EDITORIAL

ABDOMINAL PAIN

As time goes on, there are more and more laboratory aids and scientific tests to point to correct diagnoses of diseases and conditions that are not normal. It is natural that we should lean more on the new and less on the old. There are countless illustrations of this over the ages, but it is not the part of wisdom to discard or discount fundamental symptoms and signs that are nature’s way of issuing warnings.

Pain is, of course, a fundamental symptom of many conditions. It is unfortunate that some of our worst diseases do not in their early stages give rise to this signal. When it does occur, it justifies all the consideration given it by our predecessors and more, for we have the benefit of modern knowledge that has been developed in the fields of anatomy, physiology and pathology, which add to the value of this symptom. One seems to note, however, in recent years a certain indifference or casualness in the attempts at its interpretation. It is not meant that there is indifference to its relief, but to question whether it is always given the careful analysis that can be so very revealing.

In considering pain, it is probably more important than in most any other complaint, to evaluate the patient first and the symptom second, and in this problem there are dangers. It is safer in most instances to err on the side of believing rather than disbelieving.

In a brief article one cannot discuss the vagaries of children, the malingering of those receiving compensation, and other cases in litigation, nor the hysterics. In the usual bona fide cases, one should carefully listen to the description of the pain, attempting to get the patient to tell in his own words just what is felt. The choice of words in many of these histories is very descriptive.

We cannot here go into a detailed scientific discussion of pain. It is a most complex subject and it is wondered whether sufficient attention is paid to it per se in our teaching. If the complaint is in the abdomen one should take the time to obtain from the patient the characteristics of the pain; whether deep or superficial, dull or sharp, local or general, steady or rhythmic; whether it is throbbing; whether referred along well established paths: are the pain and tenderness in the same area; is there rigidity; is there nocturnal or diurnal emphasis; does the position of the patient influence the severity; is the pain accompanied by visible peristalsis and borborygmi.
It should be remembered that strangulations of bowel are likely to give more aggravated symptoms than obturator types of obstruction. Evans and Bigger, in the J. A. M. A. February 22, 1947 state:

“Pain is the commonest symptom in obstruction of the small bowel. Although it is generally stated that in both types of obstruction the onset is sudden, we are impressed by the dramatic onset of pain in strangulating obstruction; it is likely to be sudden and severe, even violent. In this respect the patient with strangulation resembles those of other clinical states where the flow of blood to a part is suddenly obstructed as in coronary occlusion or embolus to a main artery of an extremity. In simple obstruction the patient may recall that in the earliest hours there had been abrupt, periodic increase and cessation of the pain, but in strangulation the pain is generally continuous without intervals of complete freedom from pain”.

A large bowel obstruction not caused by strangulation may be accompanied by little pain, and when it is present there may be surprisingly long intervals between paroxysms, thus throwing the doctor off guard. The patient seems at times to have been relieved—only to have other paroxysms. A Wangensteen suction will in many instances relieve the pain of obstruction and while being helpful may lull the patient and doctor into greater danger.

One has only to review cases in retrospect to realize that a more critical analysis of the type of pain might have lead to a more correct diagnosis. More care might have prompted pointed to the chest condition giving abdominal symptoms, or an abdominal condition giving chest symptoms, or cerebro spinal disease giving abdominal symptoms. We find instance after instance where the persistence of pain finally leads to the diagnosis of biliary tract disease, colonic growths and other conditions in spite of negative roentgenologic and laboratory findings.

Many examples of interesting and confusing problems could be cited but perhaps enough has been said to emphasize the importance of paying attention to the patient's complaint of pain. An attempt should be made to analyze pain on its own characteristics, with corroboration from available tests. It is not wise to depend entirely on laboratories to tell what nature in her outcry may be saying rather plainly.

Walter D. Wise, M.D.
CANCER DETECTION AND THERAPY

II. METHODS OF PREPARATION AND BIOLOGICAL EFFECTS OF METALLO-PORPHYRINS* †‡

LOUIS O. J. MANGANIELLO, M.D.§ AND FRANK H. J. FIGGE, PH.D.

In a previous paper (1), the affinity of neoplastic and growing tissue for porphyrins and metallo-porphyrins (zinc hematoporphyrin) was reported. When mice with induced (methylcholanthrene) or transplanted tumors (Sarcoma 37, Sarcoma 180) and a dog with a spontaneous mammary tumor were injected with radioactive zinc hematoporphyrin, the tumors became very red fluorescent, although not as radioactive as had been anticipated. On the other hand, the liver became two or three times as radioactive as the tumor, and contained very little porphyrin. Further investigation involving the injection of radioactive zinc hematoporphyrin into normal dogs, rabbits, and mice, confirmed the impression that zinc 65 was split off the porphyrin and stored in the liver.

It thus became desirable to test other more stable metal porphyrin compounds in the hope of finding one or more that would not be broken down in the liver. When the methods for synthesizing metallo-porphyrin compounds were examined, it was found that in some instances the existing methods were quite simple. However, some metals had not been introduced except by pressure bomb synthesis (vanadium) (2) because the solvents commonly employed boiled far below the temperature necessary for the reaction. It appeared probable that any metal porphyrin complex could be made if a mutual solvent for the metal salts and the porphyrin, with a boiling point near 200° Centigrade could be found. Ethylene glycol with a boiling point near 200° Centigrade was tried and proved to be ideal in every respect. In addition, it was miscible with water and the boiling point could thus be regulated.

The method involving the use of ethylene glycol as a solvent will be described below. For comparison of yields and properties of the compound made by other methods, the preparation of zinc hematoporphyrin will be described. The fate of this compound in the bodies of animals with tumors will be discussed.

METHOD AND MATERIALS

Preparation of Zinc Hematoporphyrin

METHOD 1—METHOD OF FISHER, TREIBS AND HUMMEL AS MODIFIED BY GLENN S. WEILAND (METHYL-ALCOHOL METHOD)

Five hundred mg. (0.74 millimoles) of hematoporphyrin dihydrochloride is dissolved in 30 ml. of 50 per cent (v/v) solution of methanol and added with vigorous stirring at room temperature to a solution of 330 mg. (1.48 millimoles) of zinc acetate dihydrate dissolved in 15 ml. of methanol. Some

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† From the Departments of Neurosurgery and Anatomy of the University of Maryland School of Medicine, Baltimore, Maryland.
‡ Received for publication November 2, 1950.
§ Fellow in Neurosurgery. Fund B.
precipitation of the zinc porphyrin appears. After a few minutes, while stirring vigorously, there is added to the mixture 50 ml. of water. The precipitated metal porphyrin is then filtered and washed 3 or 4 times with 50 ml. of water until the filtrate is free of zinc and chloride ions. The material is dissolved in dioxane which is then evaporated in a hood. The yield by this method is 648 mg. of zinc hematoporphyrin.

**METHOD 2—ETHYLENE GLYCOL METHOD**

Five hundred mg. of hematoporphyrin dihydrochloride is dissolved in 200 cc. of ethylene glycol. Next, 350 mg. of zinc acetate dihydrate is dissolved in 25 cc. of ethylene glycol. Both solutions are heated to 90 C. and mixed with vigorous shaking. Heating is continued until the solution changes from a red fluorescent color to an orange-yellow fluorescence. Next, 750 cc. of water is added. When

<table>
<thead>
<tr>
<th>Solvent</th>
<th>ETHYLENE GLYCOL METHOD</th>
<th>METHYL ALCOHOL METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Soluble</td>
<td>Fluorescence</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Acetone</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Ether</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Dioxane</td>
<td>soluble</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Benzine</td>
<td>slightly</td>
<td>yellow-orange</td>
</tr>
<tr>
<td>Pyridine</td>
<td>soluble</td>
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</tr>
<tr>
<td>NaOH 1N</td>
<td>very</td>
<td>dark yellow</td>
</tr>
<tr>
<td>Water pH 10</td>
<td>soluble</td>
<td>orange-yellow dark</td>
</tr>
<tr>
<td>Water pH 8</td>
<td>soluble</td>
<td>orange-yellow dark</td>
</tr>
<tr>
<td>Water pH 7</td>
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</tr>
<tr>
<td>Water pH 5</td>
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<td>nonfluorescent</td>
</tr>
<tr>
<td>0.1 N HCl</td>
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<td>slightly red</td>
</tr>
<tr>
<td>1 N HCl</td>
<td>slightly</td>
<td>orange-yellow</td>
</tr>
<tr>
<td>2 N HCl</td>
<td>slightly</td>
<td>orange-yellow</td>
</tr>
<tr>
<td>H₂SO₄</td>
<td>decomposed</td>
<td>dark red</td>
</tr>
</tbody>
</table>

warmed, a flocculent precipitate forms, which settles out on standing. After removal of the supernatant liquid, the precipitate is filtered and washed three to four times with distilled water. The precipitate is then collected by dissolving it in dioxane and is weighed after the evaporation of this solvent (in hood). The yield by the above is 461 mg. zinc hematoporphyrin.

**RESULTS**

*Comparison of the Yields, and Properties of the Products*

The fact that the yield by the methyl alcohol method was considerably higher (641 mg) than the yield with the ethylene glycol method (461 mg) was related to the fact that the product obtained by the methyl alcohol method was a gummy resin-like substance that could not be completely dried. In contrast, the material obtained by the ethylene glycol method was a fine dry powder. The solubility and fluorescence of the preparations were determined and listed in Table I.
Ten mg. of the zinc hematoporphyrin of each sample was placed in 20 cc of solvent. The degree of solubility and fluorescence color and intensity were estimated by visual inspection and comparison. The solutions were examined two hours after preparation and again, one week later (see Table I). The fluorescence and absorption spectra were determined by means of a Hartridge reversion spectroscope. The

### TABLE II

**Fluorescence and Absorption Spectra of Zinc Hematoporphyrin**

<table>
<thead>
<tr>
<th>SOLVENT</th>
<th>METHYL ALCOHOL METHOD</th>
<th>ETHYLENE GLYCOL METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluorescence band (Angstrom units)</td>
<td>Absorption bands (Angstrom units)</td>
</tr>
<tr>
<td></td>
<td>Edge</td>
<td>Center</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>619.2</td>
<td>584.0</td>
</tr>
<tr>
<td></td>
<td>577.5</td>
<td>551.1</td>
</tr>
<tr>
<td>Acetone</td>
<td>611.8</td>
<td>586.5</td>
</tr>
<tr>
<td></td>
<td>570.4</td>
<td>553.4</td>
</tr>
<tr>
<td>Dioxane</td>
<td>609.2</td>
<td>586.3</td>
</tr>
<tr>
<td></td>
<td>571.4</td>
<td>553.8</td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>627.8</td>
<td>582.5</td>
</tr>
<tr>
<td></td>
<td>571.5</td>
<td>550.2</td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>625.8</td>
<td>585.4</td>
</tr>
<tr>
<td></td>
<td>585.6</td>
<td>553.4</td>
</tr>
<tr>
<td>NaOH 0.1 N</td>
<td>624.6</td>
<td>589.2</td>
</tr>
<tr>
<td></td>
<td>572.8</td>
<td>554.5</td>
</tr>
</tbody>
</table>

Data were recorded in Table II. These spectroscopic data made it possible to identify the porphyrins or metalloporphyrins in the tissues, even without extraction. To permit differentiation, similar absorption and fluorescence spectra were determined for hematoporphyrin and hemin. These are also listed in Table II-A. Attempts to determine the melting points of the above compounds were unsuccessful.

A number of other metal porphyrins have been prepared by the ethylene glycol method. These compounds and their biologic effects will be described later.
An attempt was made to determine the toxicity of zinc hematoporphyrin and zinc 65 hematoporphyrin. Experience with the injection of hematoporphyrin into animals (mice, rabbits and dogs) and human subjects led to the conclusion that hematoporphyrin itself was not as toxic as reports indicate (3). Mice readily tolerated doses of 10 mg. of hematoporphyrin if they were not exposed to direct sun-

**TABLE II-A**

*Fluorescence and Absorption Spectra of Hematoporphyrin HCl and Heme*

<table>
<thead>
<tr>
<th>SOLVENT</th>
<th>HEMATOPOPHRIN HCl</th>
<th>HEME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fluorescence band A</td>
<td>Absorption bands A Center</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>605.6</td>
<td>598.9</td>
</tr>
<tr>
<td></td>
<td>573.6</td>
<td>554.3</td>
</tr>
<tr>
<td></td>
<td>526.6</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>626.1</td>
<td>624.4</td>
</tr>
<tr>
<td></td>
<td>590.5</td>
<td>570.6</td>
</tr>
<tr>
<td></td>
<td>532.3</td>
<td></td>
</tr>
<tr>
<td>Dioxane</td>
<td>626.2</td>
<td>623.1</td>
</tr>
<tr>
<td></td>
<td>590.6</td>
<td>574.4</td>
</tr>
<tr>
<td></td>
<td>532.9</td>
<td></td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>610.4</td>
<td>603.8</td>
</tr>
<tr>
<td></td>
<td>563.9</td>
<td>529.4</td>
</tr>
<tr>
<td></td>
<td>496.0</td>
<td></td>
</tr>
<tr>
<td>Methyl alcohol</td>
<td>610.1</td>
<td>603.0</td>
</tr>
<tr>
<td></td>
<td>563.0</td>
<td>526.9</td>
</tr>
<tr>
<td></td>
<td>497.0</td>
<td></td>
</tr>
<tr>
<td>NaOH 0.1 N</td>
<td>616.4</td>
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<tr>
<td></td>
<td>569.5</td>
<td>540.9</td>
</tr>
<tr>
<td></td>
<td>502.7</td>
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</tr>
</tbody>
</table>

light. Rabbits were given 25 to 50 mg. of hematoporphyrin with no undesirable effects. It was noted that when normal mice, or mice with tumors, were injected with metalloporphyrins, the mice with tumors tolerated a much larger dose than the normal mice. A preparation of zinc 65 hematoporphyrin, prepared by the Tracerlab Company under direction of Glenn S. Weiland, was injected into normal mice with transplantable tumors, rabbits and normal dogs, and a dog with a spontaneous mammary carcinoma. Normal mice tolerated doses of 2-4 mg. while mice with tu-
Mors tolerate 2 total daily doses of 5–8 mg. Two dogs, one with spontaneous mammary carcinoma, were injected with 28 and 66 mg. without toxic symptoms.

No ill effects of these injections were noted. Mice and the dog with malignant tumors concentrated some zinc 65 hematoporphyrin in the tumors, which became very red fluorescent. Most of the fluorescence appeared to be related to the presence of hematoporphyrin. The survey of the larger animals (rabbits and dogs) with a Geiger counter, revealed that the liver had 6–8 times as much radioactive zinc as the tumors. There was no fluorescence spectrum characteristic of zinc hematoporphyrin. It was assumed that the liver had removed and had stored the zinc 65 from the injected matter. It took about 9–12 months for the zinc 65 to leave the liver completely.

On the basis of the above studies, eight human subjects with malignant neoplasms were injected with 10–100 mg. with no noticeable toxic effects.

CONCLUSIONS

1. Zinc porphyrin was not stable enough to be useful for cancer detection and therapy. The search for more stable metalloporphyrins is now in progress.

2. A new method for preparation of metalloporphyrins is presented.

BIBLIOGRAPHY


THE "LENTICULO-STRIATE ARTERY"*†

ELINOR W. DEMAREST, M.D.,‡

The existence of the lenticulo-striate artery, Charcot's artery of cerebral hemorrhage, as a definite entity has been seriously questioned. A survey of the original and current work on this artery reveals a general vagueness of terminology and an indefiniteness in the description of its course. From this, the 3 following questions arise: 1) Is there a constant lenticulo-striate artery, the so-called artery of cerebral hemorrhage of Charcot; 2) Are there proved cases of its rupture; 3) What is the status of this artery in the current textbooks?

In 1868 Charcot (1) published a paper on his work on cerebral hemorrhage in which he reported 77 cases, 69 of which were hemorrhages at the base of the brain. The localization of the hemorrhage was not well defined nor was any attempt made to dissect out the involved vessels. Only 3 sites of rupture were found. This work constituted the foundation for his statement that cerebral hemorrhage occurs most frequently in the base of the external capsule anteriorly and then spreads through the lenticular nucleus to the internal capsule. He labelled the point of origin the "site of election" for cerebral hemorrhage.

Charcot instigated Duret to investigate the arterial supply of the brain and the latter produced the first complete monograph on the subject in 1874 (2). The study of the distribution of the arteries to the corpus striatum was done by injecting the arteries, (no technique for this was given in the paper), and by then making two transverse sections through the brain. One was made "just a little behind the chiasm of the optic nerves." In this section he described the middle cerebral artery running over the perforated space for a distance of 1 centimeter and then disappearing behind the section of the posterior cerebral lobe. "In this interval it gives off of its superior border the arteries to the corpus striatum." Duret's description (translated) of these arteries was as follows: "One can divide these arteries into two groups. The external ones are very voluminous. The internal ones, situated near the vertex of the lenticular nucleus, are very small. Among the first group there is always one which goes for a certain distance along the base of the lenticular nucleus on the margin of the external capsule in order to reach the caudate nucleus where it divides into four or five terminal branches which we find on the second section. It is this artery which, after our studies at Salpêtriere and after the teaching of Charcot, lies in the location of predilection of hemorrhage of the corpus striatum. This arteriole supplies many collateral branches to the third segment of the lenticular nucleus. There are still two or three external branches which go in front of the third segment of the lenticular nucleus and finally reach the end of the corpus striatum. This group of external arteries are called the lenticulo-striate arteries."

No dissection of these arteries was made for fear of rendering the structures

* From the Department of Pathology, Division of Neuropathology, University of Maryland School of Medicine, Baltimore.
† Received for publication September 1, 1949.
‡ University Hospital, Baltimore.
through which they passed unrecognizable. Duret makes no mention of the number of brains examined in making the above description.

So Duret divided the basal branches of the middle cerebral artery into an external group, which he called the lenticulo-striate arteries, and an internal group, called the lenticulo-optic arteries. He described one of the former group as being constantly located in the area already designated by Charcot as the site of predilection for cerebral hemorrhage.

In the same year Heubner (3) published a paper on the circulation of the brain in which he did not name the basal branches of the middle cerebral artery. His work was done by injecting single arteries, piece by piece, and noting the part of the brain each piece supplied by sectioning the brain. He performed 60 injections on 30 brains. Heubner gave the location of origin of the arteries to the corpus striatum and described them as "those little arteries which supply the putamen and the middle part of the caudate nucleus and the external capsule." He made no attempt to differentiate or to name these arteries. He also contradicted many of Duret's other findings.

Among Duret’s comments on Heubner's work (4) was the statement that Heubner was too precise in his description of the origin of the arteries to the corpus striatum and that Heubner did not see the difference which existed between the internal and external (or lenticulo-striate) arteries.

In his lectures of 1876–1880 (5), Charcot incorporates Duret’s description of the lenticulo-striate arteries stressing the importance of one of them because of its size and predominant role in intra-encephalic hemorrhage. He states, “It appropriately could be called the artery of cerebral hemorrhage” and describes its course as entering the third segment of the lenticular nucleus, then transversing the superior portion of the internal capsule and entering the body of the caudate ganglion. It then continued from behind, forward to the most anterior part of that ganglion.

Kolisko (6), in 1891 introduced further corrections to Duret’s work, mainly concerning the field of supply of the anterior choroidal artery. His work also was done by injection and section of the brain. No terminology is given to the basal branches of the middle cerebral artery.

The area of supply of the middle cerebral artery differed in all of the above cited works.

In 1909 Beevor (7) produced a survey of the maximum distribution of the major vessels based on the examination of 87 brains, but he paid little attention to the details of distribution of the smaller arteries. He injected simultaneously the major vessels, using four different colors. He showed variations in the areas supplied by each artery in the different brains. In coronal sections he thought that the curved arrangement of the area of the middle cerebral supply followed the course of the lenticulo-striate and lenticulo-optic arteries of Duret, but Beevor made no attempt to define or trace these vessels. He outlined more definitely the area of supply of the middle cerebral artery (8).

Aitken (9), in 1909, published a series of figures of the arteries to the basal ganglia based on actual dissection of the individual vessels, based on an examination of 45 brains. He reproduced Duret’s figure of the arteries to the corpus striatum and claimed that the caliber of Charcot’s artery was greatly exaggerated. Figures were
then given from textbooks of the day which had adopted Duret's findings. There is a gradual progress of the original error in the drawing until the so-called Charcot's artery is pictured lying practically in the external capsule for its entire length and arriving ultimately nowheres. Aitken suggested that this is the trend of the pictorial future of this region if it is allowed to develop along the lines of credence. He denied the existence of any branches going to the optic thalamus, the lenticulo-optic arteries of Duret.

Duret (10) defended his work against Aitken's criticisms by saying that his sections are "demi-schématiques" because it was impossible to do otherwise, "since the arteries do not occupy only one position." This is in direct contradiction to his previous claim of constancy in the location of Charcot's artery in his original article (2). He claimed that Aitken reproduced the diagram, which accompanied Charcot's Lectures on Localization in Diseases of the Brain, and in which the volume of the artery of hemorrhage (Charcot's) was exaggerated and the drawing was schematic on the demand of Charcot, for the necessity of his demonstration. Duret concluded from the recent work done on the vascularization of the corpus striatum, that there are important variations in the origin and distribution of these arteries and in their courses.

Ludlum (11), in 1909, was the first to cast skepticism upon the lenticulo-striate artery. His work also was done by injection. He found that the striate vessels varied in size from all very small ones in some brains to a fewer number and larger size in others, and that, in their path, no one arteriole seemed any larger than any other. He questioned the legitimacy of naming any artery the lenticulo-striate artery and calling it the artery of cerebral hemorrhage, "not withstanding Charcot." In all of 93 cases of hemorrhage he could not find any artery sufficiently larger than another to be worthy of a name peculiar to itself. The hemorrhage and softenings were in different areas in each case. He demonstrated that the anatomy of the striate vessels is not always constant. He could not find any lenticulo-striate vessels coming up in the line of the external capsule, Charcot's area of predilection. He found that they arose more centrally in the lenticular nucleus and nourished the nucleus to this line of the external capsule.

This was the first article in which the name lenticulo-striate was applied to any one artery and used synonymously with Charcot's artery of cerebral hemorrhage. Duret used the name lenticulo-striate to apply to a group of branches of the middle cerebral artery. Charcot's artery was one of this group. This is apparently one of the steps which has led to the present confusion in the description of the basal branches of the middle cerebral artery.

Beginning in 1919, there was much investigation relating to the morphology of the corpus striatum and its blood supply. These authors have called the basal branches of the middle cerebral artery, the striate arteries, and have divided them into a mesial and lateral group, replacing the lenticulo-optic and lenticulo-striate groups of Duret. Elliot Smith (12) in 1919 commented on the constancy of the position and relations of the lateral striate artery in every order of mammals. He found in the turtle's brain that there was given off from the middle cerebral artery, as it crossed the endo-
rhinal fissure, an exceptionally large perforating artery (or several arteries), which passed into the brain along the boundary line between the palaeostriatum and the hypopallium. He claimed that in mammals of every order, one or more large arteries entered the brain at the identical spot, that is, the postero-lateral corner of the tuberculum olfactorium, immediately in front of the tubercle of the olfactory tract and to the inner side of the olfactory tract. "The artery that enters at this point in the human brain is the vessel which Charcot called the artery of cerebral hemorrhage." But as Elliot Smith describes his findings, he says one or more arteries enter at this point. So then, following his reasoning, there are one or more arteries which should be called the arteries of cerebral hemorrhage.

In 1920 Shellshear (13) published his work done by injecting the middle cerebral artery. He referred to Duret as picturing the claustrum being supplied in part by "branches of the lateral striate artery." Duret, in the work cited by this article (2) makes no use of this name.

We have thus progressed from Duret's "lenticulo-striate arteries," to Ludlum's "the lenticulo-striate artery," and now to Shellshear's "the lateral striate artery."

Shellshear (13) described the middle cerebral artery as supplying antero-lateral branches which perforated the anterior perforated space. These branches further divided into the mesial and lateral striate arteries.

Abbie summarized the above works (14, 15) and in 1937 (16) pointed out that clinicians, generally, accept and teach Duret's original findings with little or no appreciation of the corrections made since 1874. He stated that they still discuss the lenticulo-optic artery despite the fact that it has no existence. "The term lenticulo-striate artery is still retained, although the name is misleading, implying some distinction between the lenticular nucleus and the corpus striatum, and has been replaced in anatomical teaching by the title, lateral striate arteries." He described the middle cerebral artery as giving rise to a number of large branches of different sizes which enter the brain just anterior to the attachment of the temporal lobe. Traced into the cerebral substance, these twigs are found to pass laterally and caudally between the claustrum and the basal mass, into the latter of which they sink at various intervals. "The largest of these was called the lenticulo-striate artery by Duret." In this statement Abbie makes the same mistake as did Ludlum. Abbie goes on to point out that the identification of any individual twig is impossible and in this paper these vessels are referred to collectively as the lateral striate arteries.

In summary of the above works and in answer to the first question, the basal branches of the middle cerebral artery can be divided into an external and an internal group, the former being called the lenticulo-striate arteries after Duret. His name for the internal group, lenticulo-optic arteries, is omitted because the middle cerebral artery, as shown by Aitken (9), does not supply the optic thalamus. A better nomenclature is that offered by Abbie (16) in which the basal branches of the middle cerebral artery are called the striate arteries and are divided into a mesial and lateral striate group of branches. No worker, except Smith (12) who worked on mammalian brains, was able to confirm Duret's finding of an artery sufficiently distinctive or constant to be designated by a name, as the artery of cerebral hemorrhage.
Cases of Rupture

In a search of the literature for reported cases of rupture of the lenticulo-striate arteries, only one case could be found. In 1831 Thompson (17) described an aneurysm or pouch “situated towards the cerebral aspect of the point of bifurcation of the anterior branch of the first fork of the middle cerebral artery” which had ruptured at a point away from the main vessel. Since this work was done before the time of Duret, one cannot be sure that his branch would fall within Duret’s lenticulo-striate arteries.

Shennon (18) in 1915 described multiple aneurysms occurring on the “smaller branches of the lenticulo-striate artery.” These were found in an “old formal-preserved brain” in which “the vessels were pulled out of the lacerated tissue surrounding the area of hemorrhage or were carefully dissected out.” The site of the vessel rupture connected with the hemorrhage could be demonstrated.

It is generally accepted that the most frequent site of intracerebral hemorrhage is in the region of the basal ganglia, although this was questioned by Ludlum (11). This area is supplied by both the anterior and middle cerebral arteries. Therefore, one is not justified in claiming rupture of the branches of the middle cerebral artery based on the location of the hemorrhage alone. It can be proved only by locating the site of rupture and by tracing the injured vessel back to its parent artery.

The fact that hemorrhage starts in the anterior portion of the base of the external capsule, Charcot’s site of predilection for cerebral hemorrhage, does not mean that the artery described by Duret (2) as located at this site has necessarily ruptured. As Abbie (16) showed, the lateral striate vessels are massed together between the putamen and claustrum, that is, at the base of the external capsule. So, for a short time, a large number of arteries of different sizes is concentrated within a very small volume of cerebral substance. Abbie concluded that the frequency of rupture at this point depends upon the law of probability rather than upon any inherent quality of the vessels in this situation. The number of arteries crowded within this small space is probably twice as great as that to be found in any comparable volume of cerebral tissue. This, Abbie said, is dependent upon the fact that the rhinal fissure, through which the majority of the lateral striate arteries enter the brain, has become doubled upon itself during human phylogeny.

Hemorrhage can then occur from any one of this mass of lateral striate vessels at this site. There is no evidence that any one of these arteries is more susceptible to rupture or is more frequently found to be ruptured. The naming of one artery the artery of cerebral hemorrhage is not justifiable.

Survey of Textbooks

In a survey of thirty current textbooks of anatomy, neuroanatomy, and neurology, the arteries in question were found to be described as follows:

1. Nine textbooks (19-27) describe Duret’s original classification of lenticulo-striate and lenticulo-optic arteries, one of the lenticulo-striate arteries being called the artery of cerebral hemorrhage. Wilson (28) states that the existence of the lenticulo-optic artery is denied and that of the lenticulo-striate is questioned.
2. Seven textbooks (29-35), reproduce Ludlum's use of the name lenticulo-striate to one artery and use it synonymously with the name artery of cerebral hemorrhage.

3. Three textbooks (36-38) describe the branches of the middle cerebral artery as mesial and lateral striate arteries with the lenticulo-striate artery as a branch of the lateral striate. Lenticulo-striate artery is used synonymously with the artery of cerebral hemorrhage.

4. One textbook (39) describes the branches of the middle cerebral artery as the mesial and lateral striate arteries with the artery of cerebral hemorrhage as a branch of the latter group.

5. One textbook (40) introduces another nomenclature and calls the basal branches of the middle cerebral the Putamino-capsular branches. The term the artery of cerebral hemorrhage is not used.

6. Two textbooks (41, 42) state that the artery of cerebral hemorrhage cannot be distinguished. The former reference uses the terms lenticulo-striate artery and artery of cerebral hemorrhage synonymously, denying the existence of both.

7. Two textbooks (43, 44) state that since the secondary branches of the cerebral arteries vary considerably, they should not be distinguished by name.

8. Four textbooks (45-48) make no reference to naming the basal branches of the middle cerebral artery.

**SUMMARY**

1. Duret's classification of the basal branches of the middle cerebral artery is given. He described a branch of the lenticulo-striate group as lying at the edge of the external capsule, and called this the artery of cerebral hemorrhage.

2. No other worker examining human brains describes a distinguishably different artery located in this position.

3. The use of the name lenticulo-striate artery and the artery of cerebral hemorrhage as synonymous terms was introduced by Ludlum and is clearly a misquotation from Duret's work.

4. Since only one case of proved or claimed rupture of the lenticulo-striate arteries is described in the literature, the name artery of cerebral hemorrhage is not justifiable.

5. From the works studied, the basal branches of the middle cerebral artery can be divided into an external and an internal group, the former being named lenticulo-striate arteries after Duret. A preferable nomenclature is that of calling the basal branches the striate arteries. They may be divided into lateral and mesial groups.

6. The current status of the nomenclature of the basal branches of the middle cerebral artery, based on a survey of thirty recent textbooks, is presented. It clearly shows the need for clarification and standardization of the naming of these arteries.

**BIBLIOGRAPHY**


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STUDIES IN THE TREATMENT OF TINEA CAPITIS. II

Butyl 1-butanethiolsulfinate (Win 717)*†

HARRY M. ROBINSON, M.D., HARRY M. ROBINSON, JR., M.D. AND HARWOOD V. LINK, M.D.

In the first study in this series (1) we presented the results of our clinical experience in the treatment of tinea capitis with 5-nitro-2 furfuryl methyl ether (Furaspor), and demonstrated that 42.47 per cent of the patients who used this drug in accordance with the directions given, received a good result. It is our plan to continue to investigate the therapeutic value of new preparations in the managements of microsporon audouini infection of the hair. The preparation under consideration in this presentation is butyl 1-butanethiolsulfinate† (Win 717) which is a synthetic analog of allyl 2-propene-1-thiolsulfinate, the antibacterial principle of allium sativum, the common garlic.

NATURE OF DRUG

Win 717 is a pale yellow oily substance which is slightly soluble in water and very soluble in most organic solvents. It is unstable in alkaline solutions and in the presence of strong reducing agents, but is stable in dilute acid solutions. The chemistry of this compound has been reported by Cavallito and his co-workers (2). Small, Bailey and Cavallito (3) have shown that a maximum dilution of 1:833,000 of this preparation will cause complete stasis of fungus growth. It was the opinion of these workers that this substance has an extremely high activity against microsporon audouini and also that it had the ability to penetrate the unbroken skin. They demonstrated in the patients they tested by patch tests that a 1:2500 solution was non-irritating to the skin.

CLINICAL STUDIES

The studies on this material were carried out in the Department of Dermatology of the University of Maryland School of Medicine. A total of 103 patients were started on treatment with this compound. Each child was proved to have tinea capitis by examination under the Wood’s light, and following this smears and cultures on Saboraud’s media were made. All cases treated with Win 717 were proved by culture to be infected with microsporon audouini. There were 53 white children and 50 Negro children in this study and the ages ranged from 2 to 14 years. Thirty-four of these children received treatment for less than 1 month primarily because of a lack of cooperation on the part of the parents who refused to bring them in to the clinic for medication and observation. The method of treatment was changed on any patient who did not show improvement after 6 months treatment with this drug.

* From the Department of Dermatology, University of Maryland School of Medicine.
† Received for publication May 2, 1950.
† The Butyl 1-butanethiolsulfinate (Win 717) used in this study was furnished by Winthrop-Stearns, Inc.
METHOD OF TREATMENT

As soon as the diagnosis was established the parent or guardian was instructed to shave the child's head once each week until the child was discharged as cured. Each patient was furnished with a two ounce bottle of Win 717 and instructed to rub this solution lightly into the scalp, with a toothbrush if possible, twice daily. In order to comply with health department regulations the same routine was followed as in the first section of this study, that is, the patient was instructed to wear a washable white cap at all times so that there would be no interference with his or her school work. Each case was reported to the health department as an infectious disease. Parents were instructed to wash the child's scalp with soap and water twice each week. Following the institution of treatment each child was examined under the Wood's light at bi-weekly intervals to determine improvement.

RESULTS OF TREATMENT

Of the 103 patients with tinea capitis as a result of microsporon audouini who were started on therapy with Win 717, 34 were treated for less than 1 month, and of these 20 did not return after the initial clinic visit. There were 16 cures and 30 failures after

### Table 1

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>RACE</th>
<th>SEX</th>
<th>NO. RECEIVED LESS THAN 1 MONTH OF TREATMENT</th>
<th>CURES</th>
<th>NUMBER OF FAILURES AFTER 6 MONTHS OF TREATMENT</th>
<th>IMPROVED AFTER 6 MONTHS OF TREATMENT</th>
<th>SHORTEST TIME TO PRODUCE IMPROVEMENT</th>
<th>LONGEST TIME TO PRODUCE CURE</th>
<th>SHORTEST TIME TO PRODUCE CURE</th>
<th>NUMBERS OF UNCOOPERATIVE PATIENTS</th>
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<td>F</td>
<td>21 1 0</td>
<td>9 0</td>
<td>2 1</td>
<td>5 1</td>
<td>1 mon.</td>
<td>12 mos.</td>
<td>8 mos.</td>
<td>10</td>
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<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>10 2 1</td>
<td>1 1</td>
<td>7 0</td>
<td>1 1</td>
<td>1 mon.</td>
<td>9 mos.</td>
<td>9 mos.</td>
<td>1</td>
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<td>6-10</td>
<td>M</td>
<td>F</td>
<td>21 3 1</td>
<td>7 0</td>
<td>4 0</td>
<td>6 0</td>
<td>3 mos.</td>
<td>13 mos.</td>
<td>4 mos.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>27 3 1</td>
<td>9 0</td>
<td>5 0</td>
<td>6 0</td>
<td>1 mon.</td>
<td>14 mos.</td>
<td>12 mos.</td>
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<tr>
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<td>M</td>
<td>F</td>
<td>1 0</td>
<td>1 0</td>
<td>1 0</td>
<td>0 0</td>
<td>2 mos.</td>
<td>12 mos.</td>
<td>8 mos.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>2 0</td>
<td>1 0</td>
<td>0 0</td>
<td>0 0</td>
<td>1 mon.</td>
<td>10 mos.</td>
<td>12 mos.</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
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<td>34</td>
<td>16 30</td>
<td>9 6</td>
<td>26 10</td>
<td>32 6</td>
<td>Average 1 month</td>
<td>Average 10 months</td>
<td>Average 8 months</td>
<td>31</td>
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</table>
6 months of therapy. Six patients showed some improvement after 6 months of therapy but it was not considered sufficient to warrant continuation of the drug and, therefore, the method of treatment was changed. The shortest times to produce a cure was 4 months. The longest time to produce a cure was 14 months. The calculation of the percentage of cures based on the total number of patients was 15.5 per cent; if, however, the number of patients who received less than 1 month of treatment is deducted then 23.1 per cent of the patients treated were cured. No patient was considered cured unless there was a complete absence of fluorescence under the Wood's light for at least 2 months after therapy had been discontinued. Thirty-one patients are listed as uncooperative and this may be explained on the basis of failing to shave the child's head or to apply the solution regularly.

CONCLUSIONS

1. Butyl 1-butanethiol sulfinate (Win 717) has been used in the treatment of 103 patients with microsporon audouini infection of the hair.
2. Thirty-four of these patients who were treated with this drug received less than 1 month of therapy and 31 patients were uncooperative in attendance at the clinic and the method of treatment carried out by the parents.
3. Of the total number treated, 15.5 per cent were cured; when the total number of patients who received less than 1 month of treatment is deducted, the percentage of cures is 23.1 per cent.
4. The percentage of cures obtained with this drug in the treatment of tinea capitis in this clinic does not warrant its further use as a therapeutic agent in this disease.

REFERENCES

OSTEOGENIC SARCOMA ARISING IN PAGET'S DISEASE (OSTEITIS DEFORMANS) OF THE CALVARIUM

REPORT OF A CASE SHOWING CEREBRAL EXTENSION*

ROBERT C. RODGER, M.D., † RAYMOND K. THOMPSON, M.D., ‡
JOHN A. WAGNER, M.D., §

Osteosarcoma may be expected to arise in 5 to 10 per cent of the cases of Paget's disease (osteitis deformans), especially in patients over 50 (1, 2, 3, 4). Summey and Pressly (5), in 1946 listed 76 cases of osteogenic sarcoma complicating Paget's disease. Of these 15 involved the calvarium. Since that time (26), additional cases (6, 7, 8, 9, 13, 14, 15, 16, 17) have been reported with two arising in the skull (7, 8). Cerebral extension of an osteosarcoma arising in Paget's disease has been reported only 3 times (8, 10, 11). Two additional cases (7, 12) showed subdural extension without invasion of the cerebral cortex. The following report represents the fourth case to show cortical invasion.

REPORT OF A CASE

A 52-year-old colored male mechanic was admitted to the U. S. Marine Hospital, Baltimore, Md., one month after sustaining a blow to the right parieto-occipital region. This episode was followed by headache, dizziness and the appearance of a mass at the site of injury. This mass gradually increased in size. Roentgen examination of the skull on admission to the hospital revealed an underlying rounded area of bone destruction in the right parieto-occipital region 2.5 cm. in diameter with a spongy appearance of the surrounding, thickened calvarium. There was also mottling of the pelvis, 4th lumbar vertebral body, and left ulna. These findings were interpreted by the radiologist as suggesting Paget's disease of bone with a superimposed "metastatic lesion" in the right parietal area (Fig. 1).

The physical examination disclosed a tender, fluctuant mass, 5 x 6 cm. in size, lying in the right occipital region. Neurologic and funduscopic examinations revealed no abnormalities. The patient's temperature, pulse and respirations were normal. An alkaline phosphatase was 44.5 Bodansky units, blood calcium 11.4 mgm. per cent; acid phosphatase 0.66 unit, and blood phosphorus 4.02 mgm. per cent. Serologic tests for syphilis were negative. Urinalysis and hematologic examinations showed no significant abnormalities. Serum proteins were within normal limits. The cerebro-spinal fluid was not examined. The scalp lesion was interpreted clinically as a hematoma. Surgical exploration revealed an apparently encapsulated mass overlying an irregular defect in the calvarium. A biopsy of the lesion was undertaken and the specimen was interpreted as showing Paget's disease (osteitis deformans) with a superimposed osteolytic form of osteogenic sarcoma. Subsequent exploration of an area of the ulna showed spongy thickening. This was interpreted microscopically as Paget's disease.

A block excision of the tumor, including the adjacent uninvolved calvarium was then performed. The dura was incised around all except the vertex attachment of the falx, adjacent to the superior sagittal sinus. The tumor was then rolled out of its nest in the brain. A small fragment was found attached to the superior parietal region of the cortex. This was removed and bleeding controlled with an electrocautery. It was necessary to transect the tumor at the periphery so that complete excision was not possible. A tantalum plate was used to fill the defect and skin grafting was subsequently

* From the Pathology Service and Tumor Clinic, U. S. Marine Hospital, Baltimore, Md. Received for publication July 15, 1950.
† Senior Assistant Surgeon, USPHS; Resident in Pathology, U. S. Marine Hospital, Baltimore, Md.
‡ Consultant in Neurologic Surgery, U. S. Marine Hospital, Baltimore, Md.
§ Consultant in Neuropathology, U. S. Marine Hospital, Baltimore, Md.
undertaken. A microscopic examination confirmed the diagnosis of osteogenic sarcoma complicating Paget's disease of the skull and showed neoplastic cells within the dura and leptomeninges.

Five months later a recurrent nodule was seen in the scalp. This was resistant to local roentgen therapy totaling 2050 roentgen units. Nine months after operation the patient was readmitted to the hospital with severe headache and, shortly thereafter, suffered a generalized convolution which began in the right hand. Following this attack he became stuporous. He continued to complain of severe frontal headache, and gradually became more and more disoriented. A daily rise in temperature to 100° F. with a terminal elevation to 102° was recorded. Objective neurologic findings were absent and there was no evidence of weakness of the extremities. Terminally, he became comatose and died nine and one-half months after the operation.

Fig. 1. Coronal section of brain just caudal to the splenium of the corpus callosum, showing cortical invasion by tumor with extensive secondary hemorrhage.

Autopsy findings. An examination of the body generally showed only pulmonary congestion. The contour of the cranium was irregular. A necrotic, ulcerating, fungating mass was seen at the vertex and in the right parieto-occipital region. The scalp was firmly adherent to the thickened calvarium. Large neoplastic masses involving the right parietal and occipital bones invaded the underlying dura mater and falx cerebri. On dissection following fixation, the dural mass was seen to be invading the cerebral cortex which it had infiltrated and destroyed at a point 5 cm. rostrad to the right occipital pole and 2 cm. from the midline (Fig. 1). The greatest diameter of the invading nodule was 1 cm. It was continuous with an extensive area of intracerebral hemorrhage extending through the right centrum ovale, rostrad to the level of the cerebral peduncles. Here it involved the basal ganglia on the right with intraventricular extension and displacement of the midline structures toward the left.

A microscopic examination of the calvarium revealed areas of trabecular thickening with fibrosis of marrow spaces (fig. 3) alternating with areas of infiltration by pleomorphic, occasionally multinucleated, neoplastic cells forming irregular osteoid deposits and, simultaneously, resulting in osteolysis
Fig. 2 (Top). Roentgenogram of skull showing mottled thickening of calvarium and punched-out area in parietal region.

Fig. 3 (Bottom). Bone from skull showing thickened trabeculae and fibrous marrow of Paget's disease. Van Gieson stain. X 170.
Fig. 4 (Top). Osteogenic sarcoma in leptomeninges, right parietal lobe. Romanowsky stain. X 170.

Fig. 5 (Bottom). Osteogenic sarcoma invading cerebral cortex, right parietal lobe. Romanowsky stain. X 340.
of existing trabeculae. Neoplastic cells similar to those seen in the biopsy made up the dural masses and the nodule infiltrating cortical tissue (figs. 4 and 5). A moderately intense zone of reactive glia surrounded the invading cells. There was also a mild lobular pneumonia. Changes consistent with Paget’s disease were found in the left ulna and pelvis.

COMMENT

The report within 7 years of 6 cases of osteosarcoma arising in Paget’s disease of the skull and showing subdural extension, has led to the inclusion of a new entity of increasing frequency among secondary intracranial neoplasms. These cases have demonstrated that, following involvement of the inner table of the skull, the dura can promptly be invaded and intracranial extension may occur, the arachnoidal membranes constituting little or no barrier.

In this brief series, certain features have been repeated. Two of the cases have shown an osteolytic form of sarcoma. Each has also shown secondary massive intracerebral hemorrhage.

SUMMARY

A case of osteogenic sarcoma (osteolytic type), arising in Paget’s disease (ostitis deformans) of the calvarium, with intracerebral extension is presented and the literature reviewed. This case represents the sixth to show subdural extension and the fourth to show cerebral involvement. Massive intracerebral hemorrhage was a terminal feature of the process.

REFERENCES

PERICARDIAL COELOMIC CYSTS*

REVIEW OF THE LITERATURE AND REPORT OF A CASE

WILLIAM RIENHOFF, JR., M.D. F.A.C.S., ROBERT L. JACKSON, M.D. F.A.C.S.
AND MARCUS W. MOORE, Sr., M.D.

Baltimore, Maryland

Six cases of Coelomic Cysts of the Pericardium were reported by Lambert (1) in 1940, in which 2 anterior pericardial cysts were removed by Berry. Blades later reclassified 5 cases of anterior mediastinal tumors as Coelomic Pericardial Cysts. In 1947, Leahy and Culver (2) reviewed the literature of cases of pericardial cysts. Bradford, Mahon, and Grow (3), in the same year reported a series of 8 cases. Other case reports have been made by Lam (4), Leahy and Culver (2), and Buyers and Emery (5).

Thompson (6) states that according to the suggestion of Freedlander and Gebauer (7), the pericardial defects might be produced by failure of fusion of embryonic transverse septum with the pleuro-pericardial or pleuro-peritoneal membranes. However, Lambert (1) attributes the origin of pericardial cysts to failure of primitive mesenchymal lacunae, which form the pericardium, to fuse with others, and instead to form independent cavities. He describes these cysts as being lined by vascular endothelial cells upon a loose fibrous tissue containing capillaries and noted that it was difficult to distinguish between mesothelial and endothelial linings.

Coelomic pericardial cysts have no distinct characteristic features which differentiate them from other mediastinal cysts (6). Coelomic pericardial cysts usually give a rounded defined translucent mass roentgenologically. Buyers and Emery (5) states that the diagnosis is made only from gross and pathologic findings.

Mediastinal cysts in former years were felt to be rare in occurrence. However, with recent advances in thoracic surgery, many of these cysts have been successfully removed. In 1945 Laipply (8) gave an extensive review of mediastinal cysts and classified them according to their histologic structure.

CASE REPORT

H. J., a Negro male, 44 years of age was admitted to Provident Hospital on September 6, 1949. The patient had been asymptomatic but the presence of an anterior mediastinal tumor was discovered in May 1949 during a routine public health chest roentgenologic examination. There was no history of chest pains, hemoptysis, shortness of breath, or palpitation. There had been no weight loss, fever, or wheezing.

The patient was a slender male, in no acute distress, lying flat in bed, cooperative and well-oriented. His temperature was 98 F.; his pulse rate was 80 per minute; his respiratory rate was 20 per minute; and his blood pressure was 120 mm. Hg systolic and 80 mm. Hg diastolic. The only abnormal physical finding was an area of increased dullness over the apex of the heart that extended from the left parasternal line to the left anterior axillary line.

Roentgenographs revealed a small tumor at the apex of the heart in the left anterior mediastinum.

* From the Surgical Service of Dr. Samuel McLanahan, Provident Hospital, Baltimore, Maryland.

Received for publication September 1, 1950.
Fig. 1. A preoperative roentgenograph showing a translucent tumor of the left cardiophrenic angle.

Fig. 2. A postoperative roentgenograph showing that the pericardial coelomic cyst was removed.

Fig. 3. A large unilocular thin walled pericardial cyst was found at operation.
(Figure 1). This tumor was ovoid, smooth, circumscribed, and translucent. It measured 8 x 7 x 5 cm. Fluoroscopy revealed no pulsation in the tumor. It was found to spring from the pericardium and not to be connected to the heart. Its base was on the left leaf of the diaphragm. The motility of the diaphragm was normal. The hemoglobin was 94 per cent and the leukocytes numbered 11,000 per cubic millimeter. The erythrocytes count was 4,730,000 per cubic millimeter. The blood Wassermann test for syphilis was negative. The urinalysis and electrocardiograph were normal.

In May, 1949 an exploratory thoracotomy was advised, to which he consented in September 1949. Serial roentgenographs between the 4 month period revealed no change in the size or position of the tumor.

The operation was performed September 8, 1949, under intratracheal nitrous oxide and oxygen and intravenous sodium pentothal and curare. A left anterio-lateral incision was made in the eighth intercostal space 18 cm. long, and the ribs were forcibly retracted with a rib spreader. The left lung was retracted laterally. A large unilocular thin walled cyst was found in the anterior mediastinum. It measured 10 x 12 x 6 cm. The phrenic nerve was overlying the lateral border of the cyst (Figure 3).

The cyst was enucleated by blunt dissection. Hemorrhage was slight and easily controlled. The phrenic nerve was not divided. Closure was effected with interrupted number 2 chromic catgut sutures. The post-operative condition of the patient was excellent. Temperature, pulse, and respiratory rates were normal throughout the entire post-operative course. The skin sutures were removed and the patient was discharged in excellent condition on the seventh post-operative day. Recent roentgenographs revealed a good expansion of the lungs with no evidence of recurrence of the cyst (Figure 2). To date he has remained in excellent health.

Pathologic Examination

The specimen consisted of a whitish smooth walled unilocular cyst with a clear watery fluid, having a specific gravity of 1,001. It measured 10 x 12 x 6 cm. The wall was thin and translucent. The inner surface was smooth, glistening and traversed by thread-line blood vessels.

Microscopically the cyst wall consisted of a single layer of flattened mesothelial type cells on a thin layer of vascularized loose connective tissue. The pathologic diagnosis was pericardial coelomic cyst.

DISCUSSION

Following the classifications derived by Laipply (8) and by Donald (9) this cyst was identified as a pericardial coelomic cyst. It had the gross appearance of the smooth thin walled translucent pericardial cyst and had the pathologic evidence of a single layer of mesothelial cells on a thin connective tissue stroma. The cyst found in this case report could be differentiated from other congenital mediastinal cysts. The gastroenteric cyst was ruled out by the absence of smooth muscle fibers, mucous glands and columnar epithelium. In the dermoid and teratoid cysts, hair, bone, skin and cartilage can usually be identified. Also, the congenital bronchial cyst could be ruled out by the absence of walls with smooth muscle, mucus glands, cartilage and ciliated epithelium.

SUMMARY

A case of coelomic cyst of the pericardium discovered during a mass roentgenologig survey is reported. Surgical excision of the cyst was successful with no recurrence.

REFERENCES

### Department of Obstetrics
#### Statistical Summary
July 1, 1949 through June 30, 1950

| 1. Number of patients discharged | 3,386 |
| 2. Number of patients delivered and discharged (twins 33 sets) | 3,392 |
| a. Patients delivered of viable infants | 3,313 |
| b. Patients aborting | 51 |
| 3. Maternal mortality | 1 |
| a. Rate per 1000 live births | 0.30 |
| 4. Number of viable babies born (400 gms. and over) | 3,274 |
| a. Term | 2,906 |
| b. Premature* | 368 |
| A. Number born alive | 3,201 |
| a. Term | 2,872 |
| b. Premature | 329 |
| B. Number still born | 73 |
| a. Term | 34 |
| b. Premature | 39 |
| c. Rate per 1000 viable births | 22.3 |
| 5. Number of neonatal deaths | 50 |
| a. Term | 19 |
| b. Premature | 31 |
| c. Rate per 1000 viable births | 15.2 |
| 6. Total fetal mortality | 123 |
| a. Rate per 1000 births | 37.5 |

* A premature baby is one which weighs less than 2500 gms. at birth.

#### Patient Status

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<th>Live Births</th>
<th>Stillbirths</th>
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<td>28</td>
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#### Presentation: Premature and Full Term (Delivery Diagnosis)

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| **Total** | **1,366** | **1,999** |

28
## Types of Delivery

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### A. Forceps—total

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### B. Breech extraction—total

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### C. Version—internal podalic and breech extraction—total

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### D. Craniotomy

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### E. Other Destructive operations—total

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### F. Laparotomy (other than cesarean section)—total

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### G. Cesarean section—all types—total

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### Type of Delivery—Continued

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<th>CESAR</th>
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### Other Operations and Procedures not Including Delivery

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<td>c. Not pregnant</td>
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<tr>
<td>c. Toxemia</td>
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</tr>
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<td>d. Other</td>
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Fetal—Continued

Injury and disease—Continued

Newborn—hemolytic disease of

Other injury

Infection

Diarrhea

 Conjunctivitis.

Impetigo

Pneumonia

       Omphalitis

       Septicemia

       Syphilis

Development—abnormalities of

CNS

Heart

Gastrointestinal

Extremities

Mouth

Other

Hemorrhagic disease

CNS anoxia

Tumors

Others

Total Number of Viable Babies (Twins—33 Sets)

Born Alive 3201

| Birth weight—less than 1000 gms. | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 67 |
| 1000 to 1499 gms. | 0 | 0 | 3 | 4 | 0 | 0 | 14 | 8 | 40 |
| 1500 to 1999 | 0 | 0 | 4 | 1 | 6 | 3 | 33 | 6 | 42 |
| 2000 to 2499 | 1 | 0 | 25 | 1 | 36 | 1 | 123 | 2 | 44 |
| All premature live births | 1 | 0 | 32 | 6 | 42 | 5 | 171 | 17 | 52 |
| Salvage | 1 | 0 | 32 | 6 | 42 | 5 | 171 | 17 | 52 |
| Term live births (2500 plus gms.) | 9 | 1 | 437 | 4 | 420 | 1 | 1185 | 8 | 802 |

Salvage 9.4

Term live births (2500 plus gms.) 2853 19
### DEPARTMENT OF OBSTETRICS—ANNUAL REPORT

#### Premature Labor—Causes of

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### Etiology of Neonatal Mortality (Stillbirths and Deaths in Live Born)

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Etiology of Neonatal Mortality (Stillbirths and Deaths in Live Born)—Continued

### PREMATURE

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### MATERNAL MORTALITY*

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*The criterion used for maternal morbidity is the standard of a temperature elevation to 100.4 degrees or over on any two days of the puerperium excluding the day of delivery.

### ADULT DEATHS

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Mortality Rate per 1000 Live Births

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Causes of Adult Deaths

1. Spinal Anesthesia

Maternal Death:

A 16 year old, colored, registered, Rh positive, STS negative, para 0000 was admitted at 6 P.M. on December 8, 1949 in active labor with membranes ruptured. On admission the cervix was 4.5 cm. dilated and 1 cm above the ischial spines. The prenatal course revealed a contracted inlet. At 9:00 P.M. the cervix was 6 cm. dilated and on sterile pelvic examination the fetal head was 2 cm. above the ischial spines with molding and caput. A caesarean section was decided upon. At 9:18 P.M. a spinal anesthesia with 10 mgm. pontocaine in 10 per cent glucose and 25 mgm. ephedrine was given. A puncture was made at the third interspace, the patient tilted 10 degrees for 20 seconds and then placed level. Her blood pressure was 116 systolic over 70 diastolic. The anesthesia level was T-6. Her blood pressure was rechecked immediately and not obtained. Oxygen by positive pressure was started and patient intubated. She was given whole blood intravenously and adrenalin was injected into the heart. The patient died at 9:33 P.M. A post mortem section was successful.

Post mortem examination—Gross pathology—nothing unusual. Microscopic—Slight cerebral congestion and petechial cerebral hemorrhages.
CLINICO-PATHOLOGIC CONFERENCE
FROM THE CASE HISTORIES, UNIVERSITY HOSPITAL, BALTIMORE

Clinical History

A 55 year old white female was admitted to the medical service for diagnostic study because of "colitis" and palpitation of the heart. In March, 1950 she began to have diarrhea and cramping pains in her lower abdomen for which she was given sulfasuxidine. After some improvement there was a return of nausea, diarrhea and abdominal discomfort. Her abdomen became distended because of flatus. There was no vomiting. She had numerous loose mucoid stools each day.

A history of fatigability and weight loss, later followed by palpitation, shortness of breath and orthopnea was evident. The family history was not significant. Her mother died of cerebral hemorrhage. The past history included two surgical operations, an appendectomy and right salpingo-oophorectomy thirty years previously. Twelve years previously she had a cholecystectomy.

An examination on admission revealed a temperature of 98.6 F.; pulse, 84; respirations, 20; blood pressure, 150 systolic over 80 diastolic. The patient was a well developed, obese white female complaining of palpitation and fatigue after walking around the bed. The trachea was in the midline. The thyroid gland was normal. There was no venous engorgement or cervical adenopathy. The breasts were large, pendulous and free of palpable masses. The note elicited by percussion over the lungs was resonant. The breath sounds were vesicular. There were no rales. The heart was of normal size. No murmurs were heard. There was a healed upper right rectus abdominal scar. There were no abdominal masses or tenderness. Borborygmus was present. There was no cyanosis of the extremities. Varicosities were present in the right leg. Pitting edema existed in both feet. The deep tendon reflexes were normal.

The white blood cells numbered 7,800 per cubic millimeter, of which 54 per cent were neutrophilic polymorphonuclear granulocytes; 41 per cent, lymphocytes; 1 per cent, monocytes; and 4 per cent eosinophilic polymorphonuclear granulocytes. Blood platelets were normal. The blood urea nitrogen was determined to be 9 milligrams per hundred cubic centimeters. The blood sugar concentration was 80 milligrams per hundred cubic centimeters. A serologic test for syphilis was negative. Inversion of T waves was noted on the electrocardiogram. There were no demonstrable parasites in the stools. Roentgenographs of the chest, skull, and upper gastro-intestinal tract were insignificant. The barium enema (Fig. 1), was helpful in making the diagnosis.

On June 12 a section of bowel was removed. Post-operatively the patient did well and was allowed up on the day after operation. However, on the 14th of June her temperature rose to 100.6 F. and pulse rate, to 100 per minute. An examination at this time revealed fine rales in both bases. On the 19th of June a superficial phlebitis developed in the dorsal vein of the right foot. The patient was given dicumarol and aureomycin. The prothrombin time was maintained at 45 to 55 per cent. The temperature and phlebitis gradually subsided. She was discharged on July 3, 1950.
Figure 1. Barium enema showing filling defect in cecum.

Figure 2. Spot film of large smooth defect in wall of cecum.

Figure 3. View of cecum and colon after evacuation of barium enema.
Clinical Discussion

Dr. T. R. Adams: So far as I am concerned, this case is an almost insoluble conundrum. There is surprisingly little information that would lead me to a diagnosis. However, there are several things that should be considered in trying to make a diagnosis in this patient. I am going to assume that she had her trouble mainly in the colon. There are many things that could cause the signs and symptoms in this patient. Some are uncommon and some quite rare. First, hyperplastic tuberculosis of the colon, although deserving of consideration, would not permit the degree of health and adiposity seen in this woman. Another possibility is polyposis of the colon. A polyp could, without actual bleeding, cause the mucous colitis that she supposedly had. A polyp could cause cramps and abdominal distension, either by its mass alone or by its precipitating the formation of an intussusception. Another possibility, syphilis, is discarded because of the negative serology. In chronic ulcerative colitis, there are often bloody, mucinous stools, there is, however, a possibility of a segmental type of colitis. We have all seen malignant tumors of the ovaries, uterine body, and cervix involving the colon. That could cause the syndrome seen in this patient. Her genital history is negative except for the removal of a tube and ovary many years ago. Endometriosis should be considered in this case. This woman had a hemoglobin of 95 per cent. She had not lost much weight. Endometriosis could very well cause almost complete obstruction. Infrequently, one sees submucous lipomata of the colon, which could give this clinical course. It could cause the partial obstruction and mucous diarrhea. Intermittent volvulus of the sigmoid colon might be added to this differential study. Mesenteric vascular occlusion, although it is not very common, could cause an illness such as this patient experienced. Adhesions causing partial obstruction may block the large bowel, but I do not recall seeing it. Something else that comes to mind is a carcinoma of the stomach with implants in the pelvis that might impinge upon the bowel. In the absence of symptoms of gastric disease, this possibility is excluded. Post irradiation strictures of the colon are not indicated by this patient’s history.

The best supposition in considering this case is a diverticulitis. This woman had a normal hemoglobin, she had lost little or no weight, and she had symptoms of partial obstruction. Diverticulitis should certainly be strongly suggested when one remembers that 5 per cent of all persons over the age of 40 have diverticulosis. Only about 8 to 10 per cent of that group suffer inflammatory complications. I am surprised that this patient was not sigmoidoscopyed.

Dr. D. J. Barnett: The interest in this case, of course, is in the barium enema. The preliminary examination of the abdomen showed no evidence of intestinal obstruction. On starting the enema, the barium suspension flowed very easily through the entire colon. The distal half of the colon appeared distended. No peristaltic activity was manifested in the right half of the colon (Fig. 1). At the junction of the cecum, a filling lesion was demonstrated on the film made in a directly anterior-posterior position. It demonstrated the lesion to lie in the midline. We know the lesion was posterior and that it had a relatively smooth outline and indistinct lobulations (Fig. 2). The barium suspension could not be forced into the ileum. After evacuation, the filling defect was still visible at the junction of the ileum and colon.
A relatively normal mucosal pattern was seen on the proximal half, but on the distal half the mucosa was in parallel bands and relatively flattened (Fig. 3). These shadows were interpreted as indicative of malignancy or an old inflammatory process of the cecal wall.

Dr. Adams: This looks to me like late ulcerative colitis with scarring. As I suggested in the beginning, one certainly would have seen that with the aid of the sigmoidoscope. If this is a carcinoma of the cecum, it certainly has not caused symptoms that one usually sees in carcinomas involving the right half of the colon. One usually finds that the hemoglobin is much lower than would be expected after finding little blood in the stools. She had a hemoglobin concentration of 95 per cent even after being ill for 3 or 4 months. Off-hand, one would not think that this was a carcinoma of the cecum. The roentgenograph wouldn't appear thus if it had been carcinoma. Extensive ulcerative colitis is my diagnosis.

Dr. H. C. Hull: I am not sure of what she had, but I make the hazardous diagnosis of submucous lipoma. At any rate, I think the lesion is a benign tumor.

Dr. H. R. Spencer: On what basis do you explain the lack of bleeding?

Dr. Hull: There was no erosion of the mucous membranes.

Dr. R. C. Sheppard: I would like to ask Dr. Adams what he thinks of "carcinoid" as the diagnosis?

Dr. Adams: The reason I did not mention it in the diagnosis was because I was so sure that the lesion in this case was on the left half of the colon. Carcinoid tumors are sometimes malignant, but very slow growing lesions that only occasionally metastasize.

Dr. Spencer: Carcinoids do not bleed. Those that occur in the appendix are invariably benign. Those that occur in other parts of the intestinal tract may metastasize.

Dr. G. Govatos: I believe she had a tumor invaginating the wall. Either a polyp or a lipoma comes to my mind. Some roentgenologists think that submucous lipomas are a little more translucent.

Dr. Barnett: That would depend on the size.

Dr. Govatos: Another thing one must remember about submucous lipomas is that if they get large enough they might bleed.

Dr. C. R. Edwards: I believe that the most important feature of this case is the intermittent diarrhea and the smoothness of the deformity in the right colon. As a rule, of course, we know that any neoplasm in the right colon may lead to anemia. There are few exceptions. The so-called "napkin-ring" carcinoma which does not extensively ulcerate is one. The majority of the malignancies of the right colon are of the ulcerative type. When a patient of this age is presented with anemia and a tumor in the right colon, carcinoma is the most probable diagnosis. Many neoplasms of the right colon are not obstructive. This woman's symptoms were indicative of obstruction. Prolapse of a polyp with the formation of an intussusception would probably cause bleeding. In the chronic types of intussusception blood often appears in the stools. Whether it is a prolapse or whether it is an intussusception, if it is going to cause as much deformity as is seen in the roentgenograph in this case, almost invariably it will be associated with some blood in the stools. This case emphasizes
the importance of doing an exploratory laparotomy where questionable roentgenologic findings couple with signs of partial colic obstruction.

It is a very unfortunate thing that the majority of the diagnoses of endometriosis are not made prior to operation. If one will examine the history of a case where endometriosis is definitely defined by operation and pathologic studies, intermittent regression of the symptoms will be indicated. Endometriosis invading the bowel wall has been reported in almost every segment of the colon.

Pathological Discussion

Dr. H. R. Spencer: The gross specimen in this case consisted of the cecum and 29 cm. of terminal ileum. The ileum was acutely angulated and adherent to the side of the cecum. The serous surfaces were otherwise normal. Longitudinal section through the cecum, ileum, ileocecal valve and ascending colon showed the ileocecal ostium to be surrounded by pouting resilient mucosa and submucosa that protruded 1.5 cm. into the colon. This deformity consisted of a doughnut shaped protrusion of ileal mucosa that was pushed distally by excessive growth of submucous fat. The stroma was edematous and sparsely infiltrated by lymphocytes. There was no evidence of ulceration or malignancy.

This is a case in which partial intussusception and obstruction were caused by a submucous lipoma. Lipomas of the intestinal tract are not common. They arise either in the adipose tissue of the submucosa or of the subserosa. The submucous tumors of this type usually are not large but in about one-half of the cases can cause intussusception.

Diagnosis: Submucous lipoma, terminal ileum.
OBSTETRIC CASE REPORT*

The patient, an 18 year old secundigravida was admitted to the hospital at 2:15 A.M., October 20, 1950 in advanced labor. Her first pregnancy was accompanied by pre-eclampsia, and terminated with a living baby. Her present prenatal course was entirely satisfactory.

Labor began at 1:45 A.M., at home. On admission she was ready for delivery. A saddle block anesthesia was instituted at 2:30 A.M., and at 2:50 A.M. she was delivered spontaneously and without lacerations of a full term, living, female child. The delivery was rapid. At 2:55 A.M. the placenta and membranes were expressed intact. Immediately following completion of the third stage, pitocin was given intramuscularly. Cervical inspection and vaginal inspection were negative.

Two hours postpartum there was moderate vaginal bleeding with uterine relaxation; however, the uterus would become firmly contracted when massaged. Five hours postpartum, she began to bleed profusely, and massage only moderately controlled the hemorrhage. Intravenous fluids were started with one ampule of pitocin added to 500 c.c. of 5 per cent glucose administered at a moderately rapid rate. Within a very few minutes the uterus contracted firmly and continuously and bleeding ceased. Her further course was uneventful.

Diagnosis: Delayed postpartum hemorrhage as a result of uterine atony.

Discussion: The cause of postpartum uterine atony is unknown. We do know that it follows precipitate and prolonged labors, hydramnios and twin pregnancies. In its treatment there is one maneuver that may prophylactically decrease its incidence. That procedure is the slow extraction of the baby, particularly after the head has been born. Forty-five to 60 seconds should be used to deliver the remainder of the body. This aids in immediate placental separation and decreases the third stage blood loss.

Active therapy should consist of the following: 1) preparation for immediate transfusion and liberality in its use; 2) massage, either externally or a combination of the fist in the vagina against the uterus and the external hand massaging the uterus; 3) intravenous ergotrate; 4) pitocin as was given to the above patient; that is, as an intravenous drip in isotonic glucose or normal saline; 5) manual exploration of the uterus, and visual inspection of the cervix and vagina for retained secundines and lacerations; and 6) if uncontrollable with these methods, an abdominal hysterectomy should be done.

All cervical and vaginal lacerations should be repaired immediately. In many instances abdominal hysterectomy is postponed too long with disastrous results to the mother. If the first 5 steps do not control the hemorrhage, other procedures, such as packing of the uterus will probably be of no avail. Hysterectomy is then a lifesaving procedure.

* From the Department of Obstetrics, Univ. of Maryland, School of Medicine, Baltimore.
BOOK REVIEWS

Textbook of Bacteriology. Joseph M. Dougherty, A.B., M.A., Ph.D., Dean of the School of Science and Professor of Bacteriology, Villanova College; and Anthony J. Lambert, B.S., M.S., Instructor in Bacteriology and Parasitology, Temple University School of Medicine. The C. V. Mosby Company, St. Louis, Missouri, 1950. 491 pp. Price $5.75.

This is a text for undergraduate students and is well-suited for introducing bacteriology to pre-medical and pre-dental students and for nurses' instruction.

The student is introduced to the subject by way of a rather concise, though highly informative, review of the history of bacteriology. This is followed by a chapter on microscopy; a logical sequence since much of the rapid progress in the development of bacteriology depended upon the perfection of the compound microscope. The chapter on microscopy is extended to include the valuable contribution of the electron microscope to bacteriology.

Those chapters dealing with bacteriologic technique, apparatus, cultural methods and staining are well presented and are amply supplemented with tables, illustrations, and diagrams which are too often slighted in elementary texts. Such treatment of these phases of bacteriology is of practical value. The effects of physical and chemical agents on bacteria are well-treated and a chapter on chemothterapeutics is remarkably well up to date.

Six chapters are devoted to various phases of the infectious process, immunology and serology. Particularly impressive is the thoroughness with which the complement fixation reaction is considered, the procedure demonstrated being a modification perfected by Dr. John A. Kolmer. These chapters would serve well in the establishment of a foundation in immunology and serology for the elementary student in bacteriology.

Some twenty groups of organisms are considered with regard to morphology, cultural characteristics, pathogenicity for man and animals, immune and serologic responses elicited, therapy and other information where pertinent; for example, toxin production, antigenic types, specific tests and distribution of the organism. The inclusion of the actinomycetes, pathogenic fungi, rickettsia and filtrable viruses produces a well rounded representative presentation of pathogenic microorganisms. Chapters dealing with the bacteriology of water, milk and food as well as the parasitic protozoa are of practical value to the future technician.

The reviewer feels this text to be an excellent one for introducing the science of medical bacteriology to the undergraduate student destined to major in medicine or an allied field. It is written in a style which is both lucid and vivid and for the student interested in enlarging upon the basic presentations, there is an ample provision of references to original investigation or other authoritative sources.

Andrew G. Smith, Ph.D.


It would be an almost impossible task to measure the extent of current professional and lay interest in Freud's system of psychoanalysis. This wide-spread popularity of psychoanalysis has caused much of its terminology to become a part of the vocabulary of the average layman with the result that far too many Freudian concepts and terms have been distorted and have lost their original meaning. This is so true that the interested, intelligent layman, the beginning student of psychoanalysis, and the researcher, have had a difficult time determining just what was Freud's definition and meaning of his terms. The only recourse open to those who desire to know authoritatively what Freud meant is either to wade through his voluminous tomes or else seek out a psychoanalytic expert—neither of which is practical or satisfactory. This problem, happily, no longer exists, thanks to the fruitful efforts of the editors of the Dictionary of Psychoanalysis.

This book should prove useful and practical to anyone who is interested in psychoanalysis. It is an authoritative, well planned, comprehensive Freudian glossary, alphabetically arranged, with an introductory key to references to complete and further simplify its use. This publication is thorough and leaves little to be desired by those for whom it is intended. The format and the selection of
type is attractive, makes for easy reading and contributes to the book's value. As a handy reference this volume belongs on the shelf of students and critics of psychoanalysis. The editors, aptly state: "This is a book that should satisfy a long-felt need" and we are pleased to recommend it.

FRANK J. AYD, JR., M.D.


In its first 3 editions, this volume has been characterized by excellent evaluation of abnormal obstetrics and of sterility. The fourth edition follows this same pattern. With particular reference to management, the subject matter in many instances is unilateral in its approach and frequently omits the points of view of other obstetricians which are in opposition to the author. By and large, this is not true, and a well rounded plan of management for any one obstetric difficulty can be obtained. Many of the sections have been enlarged, such as diabetes, placenta previa, German measles, with the addition of new sections dealing with granuloma inguinale, multiple sclerosis, infectious hepatitis and poliomyelitis.

There have been advances made in classification and terminology with the agreement of Titus, McCormick, Greenhill and Eastman in their four major textbooks. The classifications of the toxemias of pregnancy have been agreed upon as well as the definition of placenta previa and the elimination of the term premature separation of the placenta with abruptio placenta substituted. This agreement will enable obstetricians in general to more clearly evaluate and interpret results of the management of these three obstetric difficulties.

There is some misplacement of values from the standpoint of space dedicated to some obstetric difficulties. For example, only three or four pages are devoted to the management of the frequent complication of contracted pelvis, while some 11 to 12 pages are devoted to the preparation and use of dextrose solutions. This may well represent enthusiasm on the part of the author for this particular form of intravenous therapy.

The illustrations are not only numerous and well planned, but also expertly prepared. On the whole, the textbook is clearly written, well programed and can be recommended for both reference and teaching.

D. FRANK KALTREIDER, M.D.
Major General Robert Urie Patterson, MC, USA, (ret.), former Surgeon General of the United States Army and Dean Emeritus of the School of Medicine, died on December 6, 1950 at Walter Reed Hospital, Washington after a short illness, aged 73.

General Patterson was born in Montreal, Canada in 1877, receiving his medical degree at McGill University in 1898. In 1901 he joined the Medical Corps of the United States Army and after a succession of stations in the Philippines and at various army posts throughout the United States he became Chief of a Medical Unit in World War I.

In 1931 he was raised from the rank of Colonel to Major General and appointed Surgeon General of the Army, serving in this capacity until 1935 when he was retired. He then became Dean of the University of Oklahoma School of Medicine, from which post he was appointed Dean of the School of Medicine of the University of Maryland, serving in this capacity from 1942 until 1946 when he was forced to
retire because of ill health. As Dean of the School of Medicine during the war years, his forceful personality contributed greatly to the maintenance and continuation of high standards during a time when medical school faculties and educational facilities were subject to considerable depletion.

He was instrumental in the institution of a program which ultimately lead to the expansion of the post graduate training facilities of the School of Medicine. During the war years he initiated the Planning Committee which was largely responsible for the constructive post war program which is still in progress.

CANCER SEMINAR PROGRAM—1950–51

*Third Wednesday in every month from 4 until 5 P.M. (unless otherwise noted)*

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<tr>
<th>Date</th>
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<td>Monday, January 22, 1951</td>
<td>Dr. Sidney Farber</td>
<td>Tumors in children</td>
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<td>February 21, 1951</td>
<td>Dr. Richard Sweet</td>
<td>Carcinoma of the esophagus</td>
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The remainder of the year's program has not been completed.

ARmy Surgeon General explains Medical Draft Commission Deadline

In response to numerous inquiries relative to the final date on which draft eligible physicians and dentists may receive preinduction reserve commissions, Major General Raymond W. Bliss, Army Surgeon General, emphasized today that the mechanics of processing applications preclude the guarantee of a commission to a registrant if he applies after receiving his induction notice.

This commission deadline, General Bliss explained, is the result of administrative considerations. Section 5 of Public Law 779, 81st Congress, simply provides that "no person inducted under the provisions of this Act shall be entitled to the benefits of the provisions of Section 203 of Public Law 351, 81st Congress." (8100.00 monthly incentive bonus—ed.) However, for physicians and dentists to qualify as volunteers, and thus for the special professional pay authorized under Public Law 351, all processing required for a reserve commission must be accomplished and appointment made prior to induction.

"Because of the work load involved in processing an application for reserve commission, and the controls necessary for a decentralized Selective Service system, as well as a decentralized Army appointment system, we simply cannot guarantee that a registrant can receive his commission in time if he applies after he has received his induction notice," General Bliss said. "This, of course, does not preclude any registrant applying for his commission after he has received his induction notice, and if he receives a commission before actual induction, he is entitled to all the benefits provided for commissioned officers."
DEPARTMENT OF PHARMACOLOGY

Go Lu, M.D., was appointed a Fellow in Pharmacology as of September 1, 1950. Dr. John C. Krantz, Jr., gave the Convocation address at the University of Buffalo on October 20, and while in Buffalo spoke to the staff of the Maternity Hospital of the University of Buffalo, and addressed the annual banquet of the Torch Club of the city.

APPOINTED ASSISTANT PROFESSOR OF PHARMACOLOGY

Dr. Raymond M. Burgison

The appointment of Dr. Raymond M. Burgison as Assistant Professor of Pharmacology was announced on September 1, 1950.

Dr. Burgison, a native Baltimorean and a graduate of Loyola College, received his Doctor of Philosophy degree from the University of Maryland School of Pharmacy in June, 1950. During his postgraduate training he held the Ohio Chemical Company Fellowship in the School of Medicine from 1948 to 1949, and from 1949 to 1950 was the Eli Lilly Fellow in Pharmacology. Prior to his entrance into the graduate school of the University he worked as an industrial research chemist and during World War II was active in rubber research.

In the department of Pharmacology, Dr. Burgison will continue investigations with drugs used in the treatment of cardiovascular diseases.
DEPARTMENT OF PHARMACOLOGY

The Department of Pharmacology has received a grant of $4500 from Eli Lilly & Company for the study of cardiovascular drugs, and a grant of $3500 from the Air Reduction Company for a continuation of studies in anesthesia.

Go Lu, M.D., is enrolled as a graduate student in this department.

Dr. John C. Krantz, Jr., gave 5 lectures at the Atlantic City General Hospital and served as a consultant to the hospital for the week of June 11.

Dr. Krantz will be the speaker at the annual banquet of the Surgical Society of San Diego, California, September 13, and will also speak on September 14 at the Medical Society of Hollywood.

GRANT AWARDED

A recent grant of $6,000 from the United States Public Health Service has been awarded to the Department of Pharmacology for continuing studies in the pharmacology of drugs applicable to the treatment of hypertension.

NOTES FROM THE DEPARTMENT OF OBSTETRICS

On July 1, 1950, Dr. Schuyler G. Kohl resigned from our faculty to accept an appointment under Dr. Louis M. Hellman, Professor of Obstetrics, and Gynecology at the State University of New York, School of Medicine, at Brooklyn, New York.

New appointments to the obstetric staff of the school include: Drs. J. Tyler Baker, Harry McB. Beck, Wm. A. Dodd, Irvin P. Klemkowski, Clarence W. Martin and Harry Cohen.

At the November meeting of the Southern Medical Association in St. Louis there were two papers presented by members of the obstetric department. The first was by Drs. J. M. Reese and C. W. Martin and the second by Drs. I. A. Siegel and H. B. McNally. In both instances, the paper was read by the senior author.

With sorrow we report the sudden and untimely death of Dr. Robert F. Linn on Sept. 27, 1950. Dr. Linn was resident in obstetrics at the University Hospital 1941-42 after which he entered the armed forces, and upon completion of his tour of duty, went into practice in Cleveland, Ohio, his home. A successful obstetrician, Dr. Linn enjoyed the respect of his confreres. Dr. Linn was just 40 years of age when he died, death being due to coronary occlusion.

Dr. W. Paul Dailey, Harrisburg, Pa., resident in obstetrics at the University 1930-32 was recently elected President of the Harrisburg County Medical Society.

"DOUGTRICIANS" ORGANIZE

In June 1949 a number of the past obstetric residents of the University and Baltimore City Hospitals met at the University Hospital to organize "THE DOUGTRICIANS." All present were former residents of Dr. Louis H. Douglass, thus the derivation of the name of the society. The meeting consisted of clinics and case presentations. In the evening a dinner was held at the Baltimore Country Club. A permanent organization was formed at this initial meeting.

The second annual meeting and dinner was held at the Hotel New Yorker, New
York, in May 1950 in conjunction with the International and Fourth American Congress of Obstetrics and Gynecology. Eighteen members were present. Dr. Louis H. Douglass, the guest of honor, made a brief talk. Dr. J. Morris Reese, President, presided.

It is planned to hold the third annual meeting in June 1951 in conjunction with the Medical Alumni meetings.

Dr. John C. Krantz, Jr., Professor of Pharmacology, has been recently elected an honorary member of the Hollywood Academy of Medicine, Hollywood, California.

DEPARTMENT OF DERMATOLOGY

Recent publications by the Department of Dermatology include the following.


By Dr. Israel Zeligman—Red Fluorescence of Urine in Wood's Light as Aid in Office Diagnosis of Porphyrria. Archives of Dermatology and Syphilology. May 1950.

By Dr. Francis A. Ellis—The Vesicular Form of Darier's Disease (so-called benign familial pemphigus). Archives of Dermatology and Syphilology. May 1950.

By Dr. Eugene Bereston—Treatment of Kaposi's Varicelliform Eruption with Aureomycin. Archives of Dermatology and Syphilology.


By Drs. H. M. Robinson and H. M. Robinson, Jr.—Terramycin in the Treatment of Early Syphilis and Gonorrhea. (In preparation.)


The Use of Aureomycin, Oral, Intravenous and by Local Application in the Treatment of Dermatoses. To be read in November 1950 before the section of dermatology of the Southern Medical Society.


By Dr. R. C. V. Robinson—Benzy1 Benzoate in the Treatment of Tinea Capitis. October, 1949.


The Ocular Mucous Membrane Syndrome. Accepted for publication in the Medical Clinics of North America.


Dr. Francis A. Ellis and William Bundick will present an exhibit at the Southern
Medical Meeting in St. Louis in November, 1950, entitled: The importance of Biopsy in Diagnosis and Prognosis in Classification of Lupus Erythematosus.

Dr. H. M. Robinson, Jr. is preparing an exhibit on Visual Aids in the Teaching of Under-graduate Dermatology.

Drs. H. M. and R. C. V. Robinson recently presented a paper on Modern Approach to Skin Diseases at the Peninsula General Hospital, Salisbury, Maryland.

Dr. H. M. Robinson, Jr. recently lectured at the Howard University Medical School, Washington, D. C. on Rarer Dermatose.

DEPARTMENT OF PSYCHIATRY

New appointments in the clinical staff of the Department of Psychiatry are Dr. William N. Fitzpatrick, Dr. Enoch Callaway, III, Dr. Marion W. Mathews, Dr. Marvin Jaffee and Dr. Virginia Suttonfield. Dr. Robert G. Grenell has been appointed Research Associate in Psychiatry and Miss Jeannette Rayner and Mr. David Willens have been appointed Research Assistants. Dr. Ephriam T. Lisansky has been promoted to the position of Associate in Psychiatry.

A contract for “Psychological Studies on the Effects of CW Agents” has been awarded to the Department by the Chemical Corps Procurement Agency, Department of the U. S. Army. Support for a research project on “Effects of Anoxia on the Electroencephalogram and on Behavior”, which has been transferred from the Harvard Medical School, has been granted by the Office of Naval Research, Department of the Navy.

The Myer Dana Lectureship in Psychiatry has been established through the generosity of Mr. Herman Dana of Boston. A grant for the support of “Studies in Medical Logic” has been likewise received from Mr. Herman Dana, Boston.

Dr. Robert G. Grenell has read papers on “Effects of High Potassium on In Vivo Respiration and DC Potential of Cerebral Cortex” and “In Vivo Respiration of the Cerebral Cortex in the Absence of Glucose” at the Federation of Biological Sciences, and a paper on “Effects of Nembutal on the In Vivo Oxygen Consumption of the Cerebral Cortex” at the Annual Meeting of the American Neurological Association.

Dr. Whitman Newell was elected to the Presidency of the American Orthopsychiatric Society at its annual meeting in Atlantic City. He is also President of the Baltimore Psychoanalytic Society.

Dr. Jacob E. Finesinger read a paper on “Managing the Emotional Problems of the Cancer Patient” at the annual meeting of the Georgia Medical Society, and in collaboration with Dr. John R. Reid, read a paper, “Inference Testing in Psychotherapy” at the annual meeting of the American Psychiatric Association. He has also read papers before the Washington County Medical Society, the Frederick County Medical Society, the Baltimore City Medical Society and the Maryland Medical and Chirurgical Faculty and the Washington Psychiatric Society. Dr. Finesinger has been named to the editorial board of the American Journal of Clinical Investigation and has been appointed a special consultant to the National Institute of Mental Health.
DEPARTMENT OF SURGERY

Dr. Joseph Ganey delivered a paper on "A Study of Intestinal Flora" at the annual meeting of the American College of Surgeons in Boston.

Dr. William D. Lynn, who completed his Residency in Surgery in July, 1950, has been appointed full-time Associate in the Department of Experimental Surgery and Clinical Research. Dr. Lynn will continue his activities in the further organization of the research program of the Department of Surgery.

For the past several years the Department of Surgery has maintained an active affiliation with the Department of Surgery of the Peninsula General Hospital at Salisbury, Maryland, where one Assistant Resident from the Department of Surgery has been assigned on a rotating basis, changing quarterly. On July 25, 1950, an additional Assistant Resident was assigned to the Peninsula General Hospital for a 6 months rotating service.

The American Board of Surgeons recently accepted Drs. William B. Long, Henry A. Briele and William H. Fisher, Jr. of the Department of Surgery, Peninsula General Hospital, as preceptors. These three physicians are all alumni of the University of Maryland School of Medicine and received the greater part of their training at the University Hospital.

Recent papers published by the Department of Surgery include:
The Treatment of Peritonitis of Appendical Origin with Aureomycin. George H. Yeager, W. D. Lynn and T. G. Barnes. This paper will be published in The Southern Surgeon.
Drs. A. R. Mansberger, Jr., George H. Yeager, R. M. Smelser and F. M. Brumbaick have completed a paper entitled A Study on Sapheno-Femoral Junction Anomalies which will appear in the October, 1950 issue of Surgery, Gynecology and Obstetrics.
A paper entitled Terramycin in Peritonitis; Experimental and Clinical was read before the Conference on Terramycin at the New York Academy of Sciences in June, 1950 by Drs. George H. Yeager, A. R. Mansdorfer, Jr., C. D. Thomas, Jr. and T. G. Barnes. This paper will be published in a forthcoming issue of the academy journal.

MERCY HOSPITAL

Dr. Edgar B. Friedenwald, class of 1903, P & S, resigned on March 10, 1950, as Professor of Clinical Pediatrics in the School of Medicine.
Dr. Walter D. Wise, class of 1906, P & S, is President-elect of the Medical and Chirurgical Faculty for 1951.
Dr. Edward R. Dana was appointed Director of Radiology at Mercy Hospital and Associate in Roentgenology on the Faculty of the School of Medicine, July 1950.
Dr. Harold P. Biehl, class of 1940, Resident Surgeon at Mercy Hospital from September 1, 1946 to August 31, 1947, has opened an office at 11 East Chase Street, Baltimore.

Dr. Michael L. DeVincentis, class of 1941, Resident Surgeon at Mercy Hospital from September 1, 1947 to August 31, 1948, became a Fellow of the American College of Surgeons on October 27, 1950.

FRIEDENWALD LECTURE

The Dr. Julius Friedenwald Memorial Lecture was given on Thursday, November 2, 1950 at 8:30 P.M. Dr. Andrew C. Ivy, Vice-President of the University of Illinois spoke on “Physiologic Basis of the Psychosomatic Aspects of Peptic Ulcer.”

MERCY ORGANIZES CHEST CLINIC

In conjunction with the residency program in thoracic surgery established at the University Hospital, a chest clinic has been organized at Mercy Hospital to augment this training.

A resident from the thoracic surgery service will spend two years in this specialty with portions of his first year spent at Mercy Hospital in the bronchoscopic clinic. Here he will receive instruction and practical experience in bronchoscopy, laryngoscopy and esophagoscopy. During this time he will also observe all the cases of thoracic diseases admitted to the hospital.

Dr. William L. Garlick, recently appointed chief of thoracic surgery at Mercy Hospital will be in charge.

PROGRESS NOTE

View of site for new Psychiatric Hospital as of November 1, 1950, showing progress of excavation and foundation
MEDICAL SCHOOL SECTION

MEDICAL LIBRARY NOTES

Displayed on the balcony of the Medical Library is a collection of literature with illustrations on the modern treatment of poliomyelitis. This display was arranged by Miss Grace E. Shaw, Physical Therapist in the University Hospital

PERSONAL DONORS TO THE LIBRARY

August–October, 1950

Mr. Thomas C. Desmond
Mrs. Preston W. Fishbaugh
Dr. Frank W. Hachtel
Dr. Vernon Krahl
Dr. Enrique Llamas
Dr. Maurice C. Pincoffs
Dr. H. Boyd Wylie

Dr. C. Reid Edwards
Dr. N. J. Gould
Mrs. John G. Jeffers
Dr. Arthur M. Kraut
Dr. William B. Patterson
Dr. A. F. Thompson, Jr.
Dr. D. L. Wilkinson

Besides individuals who make gifts of books and journals, various foundations, pharmaceutical firms, medical organizations, and other libraries present material to this library.

It has been mentioned before in the Bulletin what a gratifying response has been made by alumni and other friends of the library to the request for medical journals. One alumnus from Jersey City, New Jersey has been faithfully shipping discarded medical journals to Baltimore ever since the request appeared. The librarian recently received the following letter from this same alumnus:

"Dear Mrs. Robinson:

I have been sending you so many old medical journals that I think a few new books would not be amiss. Will you therefore send me a list of some of the publications desired by the library and I will be pleased to select some of them and have them sent to you.

I am glad that you consider me a friend to the library. I recall the many services and benefits that the medical library rendered to me when I was a student at the University.

Arthur M. Kraut, M.D."

This letter is just one example of the interest which medical alumni show in the development of the library.
During the academic year, 1949-50 the University of Maryland Biological Society completed the following programs which are listed below.

**November 16, 1949**

Dinner Meeting: Park Plaza Hotel, Baltimore. Speaker: Dr. R. P. Silirie, Medical Division, Merck and Co. Topic: *Cortisone—Its Chemistry and Physiological Properties.*

**December 14, 1949**

Chemical Hall, School of Medicine. Speaker: Dr. Dexter L. Reimann, Associate Professor of Pathology, School of Medicine. Topic: *An Attempt to Establish Collateral Circulation to the Myocardium.* (Bull. Sch. Med., U. of M.; 35: 1, (Jan.), 1950.)

In addition, Dr. Edward B. Truitt of the Department of Pharmacology, School of Medicine spoke on *Techniques in the Measurement of Coronary Blood Flow.*

Studies of coronary blood flow on theophylline compounds by numerous methods were studied. A method of measuring the normal rate of flow as well as accurately reflecting the increases caused by changes in the coronary vascular bed were considered. The paper continues with the numerous techniques employed in the measurement of coronary blood flow in various physiologic states.

**January 18, 1950**


In the past, a yardstick for fetal maturity has been sought in the nature of fetal development itself, and explained on genetic grounds alone. Consideration of facts obtained in laboratory and domestic animals, as well as in certain races of women shows that the control of fetal size at birth is a function of fetus: maternal relationships; that fetal size is governed in part by the relation of the size of the uterus to the size of the fetus, and that in every species studied, a relationship exists between the size of the fetus and the shape of the uterus about the conceptus. Maturity, however, is independent of size, except in broad terms, among different species.

There is a period of embryonic development in each species in which the uterus about the conceptus is essentially spheroidal. After a definite period of time in each species, the fetus commences to increase rapidly in size, and the uterus about the conceptus assumes a cylindrical shape. This change over in pattern of uterine enlargement is rapid, and occurs at a nearly fixed time in each species. It is called the conversion period. Using this as a fixed point in the fetus: uterine relationship, it is found that the maturity of the fetus at birth is a function of the proportion of the total duration of pregnancy which the fetus spends in an elongating or cylindrical uterus. This is substantiated by considering such diverse factors as appearance of ossification centers, resistance of newborn to anoxia, development of regulation of body temperature, and general somatic development.

**February 16, 1950**

Bressler Library, University of Maryland. Speaker: Dr. Edward Steers, Department of Bacteriology, School of Medicine. Topic: *The Mode of Action of Sulphonamides.*
Two hypotheses are offered to explain the inhibition of growth of bacteria by sulfonamides. (1) The Wood-Fildes Hypothesis (1940) which holds that p-aminobenzoic acid, a structural analogue of sulfanilamide, is an essential metabolite. (2) The Group represented by Sevag and his co-workers (1942, 1946) who feel that sulfonamides act upon respiratory enzymes thus interfering with respiration essential to growth. Sevag postulates that p-aminobenzoic acid is a non-toxic analogue of sulfanilamide which it can displace non-specifically from any enzyme surface without itself being inhibitory. The majority of data reported since 1940 would tend to support and strengthen the Wood-Fildes hypothesis. Para-aminobenzoic acid has been shown to be a growth factor for certain organisms. Rubio and Gillespie (1940) and Blanchard (1941) isolated it from yeast. Ratner et al., (1944) reported p-aminobenzoic acid to exist in a bound form as a glutamic acid peptide. Angier et al., (1946) established the structure of the peptide as consisting of pterin, p-aminobenzoic acid and glutamic acid moieties. The intact molecule is pteroylglutamic acid or folic acid. Miller (1944) demonstrated the decreased synthesis of folic acid by Escherichia coli in the presence of sulfanilamide. Harris and Kohn (1941), Bliss and Long (1941) and Lampen and Jones (1949) presented evidence which would tend to involve p-aminobenzoic acid in the metabolism of amino acids and purines.

Work and Work (1948) on the basis of the foregoing evidence have proposed the following modification of a scheme originally devised by Kohn (1943) to explain the mode of action of sulfonamides.

\[
\begin{align*}
\text{Primary Reaction} & \quad \text{Secondary Reaction} \\
\text{PABA + pterin + glutamic acid + Unknown Metabolites} & \xrightarrow{\text{Inhib by Sulfonamides}} \text{Folic acid} + \{C, D, E\} + \{A, B, C, D\} \\
& \quad \text{Products essential for growth}
\end{align*}
\]

The work of Lampen and Jones (1947) and Miller (1941) play an important part in the formulation of the above scheme. Miller (1947) in an extension of her original work reported that sulfanilamide not only inhibited the synthesis of folic acid by a susceptible strain of Escherichia coli, but also the synthesis of pantothenic acid. The latter synthesis was 60X more sensitive to sulfanilamide than the former. Furthermore, while the synthesis of folic acid by the resistant strain (developed from the parent susceptible) was still moderately inhibited by the sulfonamide, the synthesis of pantothenic acid was not only insensitive to sulfanilamide, but also 50 per cent in excess of that of the control. Wright and Skeggs (1945) found that high protein diets protected rats against folic acid blood dyscrasias induced by feeding sulfasuxidine. High fat and high carbohydrate diets failed in this respect. Folic acid content of the feces and liver was lowered in all instances regardless of diet where sulfasuxidine was present in the diet. In contrast, pantothenic acid content was normal with the high protein diet plus the drug.

Sevag et al. (1950), report that folic acid per se is not a growth factor for Lactobacillus arabinosus (17-5), but that the degradation products of folic acid (Sevag and Kofi (1949)) are responsible for the growth stimulation. Furthermore, the apparent non-competitive antagonism between folic acid and sulfanilamide results not from the folic acid but to the control of the pH of the medium. These findings are not compatible with those of Lampen and Jones (1947) and would tend to argue against the conversion, by this organism, of p-aminobenzoic acid to folic acid.

Fisher and Armstrong (1947) reported that the respiration of Escherichia coli associated with nitrogen fixation and cell synthesis was as sensitive to sulfanilamide inhibition as was growth itself. The adherents of the Wood-Fildes school interpret these results as well as Sevag’s respiration studies as secondary effects.

In conclusion it should be remembered that as yet there is no direct conclusive evidence as to the actual site and mode of sulfonamide action.

March 16, 1950


Dr. Edward J. Herbst of the Department of Biochemistry, School of Medicine spoke on New Growth Factors for Hemophilus Parainfluenzae.

Drs. H. C. Johnson, A. E. Walker and C. Marshall of the Department of Neurosurgery, Johns Hopkins University spoke on The Effect of Topical Application of Convulstant Drugs on Normal Cortex and Epileptogenic Cortical Foci in the Macaque Monkey.
May 4, 1950

Bressler Library, School of Medicine. Speaker: Dr. R. M. N. Crosby, Department of Neurosurgery, School of Medicine. Topic: Studies on the Chemistry of Cerebral Pigmentation.

Contrary to the literature, pigments were found in abnormal spinal fluid which were neither carotine, bilirubin or hemoglobin. A method for their extraction and separation from spinal fluid was given along with some of their gross chemical characteristics. The pigmentation in Kernicterus, considered in the literature to result from bilirubin, on careful histochemical studies showed no evidence of bilirubin but was rather lipoidal in nature. A third pigment called "wear and tear" pigment appeared to be histochemically similar to that described in experimental animals with dietary cirrhosis (ceroid) and identical with that of Vitamin E deficiency. A suggested method of extraction and preliminary purification of the pigment was offered.

June 1, 1950

Dinner Meeting: Stafford Hotel, Baltimore. Speaker: Dr. R. G. Grenell, Department of Psychiatry, School of Medicine. Topic: Metabolism and Function of the Central Nervous System.

The present state of knowledge relative to the metabolic correlates of neuronal activity, is, to say the least, meager. Most of the studies in this field have been performed in vitro, i.e., by the Warburg technique, or by means of such methods as arterio-venous differences. The Warburg techniques have the inherent disadvantage of being carried out on tissue removed from the animal and subjected to slicing, mincing or homogenizing. Under these conditions the same mechanisms as the in vivo ones may not necessarily be functioning. The arterio-venous differences, in brain studies, for example, yield over-all aspects which tells nothing of the events going on in the different regions of the brain, or in localize 1, small groups of cells.

In order to overcome these difficulties, investigations in the intact brain, with two basic technical procedures are being pursued. Levels of oxygen tension and relative rates of oxygen consumption are obtained with the oxygen electrode devised by Davies and Brink (Rev. Sci. Instr. 1942). Chemical control over a small cortical area is produced by local perfusion, through micro-cannulation of a pial arteriole. The standard perfusion fluid is a modified Krebs Solution plus gelatine and glucose, equilibrated with 5 per cent CO2 at 38 C. This Solution is adequate to maintain the normal rate of oxygen consumption for several hours.

Problems of anemia, anoxia, narcosis, etc. are being investigated with these methods. In a preliminary series of experiments carried out with Dr. P. W. Davies, glucose was removed from the perfusate in order to ascertain the effects of carbohydrate removal on the cells of the cerebral cortex. Thus far, no change in the rate of oxygen consumption has been seen up to 2 hours of perfusion in the absence of glucose. This would imply either that these cells are burning protein or fat directly, or that some form of carbohydrate is being synthesized and burned. The possibility of protein playing a major role in the functioning of nervous tissue is a most intriguing one, and recent developments in chemistry enable one to set up theories of this nature, the validity of which remains for future experiments to determine.
MEDICO-LEGAL SEMINARS

The Seminar, announced in the October issue of this Bulletin is in its closing days as this issue goes to press. The candidates, each selected to attend the Seminar by the Heads of their respective Police Department, included senior Homicide Investigators from the cities of Baltimore, Cumberland, and Hagerstown, and from Anne Arundel, Baltimore, Montgomery, and Prince George's Counties. One out-of-state officer, representing the Park Police of the United States Department of the Interior, also attended.

Dr. Richard Ford, Head of the Department of Legal Medicine at Harvard Medical School, brought a timely message in his discussion of “Identification in Disaster.” Using major disasters as examples, including the Coconut Grove Fire, the Texas City Explosion, and the Noronic Fire, he outlined a plan for identifying the large numbers of dead which might result from an atomic attack. He pointed out that the only truly effective means of identification in such a disaster would be for each citizen to wear a metal identification tag and advocated inclusion of this provision in civilian defense planning. In large disasters resulting in many dead persons, certain other things also must be done. Before moving the bodies from the scene of the disaster, they must be tagged, and the tags must state exactly where they were found. In order to prevent looting of jewelry and other valuables, which are of great value in identification, large closed-body trucks, guarded by adequate police or militia should be insisted upon.

Other out-of-state speakers and their topics were Dr. Milton Helpern, Deputy Chief Medical Examiner of New York City, who spoke on “Concealed Murders”; Dr. Geoffrey Mann, Chief Medical Examiner of Virginia, whose topic was “The Police and Medical Examiner Investigations of Rape”; and Mr. Frank Stratton, Police Chemist, Boston City Police, who described “The Latest Advances in Investigation of Traffic Deaths.”

Student participation through study of the famous “Nutshell Studies of Crime” was considered one of the most valuable features of the course. These are amazingly accurate scale models of crime lent by their creator, Mrs. Frances G. Lee. The entire enterprise was such a success that many leaders in police activities throughout the State demanded its repetition, and, consequently, appropriate arrangements will be made to repeat it at an early date.
HOUSE STAFF TRAINING

On July 1, 1948, the Obstetric Department of the University of Maryland School of Medicine embarked upon a new venture in that it undertook to supply a house officer in the allied fields of obstetrics and gynecology to the Peninsula General Hospital at Salisbury, Maryland.

There were several reasons why this particular hospital was selected, among them being the fact that these two services were already rather well organized and in very competent hands. It was felt that the house officers assigned here would receive good training and that the interests of a fairly large number of patients would be well served. By means of an arrangement with the State Health Department, all service obstetric cases in Wicomico County could be admitted to the Peninsula General Hospital, and, in this way, a considerable amount of clinical material would be made available.

Before undertaking this project, the hospital was surveyed and approved by the Committee of Post Graduate Education. The staff of the hospital agreed to abide by certain rules and regulations regarding admissions and consultations. The chief of the services was made a member of the obstetric staff of the University of Maryland School of Medicine with the rank of Associate in Post Graduate Medicine. The chief of services agreed to attend and participate in weekly obstetric conferences of the University and, in this way, to familiarize himself with the school’s thoughts and routines. To carry this same idea further, one of the senior members of the obstetric visiting staff travels to Salisbury, Maryland monthly in rotation, and conducts a conference.

Each member of the University Hospital staff serves one-fifth of a year at the Peninsula General Hospital and four-fifths of a year at the University Hospital. The general reaction of the 12 house officers who have served in this capacity is that this is a very valuable part of their training. Being the only house officers on these services, they have considerable responsibility and, also, are able to perform many of the major operations.

In summary, it would appear that this has proved to be a very successful experiment, and one which should be continued.

Report by Dr. Walter D. Wise, Chief of Surgery

The Annual Report of the Committee on Post Graduate Courses shows that much thought has been given to post graduate training, and much has been accomplished.

There is no question of the need of such training in the State of Maryland and there is little doubt that such training is largely the responsibility of the University of Maryland. It is unfortunate that there should be confusion in the field best organized and the one in which post graduate teaching can be best accomplished, namely that of our house officers. This is most evident particularly in surgery and some of the specialties.

The standards have heretofore been set by several conflicting and overlapping organizations: The American Medical Association, The American College of Surgeons, and the specialty boards. This confusion has at times caused hardship upon men and hospitals. As a result of much complaint, we are now assured that clarifica-
tion and simplification of requirements is at hand, and that "The Essentials of Approved Residencies and Fellowships is being revised. Copies of the revision will be available for distribution within the next 30 days."*

World War II resulted in a lowering of some standards of hospital training and interfered with the careers of many men. Some of them lost time and opportunities they could not make up before standards were again raised. Now because of war, standards will probably have to be changed once more. It will require clear thinking and cool judgment to assure justice to the armed forces, civilian hospitals, young doctors, and to the public.

WASHINGTON COUNTY

The Washington County Medical Society, through its Chairman of Post Graduate Courses, Dr. B. B. Kneisley, has requested the Post Graduate Committee of the University of Maryland School of Medicine to give another series of six extension lectures at the Washington County Hospital, Hagerstown, beginning on November 14. Dr. John H. Hornbaker is president of the Society, Dr. G. W. LeVan is vice-president, and Dr. Ernest H. Poole is secretary-treasurer. The subjects to be included in this year’s series are Industrial Health, Neurologic Disorders, Pulmonary Diseases, Gastroenterology, Medico-Legal Practice and Office Gynecology. Last year’s series at Hagerstown was very well attended, and the remarks sent to the Post Graduate Office at the close of the season by Dr. Poole, who handled the arrangements, were very gratifying to the Committee.

MARYLAND ACADEMY OF GENERAL PRACTICE

Dr. Lauriston L. Keown is arranging with the Post Graduate Committee for a day of lectures to be given in the Gordon Wilson Amphitheatre of the University Hospital on December 7, 1950 to the Maryland Academy of General Practice. Lectures are to be given on the following subjects: Diabetes, allergy, antibiotics, surgery, anaesthesia, and pediatrics. A luncheon will be served at the hospital to those attending. Officers of the Maryland Academy of General Practice are Dr. Charles F. O'Donnell, Towson, Md., president; Dr. Irving Baumgartner, Oakland, Md., secretary-treasurer; and Doctors E. Paul Knotts, Nathan Needle, and B. B. Kneisley, vice-presidents.

ORTHOPAEDIC RESIDENCY

In a previous issue of the Bulletin, a plan to initiate the training of orthopaedic surgeons was presented whereby integration of three affiliated hospitals (University, Baltimore City, and Kernan) was projected. The plan is now in full operation with a resident orthopaedic surgeon on each staff, serving for one year in rotation. After 3 years in these combined services, the physician will have completed training to become eligible for examination by the American Board of Orthopaedic Surgery. The initiation of this training service is a distinctly progressive step in the field of orthopaedic surgery in Maryland and is of immense satisfaction to us. It adds another link in the cooperative chain of hospitals affiliated with the University of Maryland.

* Personal letter from the American Medical Association.
ALUMNI ASSOCIATION SECTION

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FRANK K. MORRIS, M.D.
DAVID TENNER, M.D.

Alumni Council

The names listed above are officers for the term beginning July 1, 1950 and ending June 30, 1951.

PROGRESS

It will doubtless be gratifying to our Alumni to know that a continued increase in facilities for training and service may be noted at almost every visit to the vicinity of Lombard and Greene Streets. The most recent evidence is the new Psychiatric unit which is getting well under way in its course of construction.

This structure is located west of the hospital, to which it will be physically attached, and when finished, will give our University complete occupancy of the block bounded by Greene, Lombard, Penn and Redwood Streets.

We have just reason to be proud of this newest addition, because it will give additional opportunity, not only for service in a much neglected field, but also training, according to the newer concepts dealing with mental illness.

The program for full utilization of these new facilities is already in process of development and since the Department is organized on a full time basis, should be ready in advance of the completed building.

It not only contemplates broadening the scope of teaching at the undergraduate level but also post graduate training, which will make possible the forging of a valuable link between the teaching of psychiatry and its practice, whether that be in our state hospital system or privately.

It is well to remember the criticism that has been heaped upon our state mental hospitals in the recent past. Well trained personnel to staff them is our greatest, in fact, our only assurance that we shall not be subjected to that ignominy again. Our Alumni should get behind this program and give it full support to the end that our mentally ill will have the benefit of services fortified by training and experience.
and the general public the satisfaction that comes from knowing that a job is being well done.

A chain is only as strong as its weakest link. A school's influence is measured by the interest shown and the support given by its Alumni. Let us not be the weak link!

WILLIAM H. TRIPLETT, M.D., Chairman, Board of Directors

ALUMNI REUNION DATE SET

The annual Alumni Day with reunions, the annual banquet, the presentation of the annual Alumni Honor Award, and the clinical sessions at the University Hospital will be held on June 7, 1951.

While the April, 1951, Bulletin will contain further details of the program and special events, attention is called at this early date, so the Alumni might prepare in advance by including this date on the Spring calendar. You will note this meeting is in close proximity to the American Medical Association meeting which will be held at Atlantic City, June 11-15.

Special honors will be bestowed this year on the members of the class of 1901 who will be presented with their honorary life membership cards and certificates of 50 years of service. The members of the three classes of 1901 are listed below.

University of Maryland

Paul Richard Brown
Ashby C. Byers
Richard P. Carman
Homer E. Clarke
George H. Costner
William H. Coulbourn
Benjamin H. Dorsey
Norman S. Dudley
Charles T. Fisher
Charles W. Gardner
Robert McC. Glass

Robert Lee Hall
Albert Scott Harden
Frank C. Heath
Edward L. Jones
Guy W. Latimer
Walter T. Messmore
Watson S. Rankin
William M. Riley
William R. Rogers
Thomas S. Tompkins
Edward D. Weems

Baltimore Medical College

William Clay Abel
David B. Ackley
Harry E. Anthony
Fletcher F. Carman
John R. Davies
George H. Dell
Campbell F. Flautt
Edgar T. Flint
Frank A. Glantz
Louis F. Hamrick

Enoch H. Harsh
Eugene H. Hayward
Samuel J. Herman
Myron D. Lipes
James A. McClung
Robert F. Morrison
Lamar C. Oyster
William W. Scarborough
Frederick G. Shaul
Colin R. Weirich

College of Physicians and Surgeons

Charles A. Anderson
Jacob A. Beer
J. M. Barry
Lewis Berlin

Philip S. Chancellor
Michael A. Conboy
A. D. Hays
Joshua Hilliard
Aside from the 50 year classes, reunions are scheduled for the classes of 1906, 1911, 1916, 1921, 1926, 1931, 1936, 1941, and 1946.

Class secretaries should contact the office of the Executive Secretary, Mrs. Minnette E. Scott for complete mailing lists and assistance in planning class reunions.

Dr. Philip Adalman shown with his portrait bust of Dr. Rufus Hartill.—Photo; Wide World—New York Times

ALUMNUS A PRIZE WINNING SCULPTOR

Dr. Philip Adalman, class of 1931, surgeon, of Jackson Heights, New York has not only maintained his active practice but has continued his hobby of sculpture, being a member of the Clay Club Art Center since 1936.

Among his many works is included the portrait bust (see illustration) of Dr. Rufus Hartill, Assistant Superintendent of the (New York) City Public School System, which took first prize in the Physicians’ Art Section of the American Medical Association.

NOMINATION FOR ALUMNI HONOR AWARD—1951

During the month of February, the Board of Directors of the Alumni Association will meet to nominate the 1951 candidate for the annual Alumni Honor Award, a certificate and gold key presented to an outstanding alumnus of the University of
Maryland, Baltimore Medical College or College of Physicians and Surgeons who, through "outstanding contribution to medicine and service to mankind" has been deemed worthy of this nomination.

If you know of any alumnus who might merit this nomination, please submit his name to Dr. Thurston R. Adams, Secretary of the Medical Alumni Association, University Hospital, Baltimore 1, Maryland. All nominations will be given careful consideration by the Board.

In the past three years the Honor Award has been presented to the following:


Nolan D. C. Lewis, class of 1914—Professor of Psychiatry, College of Physicians and Surgeons, Columbia University.

Arnold D. Tuttle, class of 1906, Col., M.C., USA (ret’d)—Medical Director, United Airlines.

Heads S. & D. Blood Donor Center

Dr. Robert E. Bauer, class of 1946, has been named Medical Director of the Sharp and Dohme Blood Donor Center, 702 E. Baltimore Street, Baltimore. This announcement was made recently by Dr. J. E. Schneider, Director of Biologic and Sterile Pharmaceutic Production.

A graduate of Johns Hopkins University in 1943, Dr. Bauer received his doctorate from the University of Maryland School of Medicine in 1946 and served his internship from 1946–47 at the University Hospital, Baltimore.

From 1947–48 he was Assistant Resident at the same hospital and from 1948–49 he served in two capacities—as Plant Physician at the Glenn L. Martin Company in Baltimore and Assistant in Pathology at the University of Maryland School of Medicine. He completed his Residency in Medicine at the University Hospital July 1, 1950.

CORRESPONDENCE

September 4, 1950.

Just received the July Bulletin and must say I enjoy it very much. I note with regret that Dr. Frank Crouch has passed away, as well as Dr. Thomas Tierney and Dr. Lloyd Noland. The latter played on the football team with me at B.M.C. in 1899 and 1900. I graduated from B.M.C. with the class of 1901 and next year I want to go back to Baltimore and see if any of the old boys are still living. I retired four years ago and have not been in very good health since but hope to be able to make the trip at the next graduation.

In view of this, may I ask if there will be any celebration for the 50 year men and when? Dr. Harry Anthony of Moravia, New York will probably join me at the time, as he was in my class.

Another thing, I have tried to find out is about my old fraternity. I was a charter member of Phi Chi and I believe this fraternity has since affiliated with some other fraternity. Can you tell me if this is correct and if the fraternity is still at the University of Maryland? I see that my old professor, Dr. Rowland, is still living and would like to write him but do not know where to write him. Can you give me his address?
I know it is a long time before Spring but I want something to look forward to. It is asking a good deal for me to expect people as busy as you all are to write me but I am very anxious to get these things cleared up.

Thanking you in advance, I am

Very fraternally yours,

M. D. Lipes, class of 1901 B.M.C.

June 7, 1950.

"Thank you" and "appreciate" are inadequate expressions of my feelings regarding the handsome Fifty Year Certificate.

Such a gesture is a grand one. The Alumni's thoughtfulness means a great deal to me personally and I am sure it does to all of us who have been privileged to remain active and serve humanity for five decades.

With every good wish, believe me

Sincerely yours,

Isaac C. Dickson, class of 1897
3055 West North Avenue,
Baltimore, Maryland

May 29, 1950.

Gentlemen:

Enclosed is my check for $5.00 for next year's dues. I would like to express my admiration for the fine job that has been done with the Bulletin.

Sincerely yours,

William I. Wolff, Class of 1940
2 Horatio Street
New York 14 New York

May 23, 1950.

Will you please convey to the officers of the Association my thanks for the fifty year Alumni certificate received by me a few days ago. I prize it greatly and shall always appreciate having received it.

I retired from active practice the first of the present month but shall always be interested in the progress of my Alma Mater.

Sincerely yours,

Richard J. Turk, Class of 1898, B.M.C.

May 20, 1950.

Allow me to thank you for the beautiful and attractive certificate you sent me several weeks ago. I appreciate it very much. Please convey to the other members of your committee my thanks.

With kindest regards and best wishes, I am

Yours sincerely,

R. W. Love, Class of 1897, B.M.C.

Moorefield, Virginia
ITEMS

Dr. Kenneth L. Zierler, class of 1941, is now serving as Assistant Professor of Environmental Medicine at Johns Hopkins School of Hygiene and Public Health in Baltimore. Dr. Zierler recently reported on his work concerning the effects of vitamin E on the carbohydrate metabolism of muscle.

Dr. C. G. Warner, class of 1928, Pathologist at the Baltimore City Hospitals, was recently elected Vice-president of the Maryland Society of Pathologists.

Dr. Frank Ayd, Jr., class of 1945, was recently the speaker at the Detroit (Michigan) First Friday Club.

Dr. Wilbur S. Brooks, class of 1938, is now Chief Radiologist at the University of Syracuse, Syracuse, New York.

Dr. Donald E. Fisher, class of 1947, until recently an Associate in Pathology at the School of Medicine, has been commissioned in the United States Public Health Service and assigned to the Communicable Disease Center at Chamblee, Georgia.

MAYO CLINIC APPOINTMENTS

Dr. James S. Hunter, Jr., class of 1941, who recently completed his Fellowship in Gynecology and Obstetrics at the Mayo Clinic has been certified by the American Board of Obstetrics and Gynecology. Dr. Hunter has been appointed to the staff of the Mayo Clinic in the section on Obstetrics and Gynecology.

Dr. John Spittell, class of 1949, now Assistant Resident in Medicine at Mercy Hospital, Baltimore, has been appointed Fellow in Medicine at Mayo Clinic, effective July 1, 1951.

APPOINTED ASSISTANT PROFESSOR AT CORNELL

Dr. Aaron Feder, class of 1938, has recently been appointed Assistant Professor of Clinical Medicine at the Cornell University Medical College.

Dr. R. Adams Cowley, class of 1944, is now in his second year as Senior Clinical Instructor in the Department of Thoracic Surgery at University Hospital, Ann Arbor, Michigan.

Dr. Maurice Feldman, Jr., class of 1944, was one of the speakers at the 15th Annual Convention of the National Gastroenterological Association held at the Hotel Statler, New York City, June 9 to 11, 1950.

Dr. James Stanley Hunter, class of 1941, was recently awarded the degree of Master of Science in Obstetrics and Gynecology at the Commencement exercises of the University of Minnesota.
Dr. Walter Stevenson, class of 1906, B.M.C., of Quincy, Illinois, President of the Illinois State Medical Society, was the author of a paper entitled *The Practice of Medicine—A Priceless Heritage*, delivered at the annual meeting of the Illinois State Medical Society at Springfield, Illinois on May 23, 1950 and published in the Illinois Medical Journal June, 1950.

Dr. Raymond C. V. Robinson, class of 1940, was recently awarded the degree of Master of Medical Science at the University of Pennsylvania.

Dr. Robert Gardner, class of 1947, has been appointed to a three year residency at Dr. Cole's Clinic in Cleveland.

Dr. Robert C. Duvall, Jr. class of 1947, formerly of the Department of Dermatology at the School of Medicine has recently been appointed to the Department of Pathology at the University of Tennessee School of Medicine.

Dr. George C. Rogers, class of 1943, is now engaged in the practice of Gynecology and Obstetrics at 1 Catawba Street, Spartanburg, South Carolina.

Dr. William H. Triplett, past President and present Chairman of the Board of Directors of the Medical Alumni Association has recently been named President of the 29th Division Association.

Dr. J. Morris Reese, Associate Professor of Obstetrics was recently elected District Governor of the 267th District Rotary International. On June 21, 1950, Dr. Reese conducted a Panel Discussion on Medicine at the District Rotary International Convention which was attended by medical representatives from all over the world.
The Spring formal dance will be held in the ballroom of the Stafford Hotel, Charles and Madison Streets, Baltimore on April 7, 1951, beginning at 9 P.M.

A series of smokers designed as an orientation course for new medical students has been in progress during the year. Members of the Alumni including Drs. Mech, Wagner, Savage and Hull have addressed the group.

ANNUAL ALUMNI BANQUET

The annual Alumni banquet of Nu Sigma Nu will be held on February 18, 1951 at the Nu Sigma Nu House, 922 St. Paul Street, Baltimore. Note this date on your calendar. Details will follow.

For his work in the use of cortisone in rheumatoid arthritis, Dr. Philip S. Hench of the Mayo Clinic, Rochester, Minnesota was recently awarded the 1950 Nobel prize for medicine. Dr. Hench is a member of Nu Sigma Nu. Dr. Erland H. Hedrick, class of 1917, is now serving his third term in Congress as the Representative of the Sixth District of West Virginia. Dr. Raymond J. Dempsey, class of 1948 is now in his Residency in Dermatology at the University Hospital, Ann Arbor, Michigan. Dr. Norman T. Kirk, class of 1910 is at present residing at Montauk, N. Y.

PHI BETA PI

The year 1951 marks the first year since 1940 that a Phi Beta Pi has graduated from the School of Medicine. The active membership of the Chapter has now grown to 30, with 25 new pledges awaiting initiation.

Dr. Eduard Uhlenhuth, Professor of Anatomy, was the speaker at the opening smoker, his topic being “The Purpose of a Medical Fraternity.”

Plans for the future include two smokers, details of which will be announced by letter. The open forums conducted last year will be continued.

The Chapter has organized a library which is slowly growing. Alumni of Phi Beta Pi are solicited for contributions of books and journals. The Chapter also solicits donations of furniture for the Chapter Rooms or donations earmarked for that purpose. Remember the mailing address of Phi Beta Pi is care, the school of Medicine. All inquiries will be promptly acknowledged.
OBITUARIES

DR. ÉLMER CLAY KEFAUVER

Dr. Elmer Clay Kefauver, class of 1891, died July 27, 1950 at the Frederick Memorial Hospital, Frederick, Maryland, of heart disease, aged 82.

He was born at the old Kefauver homestead in Middletown Valley, Maryland, the son of Richard C. and Laura Toms Kefauver.

He attended the old Middletown Academy and later graduated from Franklin and Marshall College. After his graduation he began studying under the late Dr. J. E. Beatty and then entered the University of Maryland School of Medicine graduating in 1891.

Soon after his graduation he entered practice at Thurmont, Maryland, remaining until 1923 when he was made County Health Officer for Frederick County (Maryland). In this capacity he served for 24 years, 23 of them also as Health Officer of the city of Frederick. He retired from both appointments in 1947.

In 1892 he married Miss Mary Alice Atlee. Always active in politics and fraternal affairs, for a number of years he was a member of the Frederick County Board of Education.

DR. EDWARD DORSEY ELLIS

Dr. Edward Dorsey Ellis, B.M.C., class of 1890, aged 81, died in Baltimore on June 22, 1950.
The son of John and Emma Ellis, he received his education in the public schools of Baltimore and following his graduation from Medical School continued his studies at the Johns Hopkins Medical School, then entered practice with his uncle Dr. R. H. P. Ellis. He continued in general practice for over 25 years retiring in 1910.

DR. HERMAN B. SHEFFIELD

Dr. Herman B. Sheffield, class of 1895, aged 79, died on March 17, 1950 of arteriosclerosis.

Following his graduation from Medical School he became associated with the Yorkville Dispensary and Hospital for Women and Children from 1898 to 1912, along with several additional hospital appointments. In 1905 he was appointed Instructor in Diseases of Children at the New York Post Graduate Hospital. Dr. Sheffield was a Fellow of the New York Academy of Medicine and a member of the American Medical Association and New York State Medical Society. He was a founder of the Zeta Beta Tau Fraternity and was the author of five books on diseases of children including two text books. In 1914 he won the Alverengo prize of the College of Physicians of Philadelphia and in 1920 the Merritt H. Cash prize of the New York State Medical Society. In 1930 he retired from practice because of failing vision but continued his literary activities with the writing of lyric poetry.

DR. HARRY GALLISON PRENTISS

Dr. Harry Gallison Prentiss, class of 1881, died at his home in Baltimore on November 24, 1950, aged 92. He was born in Baltimore on May 2, 1858. After his graduation from the School of Medicine, he began the practice of general medicine in the Waverly-Govans area and continued his active participation in medical affairs up until a few years ago.

Dr. Prentiss was one of the few living physicians who began his career on horseback and saw the evolution of many of the milestones in medical science


Burns, Robert Francis, Fitchburg, Mass.; B.M.C., class of 1908; aged 66; died, June 5, 1950, of coronary disease.


Carter, Paul Conway, Madison, N. C.; class of 1916; aged 60; served during World Wars I and II; died, March 27, 1950, of hepatitis.

Devlin, Peter C., Lynn, Mass.; B.M.C., class of 1902; aged 72; died, July 25, 1950, of coronary thrombosis.

Dunlap, William Verner, St. Petersburg, Fla.; P & S, class of 1897; aged 75; died, June 5, 1950, of cerebral thrombosis.

Ewald, George Latrobe, Baltimore, Md.; class of 1900; aged 75; died, July 14, 1950.

Fleming, Thomas F., Exeter, Pa.; B.M.C., class of 1901; aged 76; died, May 6, 1950, of cerebral hemorrhage.

Fox, Lorah O., Ansted, W. Va.; P & S, class of 1910; aged 60; died, July 6, 1950, of heart disease.
Glidden, Edson W., Worcester, Mass.; class of 1907; aged 65; served during World War I; died, April 26, 1950, of coronary occlusion.

Gore, Michael Alvord, Granby, Colo.; class of 1918; aged 56; died, April 10, 1950.


Hart, Henry D., Genesee, Pa.; B.M.C., class of 1893; aged 89; died, April 18, 1950, of cerebral hemorrhage.

Hines, Frank Brown, Chestertown, Md.; P & S, class of 1904; aged 68; served during World War I; died, March 28, 1950, of carcinoma of the right lung.

Hood, M. Bowman, Baltimore, Md.; B.M.C., class of 1900; aged 72; died, May 13, 1950, of heart disease.

Iseman, Everett, Savannah, Ga.; class of 1909; aged 65; served during World War I; died, September 3, 1950, of coronary thrombosis.

Jefferson, Benjamin Lafayette, Grand Junction, Colo.; class of 1893; aged 78; died, July 21, 1950.

Kefauver, Elmer C., Frederick, Md.; class of 1891; aged 82; died, July 7, 1950.

Kelly, Clyde Ernest, Vandergrift, Pa.; class of 1929; aged 49; died, August 30, 1950, of heart failure.

King, Isaac Newton, Prince Frederick, Md.; B.M.C., class of 1897; aged 76; died, June 25, 1950, of carcinoma.

Kipps, David M., Front Royal, Va.; P & S, class of 1888; aged 84; died, August 17, 1950, of coronary thrombosis.

Kisner, Jacob C., Albuquerque, N. Mex.; P & S, class of 1880; aged 96; died, July 4, 1950.

Lanich, Lloyd Jackson, Kingwood, W. Va.; class of 1915; aged 63; served during World War I; died, June 27, 1950, of cerebral hemorrhage.

LaValle, Irving Howard, Fish's Eddy, N. Y.; B.M.C., class of 1913; aged 68; died, August 17, 1950, of carcinoma of the lungs.

Lavoie, Zenon Annable, Manchester, N. H.; B.M.C., class of 1902; aged 78; died, June 1, 1950, of gangrene of the leg, popliteal aneurysm and general arteriosclerosis.


Lightle, William E., North Berwick, Me.; B.M.C., class of 1894; aged 82; died, May 1, 1950, of cerebral hemorrhage.

McKee, John Sasser, Raleigh, N. C.; class of 1907; aged 72; served during World War I; died, April 22, 1950, of coronary occlusion.

Norton, James Arthur, Conway, S. C.; class of 1903; aged 73; served during World War I; died, July 21, 1950, of carcinoma.

Perkins, Thornton W., Hopkinsville, Ky.; P & S, class of 1900; aged 80; died, April 10, 1950, of carcinoma of the prostate.

Reichard, Lewis Nyman, Brownsville, Pa.; P & S, class of 1899; aged 73; died, May 15, 1950, of embolism and heart disease.

Richardson, Walter B., Heathsville, Va.; B.M.C., class of 1895; aged 82; died, August 17, 1950, of carcinoma of the prostate.
Robinson, Francis A., Burlington, Mass.; B.M.C., class of 1894; aged 81; died, April 29, 1950, of heart disease.

Smith, Edward Sanborn, Kirkville, Mo.; class of 1900; aged 75; served during World War I; died, July 23, 1950, of cerebral hemorrhage.

Spalding, William Cullen, Los Angeles, Calif.; P & S, class of 1915; aged 60; died, May 23, 1950, of coronary occlusion.

Van Poole, Gideon McDonald, Honolulu, Hawaii; class of 1899; aged 73; served during World War I; died, April 13, 1950, of carcinoma of the prostate.

Ward, Jesse Elliott, Robersonville, N. C.; class of 1904; aged 67; died, March 23, 1950, of acute heart failure.

Warren, David Edward, Passaic, N. J.; P & S, class of 1892; aged 81; died, July 14, 1950.

Welland, Herman, Rockbridge Baths, Va.; class of 1899; aged 78; died, February 28, 1950.

Whitaker, Preston W., Long Beach, Calif.; P & S, class of 1908; aged 65; died, recently, of heart disease and cerebral hemorrhage.

Wood, Frederick Barton, Elmhurst, N. Y.; B.M.C., class of 1910; aged 67; died, June 24, 1950, of heart disease.
EDITORIAL
A DOCTOR'S DUTY

During the past twenty years the average entering medical class has numbered 6,241. The average graduating class has numbered 5,230. The average loss from each class has been 1,011. This gives an attrition rate through the four years of medical college of 16.3 per cent. With a current ratio of about one physician for every 760 persons but with admitted difficulties arising from unequal distribution and continued calls from the Armed Forces for medical personnel, it has been suggested that the total number of medical graduates should be materially increased through the establishment of new schools of medicine.

Instead of increasing the facilities for students of medicine, it is the opinion of many that a more careful survey of the candidates for admission to schools of medicine, with a resulting lower attrition rate, could increase the number of graduates by 750 a year. Consequently, medical educators have turned to the task of adequately screening the large number of applicants, selecting those men and women who are not alone properly qualified but who are oriented to the study of medicine and whose college recommendations indicate a high degree of sincerity and motivation. This is a tiresome, expensive, and consuming task. However, it produces results.

The University of Maryland is taking steps to lower this national attrition rate. This will mean fewer empty seats in class as a result of failure or withdrawal. This means more doctors; more competent doctors.

The physician's duty to medical education is the recognition and careful guidance of competent and purposeful young people during their early education. This is particularly applicable to the doctor's son, who, desiring to emulate his father, often decides to enter the practice of medicine. Only too often the disappointed alumnus is confronted by a knowledge that his efforts to guide his son have been instituted too late. Many college faculties have already organized premedical committees who will advise students during their college years. The doctor's son finds himself in a most fortunate position, having the advice and experience of a father who has devoted his life to the practice of medicine. It is therefore prudent that every physician who has a son who aspires to follow in his footsteps, begin early to inquire into the most minute details of his education by consulting the premedical committee of the college where his son will attend, and by securing a copy of the medical school catalogue to learn its requirements at the same time.

Continued careful attention to these details will not only assure a supply of competent physicians but will assist those doctors whose sons would follow them in the practice of medicine.
SUGAR ALCOHOLS—XXVIII. TOXICOLOGIC, PHARMACODYNAMIC AND
CLINICAL OBSERVATIONS ON TWEEN 80*

JOHN C. KRANTZ, JR., Ph.D.,1 PERRY J. CULVER, M.D.,2 C. JELLEFF CARR, Ph.D.,
AND CHESTER M. JONES, M.D., F.A.C.P.3

INTRODUCTION

Malnutrition associated with steatorrhea and a faulty absorption of such fat
soluble substances as Vitamins A and K has been observed in a number of patients
with gastro-intestinal tract diseases, such as sprue, pancreatic deficiency, regional
ileitis, after short-circuiting operations on the small bowel, and following subtotal
gastrectomy. Restoration of an adequate state of nutrition in these patients often
taxes the ingenuity and pharmacopeia of the clinician. The magnitude of the loss
of caloric material in the stools of these patients is illustrated by the fact that;
whereas, the normal stool fat content is usually less than 4 per cent of ingested fats
(1), under these disease conditions the fecal lipid content may exceed 40 to 60 per
cent of the dietary intake of fat (2).

Jones et al. (3) have shown that the administration of the emulsifying agent Tween
80 to such patients may produce a dramatic increase in the intestinal absorption of
fat and vitamin A. Holt has observed a similar effect of Tween 80 in premature in-
fants (4). Improvement in the absorption of vitamin A by means of the corresponding
laurate or palmitate (Tween 20 or 40) has been reported by Sobel et al. (5) and by
May and Lowe (6), although Johnson et al. (7) found the laurate to have no signi-
cficant effect on fat absorption in low concentrations. Becker et al. (8, 9) have indi-
cated that Tween 80 may have an effect upon blood chylomicron curves in man.

In consideration of the possible clinical implications of Tween 80, a survey of our
knowledge of the toxicology and pharmacodynamics of this emulsifying agent is
presented.

THE CHEMICAL AND PHYSICAL NATURE OF TWEEN 80

Tween 80 is a complex mixture obtained by the rigidly controlled reaction of 20
mols of ethylene oxide with 1 mol of mixed sorbitan oleates, which are in turn the
products of the partial esterification of the hexahydric sugar alcohol sorbitol with
oleic acid. Its typical component is represented by the formula top of page 49.

It is a lemon to amber-colored viscous liquid, having a faint characteristic odor
and bitter taste, and forms practically neutral solutions with all proportions of
water. It is also soluble in alcohol, fats, and vegetable oils, but is insoluble in mineral
oil.

* These studies were aided by grants from Atlas Powder Company, Wilmington, Delaware. Tween
80 is the Atlas trade-mark for polyoxyethylene (20) sorbitan monooleate. This compound is listed,
in U.S.P. XIV under the name “Polysorbate 80” and is designated “Sorethytan (20) Monooleate”
by the Council on Pharmacy and Chemistry of the A.M.A.
1 Department of Pharmacology, School of Medicine, University of Maryland, Baltimore, Mary-
land.
2 Department of Medicine, Harvard University, and the Medical Service of the Massachusetts
General Hospital, Boston, Mass.
As a partial ester of a fatty acid and a strongly hydrophilic polyhydric alcohol derivative, Tween 80 is an emulsifying agent and a non-ionic surface active agent; a 0.1 per cent solution in water at 25°C. having an interfacial tension of 41 dynes/cm. against air and 8.7 dynes/cm. against a sample of corn oil, compared with 72 and 19.4 dynes/cm. respectively for distilled water (10, 11).

**EFFECT OF LIPOASE**

Being a fatty acid ester, Tween 80 is readily hydrolyzed by pancreatic lipase to oleic acid and the corresponding polyoxyethylene sorbitan alcohols. Harrisson (12) has shown the rate of lipolysis of this compound to be approximately one-half that found for olive oil, in agreement with the data obtained by Gomori (13) on Tweens 40 and 60, the respective polyoxyethylene sorbitan palmitates and stearates. Similarly, Archibald (14) has proposed the corresponding laurate as the substrate for the determination of lipase activity.

**TOXICOLOGY IN ANIMALS**

Extensive feeding studies in animals have been made with all members of the Tween group by Krantz and Carr (11). Among these, they have shown Tween 80 to be innocuous for white rats in concentrations of two per cent in their diet for their life span, as shown in the accompanying table. Groups of 30 white rats were fed a similar concentration of this emulsifying agent through three generations, according to the procedure of Carr and Krantz (15). There was no evidence of alteration in the fecundity of the first and second generation of rats. The growth patterns of the animals in the first, second, and third generations were not significantly affected. There was no evidence of gross or histologic damage to the livers and kidneys of rats fed Tween 80 in the three generations. Likewise, the feeding of 1 gram per day to two *Macacus rhesus* monkeys for 10 months produced no significant histologic visceral changes.

Acute toxicity studies were also conducted on the white rats (11). Animals weighing from 120 to 200 grams tolerated Tween 80 orally in doses of 20 cc./kg. without symptoms. When these animals were sacrificed three days later, the kidney and
liver showed no damage. Injected intraperitoneally in undiluted form, the compound killed by respiratory paralysis. The \( \text{LD}_{50} \) intraperitoneally for the white rat is between 8 and 9 cc. per kilogram of body weight. Hopper and coworkers (16) have reported the \( \text{LD}_{50} \) for Tween 80 in mice to be greater than 25.0 gms. per kilogram (per \( \text{os} \), 72 hours observation) and 5.8 gm./Kg. via intravenous injection (24 hours observation).

In experiments with mice fed 1 per cent of Tween 80 over a two-month period, Dubos (17) reported that the addition of the emulsifier to the basal diet did not affect the weight, mortality and susceptibility of the animals to experimental tuberculosis, or to the therapeutic effects of penicillin after the experimental infection.

Kellner et al. (18) fed rabbits 10 cc. of Tween 80 daily for 20 weeks and injected unspecified amounts intravenously for 8 to 14 weeks (19) with apparently no untoward effects.

### TABLE 1

**Summary of Life Span (2-year) Study of White Rats Fed 2\(^\circ\)c Tween 80 in a Basal Diet of Purina Chow**

<table>
<thead>
<tr>
<th>NUMBER OF ANIMALS</th>
<th>EXPERIMENTAL</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>At start</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Autopsied in progress</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Accidental deaths</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Net carried</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Cause of deaths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Unknown</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>b. Middle ear infection</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Surviving at 24 months</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Surviving at 24 months, ( \text{c} )</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Survivors autopsied</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**EFFECT ON BLOOD PRESSURE**

Of special interest is the depressing effect of intravenously administered Tween 80 upon the blood pressure, an effect which varies from species to species (20). When a 5 per cent aqueous solution of this emulsifier is injected in doses of 1 cc. per kilogram of body weight into the veins of cats, rabbits, and *Macacus rhesus* monkeys, there is a slight and transient fall in blood pressure. On the other hand, dogs and other canine species (21) exhibit an idiosyncratic reaction to intravenous Tween 80 by a prolonged depressor response. This fall in blood pressure was never elicited by the oral administration of the Tween emulsifiers. Moreover, when only the polyoxyethylene sorbitan portion of the ester obtained by saponification was injected intravenously, there was no depressor response even in the dog. This would seem to indicate that the whole Tween molecule is necessary for any effect upon blood pressure. The idiosyncratic response of the canine family to the intravenous administration of all members of the Tween group, regardless of the nature of the esterifying fatty acid, appears to be caused by the release of some histamine-like substance (20, 22, 23). The reaction has not been obtained in man (20).
EFFECT ON BLOOD CELLS

Tween 80, in common with other surface active agents, may be shown in vitro to have some hemolytic effect, as follows:

The freshly shed, defibrinated blood of the dog was used. Solutions of the substance in various concentrations in physiological salt solution were prepared. To 10 cc. volumes of these solutions, 0.1 cc. blood was added, mixed, and observed at 37° and 26°C., respectively. The results are shown in Table 2.

CLINICAL OBSERVATION AND PHARMACODYNAMICS IN MAN

Evidence of beneficial effects of Tween 80 upon the intestinal absorption of fat and vitamin A in some cases (3) has prompted two of the authors (C. M. J. and P. J. C.) to prescribe this emulsifying agent to more than 100 patients at the Massachusetts General Hospital during the last 4 years. This group of patients, of approximately equal sex distribution and ranging in age from 5 to 72 years, consists of 10 subjects who have taken Tween 80 for 3-4 years, 17 for 2-3 years, 19 for 1-2 years, and the remainder for less than 1 year. The usual dose of Tween 80 has been 4.5 to 6 grams per day; one man was given 15.0 grams per day for several months. The large body of clinical and laboratory data collected during the course of the study clearly indicates the harmlessness of Tween 80 in the human upon continued oral ingestion of the prescribed amounts.

Clinical observations of these patients during hospitalization or at periodic office visits demonstrated a complete absence of toxic symptoms referable to the digestive or urinary systems. A rare patient had an occasional soft stool. Inquiry as to the presence of other possible symptoms showed a complete lack of headache, dizziness, muscular or joint aches, itching, weakness, cardiovascular complaints, loss of appetite, or any other manifestation that could be attributed to the ingestion of Tween 80. Blood pressures remained unchanged. In no case was there a significant loss of body weight, while many malnourished patients gained weight during the period of continued consumption of the emulsifying agent.

Routine laboratory tests showed that there was no detrimental effect upon the hematopoetic system. Kidney functions remained normal according to periodic examinations of the urine. The concentrating powers of the kidneys remained unimpaired. In no case was there albuminuria resulting from the administration of Tween 80, and the absence of formed elements in urinary sediments was evidence of a lack of irritation of the kidney parenchyma by this substance. There were no increases in the blood non protein nitrogen. Repeated batteries of liver function tests, including the cephalin flocculation, prothrombin time, bromsulfalein retention, and serum albumin and globulin levels showed that the emulsifying agent did not disturb the functions of the liver. Blood calcium levels remained normal or increased from a low level, and the blood phosphorus levels remained normal.

Of considerable interest is the fact that during this 4 year period of Tween 80 administration, the blood cholesterol levels have shown no significant increase beyond the normal range. The blood vitamin A levels also remained within the normal range, or rose to a normal level if they were initially below normal. The following case report is representative of the group of patients who have ingested Tween 80 for long periods of time:
Mrs. R. W., a 37 year old widow, had a partial resection of the small and large bowel in 1942 because of ileocolitis. Following operation, there was diarrhea and gradually increasing malnutrition. Her weight dropped from a normal of 53 Kg. in 1942 to 38.8 Kg. in March, 1947. On March 12, 1947, the patient began to take 1.5 gm. Tween 80 with her meals for one month. The administration of the emulsifying agent was discontinued for one month and then resumed on May 27, 1947, at a 3.0 gm. level for one month. It was again discontinued for the following month and resumed on July 25, 1947, with a daily dose of 4.5 gms. The patient has continued to take either 4.5 or 6 grams of Tween 80 per day ever since with the exception of an occasional control month, during 1948 and without interruption during the past two years.

At periodic clinic visits she reported gradual improvement in her health during this time. Her troublesome diarrhea decreased greatly. At intervals, the patient reported dizzy spells, headaches, belching, vomiting, poor appetite, and occasional abdominal cramps. These symptoms were present before administration of Tween 80 and appeared as frequently during the intervals that the patient was not taking the emulsifier as when she was. The appearance of these symptoms was usually associated with emotional upsets or physical fatigue and could in no way be attributed to the ingestion of the emulsifier. There were no other symptoms which might suggest a deleterious effect.

### TABLE 2

**Hemolysis Studies**

<table>
<thead>
<tr>
<th>Tween 80%</th>
<th>Minutes for 90% Hemolysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>37°C</td>
</tr>
<tr>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>46</td>
</tr>
<tr>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td>0.1</td>
<td>105</td>
</tr>
<tr>
<td>0.01</td>
<td>none</td>
</tr>
</tbody>
</table>

### TABLE 3

**Urine and Blood Examinations**

<table>
<thead>
<tr>
<th>Date</th>
<th>Urine</th>
<th>Blood</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/7/47</td>
<td>1.026</td>
<td>0</td>
</tr>
<tr>
<td>9/25/47</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>12/18/47</td>
<td>1.032</td>
<td>0</td>
</tr>
<tr>
<td>5/27/48</td>
<td>1.028</td>
<td>0</td>
</tr>
<tr>
<td>10/13/48</td>
<td>1.020</td>
<td>0</td>
</tr>
<tr>
<td>12/20/49</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2/17/50</td>
<td>1.018</td>
<td>0</td>
</tr>
<tr>
<td>10/31/50</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>
Physical examinations have shown improvement in weight from a low of 38.8 Kg. in 1947 to 49 Kg. in December, 1950. There has been elimination of the signs of malnutrition. Her blood pressures have remained normal, being 110 millimeters of mercury systolic and 70 millimeters, diastolic, in December, 1950. General physical findings are now normal except for a tender spot in the left lower abdomen. This tenderness has always been present since the onset of her illness.

The patient's laboratory data, summarized in the following tables, indicate that Tween 80 has had no deleterious effect upon the liver, kidneys, or blood, and that the blood chemistries showed no evidence of pathologic variation.

**TABLE 4**

*Liver Chemistries*

<table>
<thead>
<tr>
<th>DATE</th>
<th>CEPH.</th>
<th>FLOC.</th>
<th>PROTHROMBIN TIME</th>
<th>BSP</th>
<th>ALBUMIN</th>
<th>GLOBULIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/7/47</td>
<td>Neg.</td>
<td>—</td>
<td>16/16</td>
<td>—</td>
<td>3.5</td>
<td>2.0</td>
</tr>
<tr>
<td>6/24/47</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>4.5</td>
<td>2.3</td>
</tr>
<tr>
<td>9/25/47</td>
<td>Neg.</td>
<td>—</td>
<td>17/17</td>
<td>—</td>
<td>4.7</td>
<td>2.1</td>
</tr>
<tr>
<td>12/18/47</td>
<td>Neg.</td>
<td>—</td>
<td>17/16</td>
<td>6%</td>
<td>4.2</td>
<td>2.3</td>
</tr>
<tr>
<td>5/27/48</td>
<td>Neg.</td>
<td>—</td>
<td>20/17</td>
<td>—</td>
<td>4.2</td>
<td>2.0</td>
</tr>
<tr>
<td>10/13/48</td>
<td>Neg.</td>
<td>—</td>
<td>20/16</td>
<td>—</td>
<td>4.1</td>
<td>2.8</td>
</tr>
<tr>
<td>12/20/49</td>
<td>Neg.</td>
<td>—</td>
<td>17/18</td>
<td>—</td>
<td>4.6</td>
<td>2.1</td>
</tr>
<tr>
<td>10/31/50</td>
<td>Neg.</td>
<td>—</td>
<td>18/19</td>
<td>2%</td>
<td>4.2</td>
<td>2.6</td>
</tr>
</tbody>
</table>

**TABLE 5**

*Miscellaneous Blood Chemistries*

<table>
<thead>
<tr>
<th>DATE</th>
<th>VIT. A</th>
<th>CAROTENE</th>
<th>CHOLEST.</th>
<th>CHOLEST. ESTERS</th>
<th>CA</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I.U./cc.</td>
<td>I.U./cc.</td>
<td>mgs. %</td>
<td>mgs. %</td>
<td>mgms. %</td>
<td>mgms. %</td>
</tr>
<tr>
<td>3/7/47</td>
<td>0.8</td>
<td>0.6</td>
<td>—</td>
<td>—</td>
<td>8.3</td>
<td>3.7</td>
</tr>
<tr>
<td>6/24/47</td>
<td>1.2</td>
<td>0.6</td>
<td>133</td>
<td>94</td>
<td>8.2</td>
<td>3.3</td>
</tr>
<tr>
<td>12/18/47</td>
<td>0.6</td>
<td>0.5</td>
<td>130</td>
<td>104</td>
<td>8.0</td>
<td>3.7</td>
</tr>
<tr>
<td>5/27/48</td>
<td>0.6</td>
<td>0.6</td>
<td>153</td>
<td>84</td>
<td>8.0</td>
<td>3.6</td>
</tr>
<tr>
<td>10/13/48</td>
<td>1.3</td>
<td>0.6</td>
<td>188</td>
<td>108</td>
<td>9.4</td>
<td>3.6</td>
</tr>
<tr>
<td>12/20/49</td>
<td>—</td>
<td>—</td>
<td>166</td>
<td>116</td>
<td>9.4</td>
<td>—</td>
</tr>
<tr>
<td>10/31/50</td>
<td>0.7</td>
<td>0.4</td>
<td>135</td>
<td>85</td>
<td>8.8</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* Before administration of Tween 80.

In addition to the above described clinical and laboratory observations, special studies were carried out on a few patients to see if Tween 80 might produce other measurable changes in man. Five persons, who were on constant daily food intakes in the metabolic ward, were subjected to metabolism tests before and during the administration of the emulsifying agent. There was no evidence of alteration in metabolic rate as a result of the taking of Tween 80. Table 6 shows the metabolic rates in a typical case.

An attempt was also made to obtain information about the absorption and utilization of water soluble vitamins while patients were ingesting Tween 80. Indirect evidence of no effect was obtained by determining the urinary excretion of water
soluble vitamins before and during the administration of the emulsifying agent to 9 persons who were receiving a constant food and vitamin intake while in our metabolic ward. The findings in a typical case are shown in Table 7.

**FATE OF TWEEN 80 IN MAN**

It has been possible to determine the ethoxyl value of the urine and stools of the subjects fed Tween 80 and thereby to ascertain the amount excreted of at least the

**TABLE 6**

*Metabolic Rates in Case D. D., 48 year old female*

<table>
<thead>
<tr>
<th>Time</th>
<th>2/26/48 Before Tween 80</th>
<th>4/22/48 During Administration Tween 80 (6.0 gms./day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 a.m.</td>
<td>-20</td>
<td>-25</td>
</tr>
<tr>
<td>10 a.m.</td>
<td>-3</td>
<td>+4</td>
</tr>
<tr>
<td>2 p.m.</td>
<td>+3</td>
<td>-3</td>
</tr>
<tr>
<td>4 p.m.</td>
<td>+7</td>
<td>+7</td>
</tr>
</tbody>
</table>

**TABLE 7**

*The Urinary Excretion of Water Soluble Vitamins Before and During the Administration of Tween 80 4.5 grams per day, to a 61 year old man*

<table>
<thead>
<tr>
<th>Period</th>
<th>Urinary Excretion in Per Cent of Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thiamin</td>
</tr>
<tr>
<td>Before</td>
<td>9.6</td>
</tr>
<tr>
<td>During</td>
<td>11.3</td>
</tr>
</tbody>
</table>

**TABLE 8**

*Experimental Recovery of the Polyoxyethylene Moiety from the Urine and Stools of Four Subjects*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Feeding Period % Excreted In</th>
<th>Post-Feeding Period % Excreted In</th>
<th>Total Excretion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urine</td>
<td>Stool</td>
<td>Urine</td>
</tr>
<tr>
<td>R. S.</td>
<td>3.8</td>
<td>85.0</td>
<td>0.1</td>
</tr>
<tr>
<td>F. V.</td>
<td>4.0</td>
<td>80.3</td>
<td>0.1</td>
</tr>
<tr>
<td>D. D.</td>
<td>3.8</td>
<td>80.6</td>
<td>0.1</td>
</tr>
<tr>
<td>E. R.</td>
<td>5.8</td>
<td>83.4</td>
<td>0.1</td>
</tr>
</tbody>
</table>

* Each ingested 54 gms. of Tween 80 during a 12-day period.

polyoxyethylene portion of the polyoxyethylene sorbitan moiety from the Tween 80 ingested. Details of this study will be reported elsewhere (24). The data summarized in Table 8 show that, within the limits of error of the chemical method of analysis, there has been complete excretion of the polyoxyethylene groups from the human body.

Qualitative analysis of the urine failed to show the presence of any fatty acid.
This fact plus the in vitro evidence of hydrolysis of polyoxyethylene sorbitan monooleate (Tween 80) by pancreatic lipase suggests that the small percentage of the polyoxyethylene groups excreted in the urine results from hydrolysis of Tween 80 in the intestine and the subsequent absorption of a small amount of the hydrolysate, with the remaining approximately 95 per cent of the polyoxyethylene moiety accounted for in the stool.

SUMMARY

1. The chemical, physical, and certain biochemical properties of the non-ionic emulsifying agent polyoxyethylene (20) sorbitan monooleate (Tween 80) are described.
2. Extensive animal studies have shown that Tween 80 is innocuous when given orally in relatively high doses.
3. The oral administration of Tween 80 in doses of 4.5–6 grams per day to more than one hundred human subjects for periods up to four years has been unattended by any clinical evidence of ill effect, alteration of metabolic rate and blood chemistries, change in excretion of water soluble vitamins, or evidence of damage to liver, kidneys, and hematopoietic system.
4. Analysis of the urine and stools of subjects who have ingested Tween 80 showed complete elimination of the polyoxyethylene moieties of the emulsifier from the human body. Approximately five per cent of the polyol was excreted in the urine and 95 per cent in the stool.
5. Tween 80 appears to be completely harmless for human ingestion in amounts of at least 6.0 grams per day as judged from the available data and the four year period of observation.

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A METHOD OF DIVIDING INTRACARDIAC STRUCTURES WITHOUT OPENING THE HEART CHAMBERS*†

ROBERT S. PENTON, M.D. AND OTTO C. BRANTIGAN, M.D.

DIVISION OF INTRACARDIAC STRUCTURES

The problem of direct surgical attack upon intra-cardiac structures has vexed investigators since the idea was first entertained by Sir Lauda Brunton in 1902. Techniques for the division of stenosed mitral and aortic valves have varied from the early blind use of hooks and knives to the more recent well controlled methods of division of the mitral valve worked out by Bailey, Harken, and Smithy.

It is the purpose of this paper to present an approach for producing experimental mitral insufficiency. This idea evolved from a desire to produce insufficiency in dogs with the least possible insult to cardiac physiology resulting from the method itself. This has been accomplished in each case without changing the normal position of the heart, with only slight trauma to the heart wall, and with minimal hemorrhage.

Materials consist of a triple zero braided steel suture on a 7 cm. pliant dull atraumatic needle.

The left hemithorax is opened between the fourth and fifth ribs. The lung is protected with moist gauze. A longitudinal incision is made in the pericardium, anterior and parallel to the phrenic nerve. The position of the heart is maintained by grasping the pericardial reflexion near the left auricle with a straight clamp. The especially prepared needle is bent to a full curve and is introduced into the cavity of the left auricle lateral to the base of the appendage. The needle is passed through the center of the auriculo-ventricular orifice and is directed out through the lateral wall of the left ventricle 2 cm. inferior to the auriculo-ventricular groove. One now has a suture passing into the left auricle between the mitral cusps and out through the wall of the ventricle. The needle is now straightened to a one half curve and is reintroduced into the left ventricle at its exact point of exit, a maneuver which is greatly facilitated by the dull point. By placing a finger on the wall of the ventricle superior to the puncture site, one is then able to direct the dull point of the needle along the inner wall of the heart through the base of the valve cusp along the wall of the auricle and out the original point of the entrance. The two ends of the suture are now grasped, and that distal suture remaining outside is pulled into the left ventricle, thus forming a loop about the valve cusp. (Figure 1)

One can then divide the cusp by slight traction combined with a to and fro motion of the suture which, because of its strength and hard scabrous surface, may be used in somewhat the same manner as one would use a Gigli saw. When the cusp is completely divided, the suture becomes slack and can be pulled out through the original point of entrance.

* From the Department of Surgery, School of Medicine, University of Maryland, Baltimore, Maryland.
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The wound, resulting from the repeated penetration of the ventricle, has in no case required a hemostatic suture. Hemorrhage from the auricle has been easily controlled by a single bite with a straight clamp applied after final withdrawal of the suture. This not has been necessary in every case.

Topical and intramural procaine was used in one-half of the cases with no apparent difference in results.

Insufficiency has been indicated at the time of operation by an immediate enlargement of the left auricle accompanied by increased intra-auricular pressures.

Fig. 1

Post mortem examinations of ten dogs confirmed the division of the mitral valve in every case. Two months following operation, all cusps were found to be cleanly divided without evidence of healing. The absence of torn or ragged edges is probably caused by the suture material being used as a saw, while the pull of the chordae tendineae prevents folding or wrinkling of the cusp.

This method of valvulotomy has proved to have several distinct advantages when used on the experimental animal. Operating time is shortened. The heart remains in its normal position. There is practically no hemorrhage, and trauma to the heart wall is minimal. Although the procedure is completely blind, one has excellent control of the position of the cutting suture as evidenced by the post mortem examination of the ten dogs in this series.
Experimentally, the method has also been used to divide the interauricular septum, the tricuspid, pulmonary, and aortic valves.

In the only patient in which this technique has been used, an eleven month old infant, no difficulty was encountered in producing an interauricular septal defect 1 cm. in length. Neither was serious hemorrhage encountered. However, the patient was an extremely poor risk and died immediately following the closure of the chest. A post mortem examination of the heart revealed dextro-position of the aorta, an interventricular septal defect, and a patent ductus arteriosus.

REFERENCES
FASCIAE AND SUBPERITONEAL FASCIAL SPACES OF THE MALE PELVIC CAVITY*

EDUARD UHLENHUTH, Ph.D.**†‡

The peritoneal sac, although it extends from the abdomen into the pelvis, does not descend all the way to the pelvic diaphragm. Its most caudal level is attained in the male rectovesical pouch about three inches (and in the female rectovaginal pouch of Douglas about two inches) cranial to the anterior commissure of the anus. Because of this arrangement, the entire supradiaphragmatic part of the pelvic cavity is divided by the peritoneum into a supraperitoneal portion and a subperitoneal space. The latter is located between the peritoneum and the pelvic diaphragm and is continuous with the retroperitoneum of the abdomen in which the kidneys and ureters are contained.

The present article concerns only the subperitoneal space of the pelvic cavity, and structures which are located below the peritoneum. Although in the male only two major organs (bladder and rectum) are contained in this space, this part of the pelvic cavity is beset with difficult problems of space orientation as it is subdivided into a number of secondary "fascial" compartments by partitions which represent parts of the "visceral endopelvic fascia". Visualization, study, and presentation of the relationships between the different fascial spaces and of the many different levels and planes of the individual fascial sheets is one of the major tasks for the anatomist, teacher and surgeon.

A series of special dissections of the cadaver, suitable to the study and demonstration of the visceral fasciae and fascial spaces of the pelvis have been prepared. Structures occupying a relatively small space in many different planes, present a difficult problem to the artist who attempts to illustrate them. Two-dimensional illustrations give only a partial visualization of complicated three-dimensional bodies; nevertheless, an attempt will be made to discuss this subject with the aid of some specially selected pictures.† This is done to establish the importance of visceral endopelvic fasciae in the dissecting room and in surgery.

Parietal Endopelvic Fascia

The parietal endopelvic fascia is briefly mentioned here because through it, the visceral fasciae gain attachment to the walls of the pelvic cavity, and because of its important relationship to vessels and nerves.

The parietal endopelvic fascia is the fascia which lines the pelvic cavity in one continuous sheet and covers the muscles of the pelvic wall and floor. This fascia presents a peculiar relationship to vessels and nerves, which is useful to remember.

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† From the Department of Anatomy, University of Maryland School of Medicine.

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though there exist several accounts in which such a relationship is denied or minimized (3), it can nevertheless be demonstrated by dissection that the parietal fascia forms a partition between the neural and vascular levels. With the exception of a single nerve in the cavity of the lesser pelvis (obturator nerve), not one of the somatic nerves can be seen within the space lined by the parietal fascia. All the somatic nerve-trunks and the lumbosacral, pudendal and coccygeal nerve plexuses are located “subfascial”; that is to say, between the parietal fascia and the muscles covered by it. In order to display them, the parietal fascia must be incised and stripped away from the muscles.

Quite the contrary is true for the vessels and for the autonomic nerve plexus. The vessels are located inside the space lined by the parietal fascia and are embedded in the visceral fascia. The parasympathetic nerves originate from the sacral trunks in the subfascial space but pierce immediately the parietal fascia, enter the pelvic cavity, and travel in special visceral fascial sheaths to the viscera which they supply. To find them, the parietal fascia need not be disturbed; rather it is necessary to know the visceral sheaths in which they travel.

*Neurovascular Sheaths, A Reality*

While the configuration of the parietal endopelvic fascia is relatively simple, the visceral endopelvic fascia is difficult to demonstrate and to describe. Anatomists attempted to escape presentation and analysis of this part of pelvic anatomy by reducing the entire visceral endopelvic fascia to the fascial capsules, ensheathing such organs as the bladder, prostate gland, vagina, and rectum. This also includes simple, diffusely distributed, undifferentiated, loose packing tissue (8). General agreement exists concerning the fascial capsules: also the presence of loose packing tissue is generally granted. The most controversial subject, however, is the neurovascular sheaths, the presence of which is not generally recognized. They do exist and can be distinctly demonstrated if proper dissection is made. These sheaths serve as conduits for vessels and nerves which they carry from the periphery of the pelvic cavity to the organs, and are an important component of the fixation apparatus by which the pelvic viscera are anchored to the pelvic walls and floor. Each of these sheaths is composed of two fascial membranes between which loose packing tissue, fat, nerves, blood, and lymph vessels are embedded.

From the surgical viewpoint the great importance of the neurovascular sheaths has been particularly emphasized by gynecologists. Foremost among them were Wertheim and Schauta. Their pupils, Peham and Amreich, in their classical work on "Operative Gynecology", gave the first exhaustive description of these structures.

*Line of Anchorage*

The neurovascular sheaths or the hypogastric wings are "anchored" peripherally to the parietal fascia and are attached centrally to the fascial capsules of the viscera, with which they are continuous.

The "line of anchorage" has been well illustrated by Eduard Pernkopf in his monumental work "Topographische Anatomie". It starts (Fig. 1) cranially at the point where the hypogastric artery originates from the common iliac artery and passes
downward and backward (roughly in a vertical direction), along the hypogastric artery and its anterior division, to the ischial spine, approximately parallel to the dorsal margin of the superior ischial ramus and in front of the greater sciatic fora-

FIG. 1

The anchorage line of the visceral endopelvic fascia as illustrated by Pernkopf under the name of "neurovascular plate" (Gefaess-Nerven-Leitplatte). Both the vertical (1) and the horizontal portion (2) as well as the angle which they form against one another are shown. Cranial to the horizontal part of the anchorage line, the tendinous arch of Levator ani (3) is seen. The parietal fascia has been left in place; through it the muscles and the trunks of the sacral plexus are showing. Note the two fascial leaves bordering the vertical portion of the anchorage line.

Taken from Pernkopf's Topographische Anatomie, 1943, vol. II, Fig. 71 (redrawn and somewhat modified).

men. At the level of the ischial spine, it makes a sharp turn forward of nearly 90 degrees, passing forward and downward (roughly in a horizontal plane) across the levator ani, ending close to the lower end of the symphysis pubis.

The vertical portion of the line of anchorage is the "hypogastric root", the hori-
horizontal portion being represented by the well known "fascia endopelvina", a somewhat confusing term the use of which has continued only because of its antiquity.

The hypogastric root is a thick strip of visceral fascia which is bordered on either side, laterally and medially, by distinctly membranous layers of fascia arising from the parietal fascia (Fig. 1). Between these two layers are contained the ventral divisions of the hypogastric vessels, the origins of the visceral branches of these vessels, and the ureter.

The fascia endopelvina is a horizontal fascial shelf which forms the floor of the space of Retzius and is encountered if the hand is pushed down into this space. It will be discussed later in the section describing the space of Retzius. It arises from the parietal fascia along the so-called "white line" of the fascia endopelvina. This structure commences dorsally at the spine of the ischium, crosses the levator ani, and runs forward to the lower end of the symphysis pubis, where it meets with its fellow of the opposite side. If the space of Retzius is exposed to view by pulling the bladder away from the symphysis pubis and lateral pelvic wall (Fig. 2), the fascia endopelvina is seen as it occupies the floor level of the space of Retzius.

General Appearance of Neurovascular Sheaths

If the peritoneum is carefully raised, it is found that underneath it a continuous and well defined fascial membrane is present, expanded between the peritoneum and the parietal fascia. Figure 3 shows a preparation in which the entire peritoneum has been stripped away, leaving only the peritoneum of the bottom of the rectovesical pouch. In such a preparation, the visceral fascia is seen to reproduce faithfully the general configuration of the peritoneum. If the fascia is now cautiously lifted off the pelvic walls, its sheet-like nature can be demonstrated. Such a dissection is illustrated in Figure 4. After the fascial sheet had been separated from the parietal fascia, it was elevated by hooks and held stretched out in a wire frame to demonstrate the nature of this fascia as a well differentiated individual structure. Any one of these fascial sheets may be grasped and pulled with force to demonstrate the great resistance of the visceral sheets to tension.

As is shown in Figure 4, the visceral endopelvic fascia is continuous everywhere, with a similar fascia in the abdomen (visceral endogastric fascia). Ventrally, it is continued into the vesicoumbilical fascia; laterally, into the visceral endogastric fascia of the iliac fossa; and dorsally, it becomes continuous with a fascia which encloses, among many other structures, the ureter and the large vascular trunks of the abdomen and, further cranially, represents the perirenal fascia.

In Figure 3, the major neurovascular sheaths, of which the visceral endopelvic fascia is composed, are visible partly or in their entirety. The location of the hypogastric root (vertical anchorage line) is indicated by the cranial (vertical) portion of the ureter. Arising from it are two extensive fascial sheaths, dorsal and ventral. The dorsal or presacral hypogastric wing sweeps across the sacrum and becomes continuous with its fellow of the opposite side. The ventral wing sweeps forward along the lateral wall of the pelvis and is divided by the horizontal (ventrocaudal) portion of the ureter and by the bladder into a superior and inferior hypogastric wing. The presacral wing is that part of the fascia which is continued into the fascia around the
aorta, inferior vena cava, and perirenal fascia. The superior hypogastric wing is continued laterally into the visceral fascia of the iliac fossa, extends downward and forward from the external iliac vessels to the bladder and is continuous with the capsule on the superior surface of the bladder. It contains the horizontal portion of the vas deferens and also the umbilical arteries, following them upon the ventral wall

![Diagram of the floor of the space of Retzius](image)

Fig. 2

Floor of the space of Retzius

Peritoneum stripped away and removed. Right superior hypogastric wing and vesico-umbilical fascia cut away from their peripheral attachments and pulled laterally and dorsally together with the bladder, to obtain a view into the ventral and right lateral compartments of the space of Retzius.


Pelvis (479-42 b', 1948, fig. 7) of white male, 70 years of age.

of the abdomen where it forms, between the left and right obliterated umbilical arteries, the vesicoumbilical fascia. The inferior hypogastric wing which is only partially visible, lies caudal to the horizontal part of the ureter. It runs forward and downward toward the posterior surface of the bladder and prostate gland and is attached to the capsules of these organs.
Both the dorsal and the ventral wing are attached in their entirety to the anchorage line. In Figures 3 and 4, only the vertical portion (hypogastric root) of this line is visible.

**Fig. 3**

Visceral endopelvic fascia, after removal of peritoneum

Peritoneum peeled away from visceral endopelvic fascia and cut away except at the bottom of rectovesical pouch.

1) Rectovesical pouch. 2) Cranial continuation of rectovesical septum. 3) Transversalis (parietal) fascia. 4) Psoc (parietal) fascia. 5) Iliac (parietal) fascia. 6) Hypogastric root, with ureter in it. 7) Presacral wing, with fascial core of mesosigmoid. 8) Superior hypogastric wing, with horizontal portion of vas deferens (9) and obliterated umbilical artery (10) in it. 11) Vesico-umbilical fascia. 12) Visceral endogastric fascia on ventral abdominal wall. 13) Visceral endogastric fascia in iliac fossa.

Pelvis (479, fig. 3) of male negro, 68 years of age.

**Superior Hypogastric Wing**

As mentioned above, the ventral wing is divided into a superior and an inferior portion. Dorsally, this division is effected by the ureter, without breaking the continuity between the two portions. Ventrally, the continuity between the superior and inferior hypogastric wings is actually interrupted as the bladder is interposed between them.

In Figures 3 and 4, the superior hypogastric wing is seen from its medial aspect. In Figure 5, the superior hypogastric wing was cut away from its attachment to the
external iliac vessels and, together with the bladder, was turned medially. It is now visible from its lateral aspect which faces the space of Retzius. By pulling the bladder medially, the space of Retzius has been opened in its entire extent. Dorsally, the hypogastric root is visible. The superior hypogastric wing is seen as it arises from the

![Figure 4](image)

**Fig. 4**

Neurovascular wings of visceral endopelvic fascia

Peritoneum peeled off and cut away except for the peritoneum of the bottom of rectovesical pouch. Visceral endopelvic fascia and its continuations into the visceral endogastric fascia lifted off the parietal fascia and held spread out and suspended by hooks.

1) Rectovesical pouch. 2) Hypogastric root with ureter. 3) Presacral wing with fascial core of mesosigmoid and 4) its continuation into the fascia of abdominal retroperitoneum. 5) Superior hypogastric wing with 6) Horizontal portion of vas deferens. 7) Lateral continuation of superior wing into iliac fossa. 8) Ventral continuation of superior wing upon ventral abdominal wall and 9) into vesico-umbilical fascia. 10) Rubber tube in retrorectal space. 11) Rubber tube in lateral compartment of space of Retzius.

Pelvis (479, 1949, fig. 2) of a white male, aged 72 years. Dissection made by DeWitt T. Hunter.

hypogastric root, passes forward and, reaching the lateral angle of the bladder, attaches itself to the lateral margin of the superior bladder surface. The umbilical artery runs in it, close to the margin along which the wing was cut away from its lateral attachment. The umbilical artery gives rise to the superior vesical arteries (not shown in Figure 5). There may be as many as five such branches, all of which are enclosed
between the two fascial layers of this wing and are carried by it to the superior, and part of the posterior, surface of the bladder.

In the male, the vas deferens runs on the superior surface of this wing, pursuing a horizontal course toward the spine of the ischium, where it pierces the fascia, takes a

![Image](image_url)

**Fig. 5**

Neurovascular wings of visceral endopelvic fascia

Peritoneum peeled away and removed. Superior hypogastric wing cut away from its lateral attachment and, together with the bladder, pulled medially. View into space of Retzius.

1) Superior hypogastric wing, seen from its lateral aspect. 2) Bladder (inferolateral surface). 3) Hypogastric root. 4) Inferior hypogastric wing, with inferior vesical vessels in it. 5) Presacral hypogastric wing. 6) Medial pubovesical and 7) Lateral pubovesical ligament, both freed of their fascial covering. 8) Lateral true ligament of bladder, with covering of thin fascia endopelvina left in place. 9) Peritoneum in iliac fossa. 10) Visceral endogastric fascia in iliac fossa, continued from superior wing.

Right half of pelvis (479 42 a′ 1946, fig. 5) of colored female, 29 years of age.

sharp turn caudally, and enters the retrovesical space as shown in Figure 8. The superior wing excludes the vas deferens from the space of Retzius which lies caudal to this wing (see below). It should be kept in mind that the vas deferens is nowhere in actual contact with the floor of the pelvis. In its horizontal course, while running
dorsally upon the superior wing, the vas crosses medial and cranial to the obliterated umbilical artery.

**Inferior Hypogastric Wing**

In Figure 5 the inferior hypogastric wing is shown in its entirety from its lateral aspect, facing the space of Retzius. Its relation to the superior wing and to the bladder is as follows: From its origin (hypogastric root), it passes forward in continuity with the superior wing, delineated from it only by the ureter. As the lateral angle of the bladder is reached, the two wings become actually separated. The superior wing follows the lateral margin of the superior bladder surface, while the inferior wing becomes attached to the lateral margin of the posterior bladder surface. In Figure 5 the origin of the inferior wing from the hypogastric root as well as from the fascia endopelvina (horizontal part of anchorage line) is visible. The inferior vesical veins and arteries are contained in this wing and are carried in it down to the dorsal and inferior bladder surfaces to the seminal vesicles, ampullae of vasa deferentia and prostate gland. Some of them are illustrated in Figure 5.

The inferior wing has a special relation to the hypogastric root shown in Figure 6 which is another stage of the dissection of the female pelvis illustrated in Figure 5. The pelvis here was tilted so as to expose a view of the entire anchorage line. Its vertical portion, the hypogastric root, ends caudally in a toughened arch, the inferior vesical arch, which can be distinctly felt with a finger pushed dorsally in the space of Retzius. Laterally, this arch is attached to the ischial spine; medially, it is continued into the inferior wing. In it are situated large inferior vesical veins and one or several inferior vesical arteries. In the dissection shown in Figure 6, a window was cut out of the fascia covering the ventral surface of the inferior vesical arch; through it the inferior vesical vein is seen passing to the hypogastric veins. Just below the inferior vesical arch, one finds frequently a second arch (Fig. 6) which marks the dorsal end of the fascia endopelvina. The convexities of the two arches facing each other and the space between them is filled in by fat and a fascial membrane of varying strength. This second arch marks the location of the tough, strongly aponeurotic, superior margin of the coccygeus muscle. In many cases the terminal branches of the anterior division of the hypogastric vessels, the inferior gluteal and internal pudendal, pass into the infrapiriform space of the greater sciatic foramen just behind this second arch, while the inferior vesical vessels are joined to the anterior division of the hypogastric artery a short distance cranial to this arch. This kind of arrangement, together with the attachment of the inferior vesical arch to the ischial spine, furnishes a particularly strong and effective mooring of the inferior hypogastric wing to the wall of the pelvis, very resistant to tension exerted in a ventral direction.

The inferior hypogastric wing is of considerably greater bulk than the other wings. This is shown in a special dissection (Fig. 7), illustrating the inferior wing and the bladder from a medial and dorsal aspect. After stripping away the peritoneum, the superior wing was cut away from the inferior wing and from the bladder. The medial fascial layer of the inferior wing; as well as the capsule on the dorsal bladder surface, (the two being continuous with one another) were dissected away
Hypogastric root, inferior vesical arch and fascia endopelvina

Same dissection as Fig. 5, but promontory of pelvis tilted forward to afford full view into lateral compartment of space of Retzius. Fascia endopelvina more fully dissected.

1) Hypogastric root. 2) Inferior vesical arch with window through which an inferior vesical vein is shown. 3) Medial pubovesical ligament. 4) Lateral pubovesical ligament. 5) Lateral true ligament of bladder; fascia endopelvina which covers it, incised and retracted, aponeurotic fibers of ligament displayed and incised, levator ani showing through incision. 6) Thin dorsal portion of fascia endopelvina, incised, portio cardinals of levator ani and, further dorsally, coccygeus muscle showing through incision. 7) Arch at dorsal end of fascia endopelvina. 8) Rubber tube stuck through fascia which closes opening between inferior vesical arch and dorsal arch of fascia endopelvina. 9) Rubber tube stuck through incision in thin (avascular) part of fascia endopelvina.

Right half of same pelvis as shown in Fig. 5 (479, 1946, fig. 7).

and reflected. The core of the inferior wing is fully exposed. In the subject illustrated by Figure 7 it is fully one-half inch thick and gains in height as it passes from its dorsal origin to the bladder. It is one and one-half inches high where it is attached
into the bladder. The core of the wing consists of loose packing tissue and considerable amounts of fat. Embedded in it (not shown in the illustration) are the ureter, the autonomous nerves to the urogenital organs, and the arteries and veins supplying and draining these organs. Ventrally, the inferior wing is firmly attached to the lateral margin of the dorsal bladder surface and is continued there into the capsule on the dorsal (see Fig. 7) and inferolateral (see Fig. 5) surfaces of the bladder. Dor-
sally, where the inferior wing arises from the hypogastric root, the ureter makes a sharp turn forward and enters the inferior wing, representing the most cranial structure in its content and being carried in it to the lateral bladder angle. Also, two strong autonomous nerve trunks are seen in Figure 7, as they enter the inferior wing.

In a preparation such as is illustrated in Figure 7, the inferior wing may be grasped, and tension in a ventral direction may be exerted upon it. This procedure demonstrates very convincingly that even vigorous pulling is unable to disengage the inferior wing from its mooring to the hypogastric root and inferior vesical arch.

Through the intermediation of the inferior wing, the bladder is firmly moored to the hypogastric wing and inferior vesical arch.

The Presacral Wing

Both the inferior and superior parts of the ventral wing are related to the bladder. The dorsal or presacral wing is related to the pelvic colon and to the rectum. Like the ventral wing, it takes its origin along the entire line of anchorage; that is, in its cranial extent from the hypogastric root, and in its caudal extent from the fascia endopelvina. In its course from cranial to caudal, it makes the same angle at the level of the ischial spine. This is described by the line of anchorage and therefore follows the direction of the rectum which in the lower part of its sacral curvature also undergoes a change from a vertical to a horizontal direction, passing from the coccyx forward to the prostate gland.

The cranial portion of the presacral wing, as shown in Figures 3, 4 and 5, is wide and sweeps across the sacrum where it meets with its fellow of the opposite side. It is applied by its dorsal surface to the parietal fascia over the piriformis muscle and sacrum. In its caudal portion it narrows down and is applied to the parietal fascia over the coccygeus and levator ani muscles.

Cranially, the presacral wing passes behind the pelvic colon, but is attached to the dorsal aspect of this part of the gut by way of the mesentery of the pelvic colon, the core of which is formed by a ventral expansion of the presacral wings (Figs. 2, 3 4). Further caudally, where a mesentery is absent, each of the two presacral wings is attached into the corresponding lateral aspect of the rectum and is continuous with the fascial capsule of the rectum. Thus, it represents a lateral fascial wing of the rectum by way of which the rectum is fastened on either side to the medial margin of the fascia endopelvina and through it, to the parietal fascia of the levator ani.

In its cranial part, the presacral wing contains, between its two fascial layers, some of the most caudal sigmoid branches of the inferior mesenteric artery, the superior hemorrhoidal artery, the inferior hypogastric nerve which descends down into the pelvis medial to the ureter, and the cranial half of the pelvic ganglion (see Retrorrectal Space). In the caudal (horizontal) portion of the presacral wing, the caudal half of the pelvic ganglion is embedded.

Subperitoneal Fascial Spaces

The hypogastric wings, aided by an additional membranous structure, the rectovesical septum (to be described presently), divide the entire subperitoneal space of
the male pelvis into four fascial spaces. These are (from ventral to dorsal): the space of Retzius, the retrovesical space, the prerectal space, and the retrorectal space. The fascial partitions between these spaces and the spaces themselves are arranged in such a fashion that all of them commence, dorsolaterally, at a common center represented by the hypogastric root and the spine of the ischium with the inferior vesical arch attached to it; from this center they radiate, fan-like, towards the midsagittal plane of the pelvic cavity. This arrangement enables the arteries and nerves, arising in or carried into the hypogastric root from elsewhere, to enter any one of the fascial partitions and to reach the organs which they supply. In the same manner, the veins and lymphatics draining the viscera are carried to the common center in the hypogastric root and from there up into the abdomen.

Retrovesical Space

As the seminal vesicles and the ampullae of the vasa deferentia are situated in this space, and because through it, access to the dorsal surface of the prostate gland can be gained, it is a region of major importance for the urologist. It represents the ventral compartment of the space between the bladder and the rectum (rectovesical space) and is partitioned off against the dorsal compartment (prerectal space) of this larger space by a well defined membrane, the so-called rectovesical septum.

1. Rectovesical Septum: The rectovesical septum is a membrane which is attached firmly by its cranial margin to the peritoneum of the rectovesical pouch (Fig. 8). Laterally, it extends further cranially, sometimes as high as the cranial end of the hypogastric root, forming on either side of the pelvic cavity a lateral wing of the peritoneal sac (Fig. 3). In some subjects the rectovesical septum extends caudally all the way down to the pelvic floor (Fig. 9). Laterally, it is attached to the common anchorage line (to the hypogastric root and medial margin of the fascia endopelvina); cranially, however, its line of lateral attachment is variable inasmuch as it may be attached medial to the hypogastric root and then gain insertion into the lateral portion of the presacral wing. In either case, this septum extends transversely through the entire width of the pelvic cavity. It thus forms, either by itself or together with a most lateral strip of the presacral wing, a partition of the subperitoneal space of the pelvic cavity into a dorsal or rectal and a ventral or urogenital compartment. In cases in which the rectovesical septum is well developed, it may well represent at least for a time an efficient barrier to the passage of abscesses and exudations from one compartment into the other.

The rectovesical septum is the result of a fusion between the ventral and dorsal walls of the peritoneal rectovesical pouch, which in early embryonic life extends between bladder and rectum all the way down to the pelvic floor (Uhlenhuth, Wolfe, Smith and Middleton (7)). Therefore, this septum consists, potentially, of two layers, an anterior and a posterior layer. With proper care it actually may be split into these two layers. In adult subjects in whom this septum is well developed, it can be immediately distinguished from ordinary fascia by a conspicuous difference in texture and consistency. It is a dense, smooth sheet, often of shiny appearance.

Denonvilliers was the first one to describe the rectovesical septum, (1836), naming it "Aponevrose prostato-peritoneal". Yet it has not been determined with any
degree of certainty that what present-day urologists call the "posterior layer of Denonvilliers' fascia" is the rectovesical septum. In his "Practice of Urology" (vol. II, p. 420), Young states that the posterior layer of Denonvilliers' fascia is identical with the rectovesical septum, while the anterior layer of this fascia is represented by the capsule on the dorsal surface of the prostate gland. But the ana-

![Diagram of retrovesical space]

**Fig. 8**

Retrovesical space

Peritoneum removed, except for bottom of rectovesical pouch.
1) Peritoneum of rectovesical pouch. 2) Rectovesical septum. 3) Supragenital septum. 4) Capsule on dorsal bladder surface. 5) Capsule on ventral surface of rectum. 6) Superior hypogastric wing. 7) Vas deferens (horizontal part). 8) Vas deferens (ampulla), vertical part, in retrovesical space. 9) Presacral wing. 10) Ureter and 11) Hypogastric artery, both abnormally far ventral (caudal pole of kidney in iliac fossa).

Right half of pelvis (479, 1947, fig. 2) of white male, 77 years of age. Dissection made by Dr. Karl F. Mech.

tomonic description of the posterior layer which he gives in his account of the technique of perineal prostatectomy, contains so many inconsistencies and is so vague, that one cannot be certain that the structure which he describes is actually the rectovesical septum. In an article published in 1908, G. Elliot Smith gave a diagrammatic illustration (Fig. 10 on p. 212). From this it appears that when he de-
scribed a posterior and anterior layer of Denonvilliers' fascia, he had in mind the two primary leaves of which compose the rectovesical septum. Since both of these primary layers are attached cranially to the peritoneum of the rectovesical pouch, the retroprostatic space (of Proust) in this illustration extends all the way up to

![Diagram](image)

**Fig. 9**

Rectovesical septum and genital fascia

Peritoneum peeled away from visceral fascia and cut away except for peritoneum of rectovesical pouch. The retrovesical space (between bladder and rectovesical septum) opened up.

1) Rectovesical pouch. 2) Rectovesical septum. 3) Line along which rectovesical septum is grown to cranial margin of dorsal lobe of prostate gland. 4) Cranial expansion of rectovesical septum. 5) Fascial capsule of dorsal lobe of prostate. 6) Genital fascia, with ampulla of vas deferens enclosed between its two layers. 7) Sacrogenital ligament (exceptionally well developed). 8) Superior wing with horizontal part of vas deferens (9) and obliterated umbilical artery (10). 11) Ureter (vertical part) in hypogastric root. 12) Middle and 13) Dorsal lobe of prostate gland.

Left half of pelvis (47951, 1950, fig. 5) of white male, 54 years old.

the bottom of the rectovesical pouch and lies within the rectovesical septum and the capsule of the prostate gland.

Added to these difficulties, the anatomist encounters, in an attempt to interpret the language of the urologist in anatomic terms, the disregard of variations of the rectovesical septum which in some cases results in complete absence of a posterior layer of Denonvilliers' fascia dorsal to the prostate gland. It is true, as mentioned
above, that in some subjects the rectovesical septum is a strong and well-defined membrane. However, in other individuals, this structure is greatly deficient and consists only of isolated narrow strips of varying length extending, at the most, to the base of the prostate gland. In some subjects, the rectovesical septum stretches all the way down to the pelvic floor (as was the case in the subject illustrated in Fig. 9). In many cases, the rectovesical septum is attached to the margin of the base of the prostate or along some line farther caudal on the dorsal surface of the prostate. It cannot be dissected any further down because it fades out into the prostatic capsule. In all these instances, the prostate gland is separated from the ventral capsule of the rectum only by loose areolar tissue, filling in a rectoprostatic space. However, a retroprostatic space, in the sense of a space between the rectovesical septum and the prostate, is not developed.

Even in those cases in which the rectovesical septum extends down to the pelvic floor, it presents constantly a firm attachment to the cranial margin of the posterior lobe of the prostate gland (as mentioned also by Lowsley and Kirwin, vol. I, p. 796), whereas everywhere else in the dissection of the rectovesical septum, separation can be made easily with a blunt instrument. The sharp edge of the knife is necessary to detach the rectovesical septum in this place. Frequently, as the rectovesical septum is cut away from this attachment, the outer capsule of the prostate gland comes along with the septum (Fig. 9). This capsule, as seen in embalmed dissecting-room specimens, is about of the same thickness as the rectovesical septum and of aponeurotic appearance. After peeling this capsule away from the prostate gland, a thicker marginal zone, lighter in color than the rest of the prostatic tissue, remains. This marginal tissue can be peeled away with the aid of the semiblunt edge of a spatula-probe. It is brittle and does not have the consistency or appearance of a true fascial capsule. The middle lobe has its own individual capsule which seems to be a continuation of the capsule on the dorsal bladder wall (Fig. 7).

When, in the sagittally divided pelvis of embalmed cadavers, an attempt is made to pull the rectum away from the bladder and prostate gland, the rectovesical septum goes invariably with the latter two organs and not with the rectum. It is only loosely attached to the rectum by a quantity of delicate areolar tissue which is easily broken down either with the finger or, in some subjects, by mere tension.

2. Supragenital Septum: Gynecologists are well acquainted with the presence of a fascial septum, the supravaginal septum, which forms the roof of the vesicovaginal space, and which separates this space from the vesicocervical space. This must be cut through if access is to be gained from one into the other of these two spaces. A similar, though less substantial, septum forms the roof of the retrovesical space in the male (Fig. 8). This "supragenital septum" must be cut through if access to the seminal vesicles, ampullae, and prostate gland from the intrapelvic side is sought. As is shown in Figure 8, the supragenital septum is attached dorsally to the peritoneum of the rectovesical pouch, ventrally to the bladder capsule along the dorsal margin of the superior bladder surface, and laterally to the ventral hypogastric wing along a line corresponding to the boundary between superior and inferior hypogastric wings. The vas deferens, which in its horizontal course runs towards the ischial spine in a special sheath on the upper surface of the superior wing, pierces this fascia just
where it is joined to the supragenital septum and thus enters the retrovesical space (Fig. 8). Because of the presence of the supragenital septum, stripping away the peritoneum alone does not open up the retrovesical space (Fig. 10). To bring this

![Fig. 10](image-url)

Retrovesical space closed by supragenital septum

Peritoneum peeled off and cut away except for the bottom of rectovesical pouch. Visceral endopelvic fascia left intact, retrovesical space closed by supragenital septum.

1) Peritoneum of rectovesical pouch. 2) Cranial expansion of rectovesical septum. 3) Ureter in hypogastric root. 4) Presacral hypogastric wing. 5) Fascial core of mesosigmoid. 6) Superior hypogastric wing. 7) Bladder (superior surface). 8) Supragenital septum, closing retrovesical space.

Pelvis (479, 1948, fig. 1) of white male, 70 years of age. Dissected by Dr. Edmund B. Middleton.

space into view, its fascial roof must be incised close to the dorsal margin of the superior bladder surface (Fig. 11). Digging downward and forward into this space with a finger, brings into view the vertical course of the vas deferens and the seminal vesicles as shown in Figure 11. Dorsal to the finger and in front of the rectum, a
strong membrane, the rectovesical septum, is visible. This can be picked up with a pair of forceps and lifted off the rectum.

In the specimen illustrated in Figure 11, a knob-like projection with glistening whitish surface was seen protruding upward between the two ampullae. It was be-

![Fig. 11](image)

Retrovesical space opened up

Same dissection as Fig. 10, but supragenital septum cut through transversely and retrovesical space opened. Ureter dissected out from inferior hypogastric wing as far ventrally as to the place where it is crossed by vas deferens.

1) Supragenital septum incised transversely. 2) Retrovesical septum. 3) Vas deferens, horizontal portion, in superior hypogastric wing. 4) Vas deferens, vertical portion with ampulla, in retrovesical space. 5) Seminal vesicle. 6) Bladder. 7) Prostate gland (presumably enlarged middle lobe). 8) Ureter in hypogastric root. 9) Ureter in inferior hypogastric wing, crossed by vas deferens.

Same pelvis as Fig. 10 (479, 1948 fig. 2). Dissection made by Dr. Edmund B. Middleton.ILieved to be an enlargement of the median lobe of the prostate, but was not further examined. Although the prostate gland can be felt, if the finger is thrust down far enough, the finger is unable to enter the retroprostatic space of Proust because of the firm attachment of the rectovesical septum to the cranial margin of the prostate gland (see Fig. 9). This attachment must be cut through before the dorsal surface of the prostate gland can be reached.
In an attempt to enlarge the retrovesical space laterally, the fingers are stopped by a firm wall, the inferior hypogastric wing, which forms the lateral wall of this space. Following this wall, one can dig on either side of the rectum nearly as far back as the ischial spine and the hypogastric root. It is to be remembered that in the upper border of the inferior hypogastric wing, hidden under the fascial leaf which covers the medial surface of it, the ureter passes forward to the bladder and is crossed on its ventrocranial aspect by the vas deferens close to the point where the vas enters the retrovesical space and turns downward and forward (Fig. 11). Moreover, coming out of the inferior hypogastric wing, piercing the fascial leaf which covers it, a number of nerves and arteries are seen, which supply the ampulla, seminal vesicles, prostate and dorsal bladder surface. These structures are seen to better advantage in Figure 12; the medial fascial leaf of the inferior wing has been lifted off the core of the wing, and the cranial end of the pelvic ganglion located. Large masses of nerves arise from it, some of them passing together with the ureter within the inferior wing forward to the bladder, while others pierce the medial fascial leaf and enter ampulla of vas and seminal vesicle. In Figure 12 also, the fascia covering the presacral wing was slit open just medial to the hypogastric root and ureter; the inferior hypogastric nerve is exposed and is seen to join the cranial end of the pelvic ganglion.

3. The Genital Fascia: When the rectovesical septum is peeled away from the dorsal bladder surface, the ampullae of the vasa deferentia and the seminal vesicles frequently remain attached to the ventral surface of the septum. With proper care it can be shown that they are not directly attached to the rectovesical septum, but are enclosed in a separate fascia, the genital fascia, which is closely apposed to the septum and held loosely to it by a small amount of delicate loose connective tissue. It is actually fused only by its cranial margin either with the ventral surface of the septum or even with the suprarenal septum (see Figs. 7 and 13). Around the seminal vesicles and the ampullae, the genital fascia is split into two layers, ventral and dorsal. These form a fascial sheath around these organs (Fig. 13). Caudally, the ventral layer is attached to the cranial margin of the middle lobe. The dorsal layer is attached to the cranial margin of the posterior lobe (Fig. 9). To free the vasa and seminal vesicles of this fascia consumes, at least in the cadaver, much time. But if the genital fascia is cut through along its cranial and caudal lines of attachment and the ejaculatory duct is severed, these organs can be easily lifted out together with the genital fascia.

Judging from the condition in the adult, one concludes that the genital fascia is homologous to the ligament of Mackenrodt in the female. In this connection, it is of interest that in the same way in which in the female the uterine nerves and vessels leave ureter and inferior vesical vessels (which pass within the inferior wing forward to the bladder) and turn medially towards the uterus, so the vessels and nerves for the seminal vesicles and ampullae in the male leave the inferior wing, turn medially and enter the genital fascia in the retrovesical space to supply these organs.

4. Borders of Retrovesical Space: The retrovesical space is bordered ventrally by the dorsal surface of the bladder, dorsally by the rectovesical septum, laterally (and ventrally) by the inferior hypogastric wings. It has a dorsolateral angle where
the inferior hypogastric wing and the rectovesical septum meet along the hypogastric root. It also has a caudolateral angle, where the inferior hypogastric wing

![Fig. 12](image)

Nerve supply of seminal vesicles and vas deferens

Same dissection as Figs. 10 and 11. Pelvic ganglion and its genito-urinary branches dissected out. 1) Vas deferens; vertical portion cut through and pulled medially. 2) Seminal vesicle pulled medially. 3) Inferior hypogastric nerve in presacral wing. Lateral to it lies the hypogastric root with the ureter in it. 4) Ureter in the inferior hypogastric wing. 5) Medial fascial leaf of inferior wing lifted off the core of the wing and pelvic ganglion with its genito-urinary visceral branches dissected out.

Same pelvis as Figs. 10 and 11 (479 b, 1948, fig. 5). Dissection made by Dr. Edmund B. Middleton.

and the rectovesical septum meet along their common line of attachment to the fascia endopelvina. The roof of the retrovesical space is formed by the supragenital
septum. It has no floor unless the cranial aspect of the posterior and middle lobes of the prostate gland is considered as such; see Figure 9. This is because an angle is formed where the rectovesical septum is attached to the prostate gland, between the septum and the bladder. Strictly speaking, the retrovesical space extends caudally only to this attachment between rectovesical septum and prostate. In cases in

![Diagram of the retrovesical space](image)

**Fig. 13**

Genital fascia

Peritoneum raised and cut away except at the bottom of the rectovesical pouch. Vertical portion of ureter shelled out of fascia of hypogastric root, vas deferens cut where it crosses ureter. Supragenital septum incised transversely and walls of retrovesical space spread apart to show contents of space. Genital fascia separated from rectovesical septum; cranially it was attached in this subject to peritoneum of rectovesical pouch along same line as rectovesical septum. The rectovesical septum faded out into capsule on dorsal lobe of prostate gland. Ampulla of vas deferens shelled out from in between the two layers of genital fascia.

1) Ureter in hypogastric root, accompanied by veins from vesical plexus. 2) Vas deferens in superior hypogastric wing, cut where it crosses ureter and pierces supragenital septum to enter retrovesical space. 3) Peritoneum of rectovesical pouch. 4) Rectovesical septum. 5) Capsule on dorsal bladder surface, continued into medial fascial leaf of inferior hypogastric wing. 6) Supragenital septum. 7) Genital fascia. 8) Ampulla of vas. 9) Seminal vesicle. 10) Arteries entering retrovesical space from inferior wing.

Left half of pelvis (479, 1949, fig. 6) of colored male, 75 years of age.

which the rectovesical septum extends caudally down to the pelvic floor, cutting through this attachment leads into the retroprostatic space of Proust.

In Figure 2 the superior wing has been incised from dorsal to ventral. If the cut margins of this slit are pulled apart, one is enabled to look down into the lateral compartment of the space of Retzius. If a surgical needle is run through the lateral wall of the retrovesical space, it will be seen to appear in the space of Retzius. The
retrovesical space is partitioned off against the lateral compartment of the space of Retzius by the inferior hypogastric wing.

The Space of Retzius

The space of Retzius is also known under the names of "retropubic" and "pre-vesical" space. In reality, this space is by no means confined to the retropubic region, but extends laterally on either side between the inferolateral surface of the bladder and the lateral wall of the pelvis, back to the spine of the ischium. It is composed of a ventral and two lateral compartments. The lateral compartments are continuous with one another through the ventral compartment.

The space of Retzius has a floor and a roof, a dorsal, a medial, and a lateral wall. If the hand is pushed down between the bladder and the symphysis pubis, it is stopped at the level of the caudal end of the symphysis pubis by the floor of the space. If the hand is pushed backward between bladder and lateral pelvic wall, it is stopped by the dorsal wall. The latter constitutes a firm obstacle which prevents the hand from reaching the space behind the rectum.

In some cases an attempt to pull the bladder away from the symphysis pubis is unsuccessful, owing to the presence of a sagittal septum which binds the keel of the bladder to the symphysis pubis. While this septum is a constant structure which divides the ventral compartment into a right and a left half, it is usually so thin that it can easily be broken down with the fingers. In other subjects, however, it is so stout, that it must be cut through with scissors before the bladder can be retracted.\(^3\)

1. **Dorsal Wall of Space of Retzius:** The dorsal wall of the space of Retzius, shown in Figures 5 and 6, is represented by the vertical portion of the common anchorage line, the hypogastric root, and by the inferior vesical arch. Pushing one hand into the lateral compartment of the space of Retzius against the hypogastric root, and the other hand laterally as far as possible into the retrorectal space, will demonstrate convincingly that the hypogastric root prevents the two hands from touching each other. As it contains the ureter, one or several inferior vesical arteries and several large veins, it represents an impenetrable partition between the space of Retzius and the retrorectal space.

2. **Floor of the Space of Retzius:** The floor of the space of Retzius is formed by the fascia endopelvina (Fig. 6). This fascia extends from the caudal end of the symphysis pubis to the spine of the ischium where it becomes continuous with the fascia which covers the ventral surface of the hypogastric root. Its appearance is, however, not the same throughout its extent. If the bladder is pulled away from the symphysis pubis and the lateral pelvic wall and a quantity of fat constantly present in the space of Retzius is carefully cleaned away, the most conspicuous structure seen in the floor of the space is a band (Figs. 2 and 5) of about 5 to 7 mm. width and of glistening appearance. The bladder is firmly attached to the pubic bone and to the fascia of the levator ani by this band. It is of varying length. In some subjects it can extend dorsally for a distance of 60 mm. Dorsally, it ends constantly in a sharp crescentic margin (Fig. 5). Dorsal to this margin, the fascia drops off to a lower level. It is of the usual dull appearance of fascia and of varying stoutness and is thin and transparent in many cases. In some subjects the whitish band may present, in addition so its most dorsal crescentic margin, one or several similar margins farther ventrally, or dorsally,
to each of which the fascial band is continued at a lower level. In front, this band is bordered by a similar arch-like margin, but with its concavity pointing in the opposite direction. This ventral margin can be identified as a cord-shaped ligament, the pubovesical ligament. This is separated from the rest of the band by a slit-like interval. The band itself is known as the lateral true ligament of the bladder. Between the pubovesical ligaments of the two sides, a depression is located which is covered over with a thin fascia. Through this, the deep dorsal vein of the penis enters the pelvic cavity (Fig. 2). In some cases, two pubovesical ligaments, a medial and a lateral, are differentiated (Fig. 5). In the pelvis illustrated in Figure 2, the medial puboprostatic ligaments were situated at a slightly more caudal level in the floor of the depression between the two lateral puboprostatic ligaments.

Upon more complete dissection it is found that the 3 ligaments (medial and lateral puboprostatic, and lateral true ligament of the bladder) are in reality covered by a thin fascia which is continuous ventrally with the fascia that forms the bottom of the depression between the medial puboprostatic ligaments, and dorsally with the remainder of the fascia endopelvina. The true ligaments are situated below this fascia and are of an aponeurotic nature, possessing a bluish sheen (Fig. 6). In the case of the medial pubovesical ligament, smooth muscle bundles are intermingled with the aponeurotic fibers.

There is also a difference in relationship between the ventral ligamentous portion and the dorsal portion of the fascia endopelvina. By the ligamentous portion, the fascia is directly inserted into the bladder or prostate gland. Dorsally, it serves as a common anchorage line for the inferior hypogastric wing, the rectovesical septum, and the presacral wing.

It has already been mentioned that the fascia endopelvina ends dorsally, opposite the ischial spine, in a stout arch. The fascia which closes the space between this arch and the inferior vesical arch contains no blood vessels and often can be broken down with a finger, if communication between the space of Retzius and the retrorectal space is desired. Moreover, the part of the fascia endopelvina extending from the spine of the ischium to the dorsal end of the lateral true ligament of the bladder constitutes an avascular area; an incision through it leads broadly into the retrorectal space. Both routes are indicated by rubber tubings in Figure 6. Since the fascia endopelvina in this avascular region is usually quite thin and affords little support to the bladder and rectum, cutting through it does not materially interfere with the fixation of the bladder, which is accomplished for the most part dorsally by the inferior vesical arch and ventrally by the pubovesical ligaments and the lateral true ligament of the bladder.

3. The Medial and Lateral Walls and the Roof of the Space of Retzius: These will be discussed only briefly. The medial wall is represented ventrally by the inferolateral bladder surface; dorsally, by the inferior hypogastric wing. The lateral wall is composed of the parietal fascia over the internal obturator and levator ani muscles. The superior wall or roof is represented by the superior hypogastric wing.

The Retrorectal Space

The retrorectal space, as mentioned above, lies between the rectum and the sacrum. Dorsally, it is bounded by the parietal fascia which covers the piriformis, coccygeus, and levator ani muscles. Its ventral wall consists, in the cranial part of
the space, merely of the presacral wing. Farther caudally, however, where this fascia embraces the rectum to form the fascial capsule of this viscus, the rectum covered by the dorsal part of its capsule participates also in the formation of the ventral wall of the retrorectal space. If, in an attempt to open up the retrorectal space, one penetrates laterally, one arrives finally at the hypogastric root. This may be said to form the lateral wall of the cranial portion of the retrorectal space and which

![Diagram](Fig. 14)

**Fig. 14**

Retrorectal space

Fibrous tissue which fixes the dorsal capsule of the rectum and the presacral hypogastric wing to the parietal fascia was broken down with a blunt instrument. Fascial shelves conducting the visceral nerves are displayed.

1) Fascial capsule on dorsal surface of rectum. 2) Presacral hypogastric wing. 3) Parietal fascia. 4) Cranial shelf. 5) Caudal shelf. 6) Bundle of visceral nerves in caudal shelf, passing to pelvic ganglion.

Left half of pelvis (479, 1950, fig. 2) of white male, 66 years of age.

partitions this space off against the lateral compartment of the space of Retzius. Farther caudally, where the presacral wing attaches itself to the fascia endopelvina, the retrorectal space has no lateral wall but terminated in an angle formed by the presacral wing with the fascia of the levator ani.

A study of the retrorectal space in a sagittally divided pelvis is of interest. By attempting to lift the presacral wing and the rectum away from the parietal fascia and from the sacrum and coccyx, one observes that the visceral fascia and the capsule of the rectum are firmly fixed to the parietal fascia by an abundant loose but tough
fibrous tissue. On probing into this tissue with a spatula-probe and penetrating laterally, it will be found that constantly one or several fascial shelves remain. These arise from the parietal fascia in the vicinity of the anterior sacral foramina and pass forward and downward to join the presacral wing and the rectal capsule. Even on casual inspection, a number of substantial nerve tracts are seen running in these fascial shelves. They are the parasympathetic branches of the sacral nerves and several branches from the sympathetic ganglia. Figure 14 illustrates a pelvis in which two such fascial shelves were present. The lower one was particularly large.
and well developed. In it, the visceral nerves were arranged into a wide band-shaped bundle and were visible even before any further dissection was made.

In Figure 15, a female pelvis is shown in which the individual nerves enclosed in these fascial shelves have been dissected out. They were followed from their origin to the pelvic ganglion which they are seen to join. The two layers of the presacral wing were separated from one another and the ganglion was exposed. The pelvic ganglion lies embedded in the presacral wing, close to the lateral attachments of this wing. Its cranial tip lies about at the level of the ischial spine. The illustration shows that the nerves for the urogenital tract are given off from the cranial parts of the ganglion. They pass into the inferior wing and are conducted in that part of the visceral fascia to the uterus and bladder in the female. In the male they go to the seminal vesicles, ampullae of vasa deferentia, prostate and bladder. In Figure 7, two stout visceral nerves are seen as they enter the inferior hypogastric wing to be conducted to the urogenital organs. The nerves for the rectum arise from the caudal portion of the ganglion, pass into the space between the fascial capsule and the muscular wall of the rectum, and are distributed from there to the wall of the rectum.

The Author wishes to acknowledge his indebtedness to Dr. Albert E. Goldstein through whose generous interest the American Urological Association and private donors have contributed funds which made available the artistic assistance of Mr. William E. Loechel.

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**FOOTNOTES**

1. Among the 60 illustrations which have been collected so far, we owe the great majority to Doctor Edmund B. Middleton who holds the rare record of combining in one single person the enthusiasm of a student, the skill of an anatomist and the gift of an artist.
2. In a male pelvis dissected most recently, however, the supragenital septum was fully \( \frac{1}{3} \)" thick, composed of strong fibrous tissue and of some fat.
3. In one case (479_45, 1949, colored male, 75 years of age) which was anomalous in several other respects, this septum consisted of two strong lamellae, between which a space of nearly \( \frac{1}{2} \)" width was enclosed. Each lamella was the continuation of the inferolateral bladder capsule of the corresponding side and was continued into the parietal fascia on the pelvic wall. In the area between the lines of origin of the two lamellae from the bladder, the surface of this viscus was completely naked, the muscle being freely exposed. It is probable that this septum consists also under the usual conditions of two lamellae, but cannot be split because of its thinness.
THE RELATION BETWEEN pH CHANGES AND RABBIT GUT MOTILITY IN VITRO*†

LEAH MILLER PROUTT, B.S., E. RODERICK SHIPLEY, M.D., ROBERT H.
OSTER, Ph.D. AND J. EDMUND BRADLEY, M.D.

The general qualitative effect of pH variation on the activity of smooth muscle has been well established (1–7). In the present work, quantitative measurement of pH changes in relation to rabbit gut motility in vitro as modified by various agents including several beverage syrups‡ have been made to determine the degree of correlation between these two variables.

The possible importance of pH and its effect on smooth muscle motility in vivo was indicated by the recent clinical observations of one of the authors (J. E. B.) on the use of a beverage syrup and a glucose phosphoric acid syrup in epidemic vomiting of children (8, 9). Gorman et al (1) have demonstrated that hydrochloric acid inhibits or arrests contraction of isolated gastric muscle of the rabbit and that sodium citrate and sodium bicarbonate restore the tonus. Evans and Underhill (3) have noted that smooth muscle is very sensitive to alterations in the hydrogen ion concentration and that a lowering of the hydrogen ion concentration causes an increase in tonus and an increase in rate of rhythmic contractions, and a raising of the hydrogen ion concentration causes the opposite effect. The data obtained in the present study include simultaneous pH measurements and smooth muscle motility as measured by contraction rate in the presence of various agents used to alter the pH.

During the early stages of the experiment, it was noted that the specific gravity definitely affected the amplitude of smooth muscle contraction in vitro. In Table I may be seen a comparison between amplitude and contraction rate as modified by specific gravity changes using control solutions. Because of the wide fluctuation of mean amplitude values, as compared with the narrow contraction rate value range, the latter was selected as the indicator of pH effects on smooth muscle activity. Since sugar was present in beverage syrups, rigid control of specific gravity was not possible. Table I presents the mean values of all the effects of control solutions on gut motility.

MATERIAL

A rabbit in the fasting state was killed by a blow at the base of the brain, immediately eviscerated and the intestinal sections were flushed several times with Tyrode's solution, (10) then placed in clean Tyrode's and kept under constant aeration at 12–20 degrees C., with frequent changes of the solution.

METHOD

A modified Magnus technic (5) was used. Intestinal sections one to one and one-half inches long were cut, and mounted in the muscle chamber with as little handling

* From the Department of Physiology, School of Dentistry, and Department of Pediatrics, School of Medicine, University of Maryland, Baltimore, Maryland.
† Received for publication November 30, 1950.
‡ The beverage syrups were kindly supplied by the National Carbonated Beverage Company.
as possible. Two sutures were used on each end of the section, in order to insure holding the lumen of the gut open. One end was attached to the standard in the muscle bath, and the other to the muscle lever. The temperature was automatically controlled at 39.5 degrees C., ± 0.5 degrees C. and aeration with room air was constant. The muscle section was at all times immersed in 100 cc. of solution, the major portion of which was Tyrode's solution and the final volume of the muscle bath was kept constant at 100 cc., since any agent added to the bath was compensated for by a withdrawal of a corresponding amount of Tyrode's. The muscle section was washed with fresh Tyrode's at 39.5 degrees C. after each experimental

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</tr>
<tr>
<td></td>
<td>1.014</td>
<td>76</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>1.014</td>
<td>53</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>1.014</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>1.016</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>1.014</td>
<td>18</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1.014</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>1.014</td>
<td>9.6</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>1.015</td>
<td>17</td>
<td>8.6</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>-56</td>
<td>-9.3</td>
</tr>
</tbody>
</table>

step, and fresh solutions were used for each experimental step. Muscle contractions were recorded on a constant speed kymograph drum, and the rate of contractions could be accurately calculated at any spot on the record by using the simultaneously recorded time of one mark per second. The pH readings were taken simultaneously with muscle contraction change by the use of a glass electrode, in situ, immersed next to the muscle section in the tissue bath, and read with a Beckman electronic pH meter.

**SOLUTIONS**

The solutions used and their initial pH are given in Table II.
DISCUSSION

It should be noted that the isolated muscle strips were immersed in the test solutions in such a manner that both the serous coat and, to a much less degree, the mucous membrane were in direct contact with the solutions. The changes that occurred upon altering the pH were the result of the solutions contacting both surfaces, but the absorption across the mucous membrane obviously played a minor role. Magee and Southgate (7) have shown that motility of isolated rabbit and cavy intestines were unaffected by varying the hydrogen ion concentration, from 1.5 to 9.6 within the lumen, but when the mucous membrane was destroyed, increased acidity resulted in a marked depression of motility.

In experimental results on in vivo preparations, the depression of gastric motility in correlation with an increase in the hydrogen ion concentration has been found by many investigators (12, 13, 14), but evidence for a similar effect on tissue of the small intestine is difficult to find.

The observation of this correlation between pH change and intestinal motility confirms many previous reports and further presents the correlation graphically (Fig. 1). It is felt that the pH data obtained simultaneously with muscle activity changes by the in situ electrode, and the variety of agents employed to change the

### TABLE II

**Experimental solutions used to determine the effect of varying pH on rabbit gut motility**

<table>
<thead>
<tr>
<th>SOLUTION</th>
<th>INITIAL pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0165% HCl</td>
<td>0.82</td>
</tr>
<tr>
<td>0.192 H2PO4</td>
<td>1.12-2.00</td>
</tr>
<tr>
<td>8.5 H3PO4</td>
<td>1.02</td>
</tr>
<tr>
<td>25.0 Sugar</td>
<td>6.58</td>
</tr>
<tr>
<td>2.84 Na2HPO4</td>
<td>8.96</td>
</tr>
<tr>
<td>2.0 NaHCO3</td>
<td>8.72</td>
</tr>
<tr>
<td>A cola syrup</td>
<td>1.58</td>
</tr>
<tr>
<td>B cola syrup*</td>
<td>1.38</td>
</tr>
<tr>
<td>Citrus syrup</td>
<td>1.98</td>
</tr>
<tr>
<td>Kola (1) syrup</td>
<td>1.36</td>
</tr>
<tr>
<td>Kola (2) syrup</td>
<td>1.80</td>
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<tr>
<td>Kola (3) syrup</td>
<td>1.56</td>
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<tr>
<td>Kola (4) syrup</td>
<td>1.70</td>
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<td>Kola (5) syrup</td>
<td>1.86</td>
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<tr>
<td>Lemon syrup</td>
<td>3.25</td>
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<tr>
<td>Orange syrup</td>
<td>3.38</td>
</tr>
<tr>
<td>Grape syrup</td>
<td>2.90</td>
</tr>
<tr>
<td>Ginger Ale syrup gold</td>
<td>2.45</td>
</tr>
<tr>
<td>Ginger Ale syrup pale</td>
<td>2.22</td>
</tr>
<tr>
<td>Root Beer syrup</td>
<td>3.10</td>
</tr>
<tr>
<td>Coca leaf extract (Merck)</td>
<td>6.02</td>
</tr>
<tr>
<td>Kola nut extract (Lilly)†</td>
<td>5.52</td>
</tr>
</tbody>
</table>

* A and B cola syrups are samples from soft drink fountain supplies of Coca-Cola and Pepsi Cola syrups.
† We are indebted to Eli Lilly and Company for the kola nut extract.
pH make it possible to present quantitative evidence for the correlation in the form of a scatter diagram.

The increase in hydrogen ion concentration, giving a lower pH, which stimulated tone and then decreased contraction rate if continued, gave aspects which were reversed by a decrease in hydrogen ion concentration, resulting in a higher pH. Alkalinity at first stimulated the gut and increased the amplitude, then decreased the contraction rate if continued to excess. This decrease in contraction rate with fiber shortening was observed by McSwiney and Norton (6), who capably summarized these findings by saying that while moderate pH changes had the specific effects on intestinal motility (i.e., acidity depresses and alkalinity stimulates), the effect of sudden great shifts in pH is the same regardless of the direction of the hydrogen ion concentration change; initial stimulation, followed by marked depression. McSwiney and Norton’s optimum pH range for normal motility in rabbit gut was 7.0–8.0, which was confirmed by observations of an optimum of 7.2–8.4.

A slowing of the contraction rate occurred regardless of the acid used to lower the pH. Hydrochloric acid, hydrochloric acid and sucrose, phosphoric acid, phosphoric acid and sucrose all gave similar reductions in the rate of contraction. It was noted

Fig. 1. The distribution of values obtained on rabbit gut motility effects of numerous agent used to vary pH are shown in a scatter diagram. The linear relationship of the two variables indicate the positive correlation between muscle strip contraction rate and pH of tissue bath.
that hydrochloric acid brought about this change in less time and to a greater degree than phosphoric acid at approximately the same pH, and that alkaline stimulus following the acid effect caused greater response when the acid containing the phosphoric acid had been the depressing agent. The kymograph records showing this effect may be seen in Fig. 2. The motility depression was not significantly changed when the acid agent used was in sucrose solution, except when the viscosity of the tissue bath, determined as specific gravity, exceeded the control range of values. (See Table I.)

As may be seen in the graph of Fig. 1, the contraction rate, always expressed as per cent change of an experimental record from a normal record, was sensitive to pH changes, also expressed as per cent change of experimental from the normal. This change followed the same direction, regardless of the agent used, i.e., increase on hydrogen ion concentration contributed to a decrease in motility and decreased hydrogen ion concentration contributed to an increase in motility. The various kola beverage syrups used as acid agents followed the same trend, but with an added depressant effect beyond that possible from acidity effect alone. Kola nut and coca leaf extracts when used, without acid, caused a marked inhibition of contraction rate with only a low per cent decrease in pH. When the extracts were used in acid solution, the resultant values of motility depression fell outside the range of the correlation curve. (Not plotted in Fig. 1). The contraction rate inhibition was found to be uniformly more marked and appeared earlier when the beverage syrups* were used as the acid agents. This consistent change may be the result of components present in the beverage syrups that have further depression effect on gut motility than that attributed to acidity alone. In the case of kola syrup, perhaps the extracts of kola nut and coca leaf are responsible.

* Beverage syrups include lemon, orange, gingerale, root beer, citrus and grape, as well as the kola varieties.
SUMMARY

1. The effects of hydrogen ion concentration variation in acid solutions and beverage syrups are demonstrated on rabbit gut smooth muscle in vitro with simultaneously recorded motility and in situ pH values.

2. The distribution of the data on a scatter diagram demonstrates the linear relationship indicative of positive correlation.

3. Our data confirm previous reports; within moderate range, acids inhibit and alkalis stimulate smooth muscle motility.

4. Hydrochloric acid solutions have a more marked effect than phosphoric acid solutions at the same pH.

5. Sodium bicarbonate and disodium phosphate have similar effects on muscle, i.e., stimulation of motility.

6. Kola beverage syrups have a depressant effect on muscle motility, and show greater depression than may be attributable to the acid content alone, indicating the possible presence of other depressing agents.

7. Stimulated beverage syrups, such as hydrochloric acid and sucrose, phosphoric acid and sucrose, depress the motility of the gut in proportion to their acidity. Non-kola beverage syrups have a lesser depressant effect than the kola syrups.

BIBLIOGRAPHY


A 57 year old white male mechanic was admitted to the University Hospital on April 4, 1950, because of weakness and numbness of his left leg of one weeks' duration. Constipation and difficulty in voiding appeared 2 to 3 days before admission. Acute urinary retention occurred 12 hours before arrival at the hospital. He stated that he had previously enjoyed good health. About 2 weeks prior to admission, he developed a mild cold which was characterized by a slight cough, productive of small amounts of white phlegm. He suffered an ache in the right ear from which pus drained. The patient was seen by his family physician who gave him 3 daily injections of penicillin. The purulent discharge decreased but did not cease.

One week before admission the patient noted sudden, tight, "girdle" pains and numbness of his left leg. Subsequently, he was aware of increasing weakness of his left leg, constipation, and increasing difficulty in voiding. There was no history of headache, vertigo, coma, paralysis, anaesthesia, or paraesthesia. Although this history was given readily, its accuracy is questioned because the patient's memory and intelligence were considered below normal.

The patient's habits were indulged in moderately. He drank 2 or 3 glasses of beer and smoked 20 cigarettes each day. His employment had been steady for 32 years. Six months before admission, he sustained a low back injury after which he limped.

On admission, he appeared chronically ill. There was no evidence of weight loss or acute distress. There was no rash, evidence of jaundice, petechiae, or dehydration. His temperature was 98.6 F.; pulse rate, 88 per minute; and respiratory rate, 18 per minute. His pupils were round, regular, equal, and reactive. The fundi were normal. The right eardrum was perforated. The auditory canal was filled with a thick, odorless, white exudate. There was no mastoid tenderness. The nose and sinuses were normal. The teeth were in poor repair. Slight pharyngeal injection was seen. The tonsils were considered normal. There was no venous distention in the neck. The trachea was in the midline. There was no tug. In the right submental region, there was a hard, painless, freely movable elliptical lymph node of about 4 cm. in length. The chest expanded well. The lungs resonated on percussion of the chest. The breath sounds were vesicular. There was no increase of retro-manubrial or cardiac dulness. The heart sounds were normal in rate, rhythm, and intensity. The systolic blood pressure was 150 mm. of mercury; the diastolic, 90. The abdomen was flat, symmetrical, and relaxed without tenderness. No organs or masses were palpable. The genitalia were normal. The anal sphincter tone was fair. There were no hemorrhoids. The prostate gland was moderately enlarged, soft in consistency, and free of maseses. Feces on the examining finger were normal in appearance. There was no dependent edema. Pulses in the feet were good. There was no bony tenderness.

A consultant in neurology found the patient to be alert and cooperative. Hearing was impaired in both ears, but the impairment was greater on the right side. There
was complete anesthesia on the left side below the 10th thoracic segmental level. The right leg and both upper extremities were normal. Motor power was intact except in the left lower extremity which was weakened to such an extent that the patient could barely lift his heel from the bed. The deep tendon reflexes were hyperactive and equal in both upper and lower extremities. There was no pathologic reflexes.

On admission the blood hemoglobin concentration was found to be 90 per cent. This fell in 1 month to 70 per cent. Moderate leucocytosis was identified. Blood sugar, urea nitrogen, albumin, globulin, direct and indirect bilirubin, calcium, and phosphorus were determined to exist in normal concentrations. Thymol turbidity was reported to be .94 units; blood alkaline phosphatase, .6 units; and blood acid phosphatase, .65 units. The plasma chlorides and carbon dioxide combining power of the serum was normal. Sputum specimens and gastric washings were studied for Mycobacterium tuberculosis, but none was found. Blood cultures were sterile. Cultures of material from the ear grew E. coli and staphylococcus; from the sputum, Diplococcus pneumonia and Streptococcus viridans. Heterophile and cold agglutinins were not demonstrated. A catheterized urine specimen contained 10 white blood cells and innumerable red blood cells. Absolute bed rest was ordered. A lumbar puncture was not attempted.

A roentgenogram of the chest showed an area of increased density, measuring 3 cm. in diameter, lying behind the right fifth rib near the periphery of the lung field (Fig. 1). It appeared rarefied in its superior portion. There was pleural thickening in the region of the right lateral thorax and the right interlobar fissure. The dorsal and lumbar vertebral bodies were normal. An area of rarefaction, 1 cm. in diameter, was seen in the left ileum (Fig. 2). At the junction of the inferior ramus of each ischium with the acetabula, there was an ill-defined area of decreased density. This was most marked on the right side. On April 5 definite weakness of the right lower extremity was noticed. The left remained about the same.

An examination on April 6 revealed bilateral hyperesthesia at the level of the tenth thoracic segment. There was no spinal tenderness. There was almost complete anesthesia on both sides below the thoracic level. There was no muscle power of either lower extremity or the abdominal muscles below the umbilicus. There was loss of autonomic control. The reflexes were equally active in the upper extremities, very sluggish in the left lower extremity, and absent in the right. There was bilateral plantar extension and flexor withdrawal movements.

Because of the progression of this illness, a laminectomy was performed. At operation a definite lesion was not found. The operator felt that neither the bone nor the epidural fat in the exposed area appeared normal. Biopsies of both were taken. Subsequent microscopic examination found the bone and adipose tissue to be normal. The spinal cord in the area of the laminectomy appeared white and lifeless. The overlying vessels were sclerotic. A catheter was easily passed up and down over a distance of about 6 cm. Following laminectomy, there was no improvement of the motor and sensory impairment.

A neurologic examination on April 10 revealed evidence of progression of neurologic disease. At that time, in addition to complete paraplegia and anaesthesia, there
was definite weakness and awkwardness of the upper extremities and hypoactive reflexes. Speech was slurred, and there was some difficulty in swallowing food and liquid. The tongue protruded in the midline, the gag reflex was active, and the uvula elevated normally. Direct laryngoscopy showed approximation of the vocal cords to the right of the midline.

A lumbar puncture on April 13 revealed xanthochromic spinal fluid. The intraspinal pressure was normal. One hundred erythrocytes and twenty-five leucocytes were found in each cubic millimeter of spinal fluid. The protein concentration was 158 mgm. per 100 cubic centimeters.

Over the next 2 weeks, the patient's course was marked by increasing drowsiness and stupor. His upper extremities finally became completely paretic. During this period he was given penicillin and parenteral fluids. Terminally, he developed fever, leukocytosis, and irregular respiration with many moist rales in the chest. He expired quietly on May 4, 1950.

**CLINICAL DISCUSSION**

*Dr. M. C. Pincoffs:* If this patient had complained of only weakness and numbness of his left leg, one might have thought of injuries involving the nerves of the leg, but the onset of constipation, difficulty in voiding, and acute urinary retention indicate something involving more than the peripheral nerves or the nerve roots.

The question is whether this infection of the respiratory tract involving the middle ear was a coincidence or was related to the appearance within a week or two of damage to the nervous system. We know that the running ear was treated with penicillin. The majority of infections of the middle ear are by gram-positive cocci. This makes one suspect that there was involvement of the mastoid cells. Such an infection would not respond so readily to treatment. One inquires as to the things which link acute upper respiratory infections with the central nervous system. You recall that a few cases of meningitis are preceded by acute respiratory infections. The meningococcus may be cultured from a nasal discharge in a case of meningitis. Remember that brain abscesses not infrequently are accompanied by a middle ear involvement. This obviously is not brain abscess. I remember that on a number of occasions we have seen in this hospital staphylococcal infections followed by an abscess in the epidural space outside the dural covering of the spine. Such a mass may press on the spinal cord and produce either a paraplegia or a hemiplegia. The first case of this condition diagnosed and surgically treated in this country was reported from the University Hospital, University of Maryland. We have subsequently had a special interest in extra-dural abscess of the vertebral column. As a result, we have a rather large series of cases recorded in this hospital.

There is one point in the "review of systems" to which I call attention. It says there that there was no bone pain or tenderness. You note above, that so far as the legs are concerned, there is surprisingly little said about pain in the leg that became numb and weak. It was noted, however, that the patient had some girdle-like pain around his midsection. These findings urge a consideration of an epidural abscess. Epidural abscess is characterized usually by severe pains elicited by pressing
on the nerve roots. There is usually a history of stiff back or pain on moving the back. Often there is pain on coughing. The admitted total absence of pain is against that diagnosis.

It is difficult to describe a tactile impression so one cannot fully appreciate the adjective "hard" which modifies the submental lymph node. The node was obviously not a soft mushy one. It was probably of cartilaginous hardness which you note in the glands of Hodgkin's disease or leukemia. There is a degree of hardness which, in my experience, is always connected with either calcified glands or ones packed with carcinoma. Not every carcinomatous gland has that hardness; but when you feel a certain consistency, you can be fairly sure that it is carcinoma. I do not get that impression from this description. I cannot recall a special reason for a single very hard gland in that region. There was enlargement of other glands in the cervical chain. It is the non-specificity of the results of this physical examination and the positive roentgen examination that lead some men to think that all that is needed is the roentgenograph. This is as ridiculous as saying that all you need is a physical examination. You need both. Here is confirmation of that fact.

It is interesting to note that there was no disturbance in sphincter tone, even though the patient was developing a paraplegia. One might expect either hardening, a tighter tone, or complete relaxation. In an older man, one of the most common carcinomas is of the prostate gland. This malignancy has a tendency to metastasize to the bones of the spine and result in partial collapse of a vertebra and pressure on the spinal cord. This often results in paralysis. Therefore, one would want particularly to feel the prostate. In this case, it showed no evidence of malignancy. Even so, malignancy of this gland cannot be dismissed. Over and over again you will hear of enlarged prostates that felt benign, and were classed as benign. Later, bone metastases appeared. In such an event, if the specimen is carefully recut, a small area of carcinoma will be found. Never feel sure, if prostatic malignancy is to be eliminated on palpation alone.

This patient had a sensory loss and motor paralysis of approximately the same extent on the same side. If he had had a motor weakness on one side and sensory impairment on the other, hemisection by pressure would be considered. There was no evidence of an upper motor neuron lesion affecting the left.

In a month's time this patient's hemoglobin fell from 98 to 70 per cent. His blood calcium and phosphorus concentrations were normal. Neither his alkaline phosphatase nor his acid phosphatase was elevated. These are raised in any destructive primary lesion of bone and in cancer of the prostate with bony metastasis.

Note that the sputum cultures were positive for diphtheria. You know that in the Pacific and other parts of the world, some cases of diphtheria do not have just pharyngeal paralysis, but also develop paralysis in the extremities. Failure to perform a lumbar puncture suggests that diphtheritic myelitis was not implicated. We note that they later changed their minds.

Dr. Walter L. Kilby: This first film of the chest was made at the time of the patient's admission. One can see that his lung is quite emphysematous. There is pleural thickening at the apex. There are two lines representing the interlobar
pleura of the upper and middle lobes. There is a triangular area of infiltration in the hilum. Just what this means I do not know. It may be fibrosis from some previous pulmonary infection. We are always concerned with these infiltrations in the hilum because they might be indicative of early primary bronchogenic carcinoma. The very small insignificant-appearing lesions in lungs may turn out to be early carcinoma of the lung with widespread metastases. It does not appear to be a consolidating lesion spreading out from the hilum. In this right 5th rib, there is a small, round, poorly circumscribed area of infiltration. In the center, there appears to be a small area of rarefaction. I thought it was a lung abscess. This area of infiltration by the 5th rib was still visible one week later. Films of the dorsal spine, the lumbar spine, and the pelvis failed to show erosion or rarefaction. There is calcification of the abdominal aorta.

In the pelvis there were several indefinite areas of calcification. Note the small area of rarefaction in the ischi um near the attachment to the acetabulum. This does not necessarily mean a metastatic lesion, but it certainly seems to be worth consideration. The trabeculae are not very prominent. These roentgenographic findings are compatible with bronchogenic carcinoma.

Dr. M. C. Pincoffs: In the face of signs suggesting a lesion pressing on the spinal cord, it was obviously reasonable to do a laminectomy. However, at operation, nothing was found except a cord that appeared white and lifeless. The underlying vessels were sclerotic. Something had transected the cord. The operator was able to pass a catheter up and down over a distance of about 6 cm. The vessels were sclerotic. How often does one get a transection of the cord by a thrombus? Thrombosis may be predisposed by arteriosclerosis, but not commonly. In vascular syphilis of the spinal cord, paraplegic lesions may develop. In this case a serologic test for syphilis was not recorded.

Without much pain, this man had developed anesthesia of one leg and then the other. Within a week or so, he had trouble in his arm. After that he became stuporous and comatose. He had no fever, no increased cell count in his spinal fluid, no pain, or muscle spasm. It seems to me that all the usual things—virus infections and whatnot—are all unlikely. Infectious polynévritis, supposedly of virus origin, though it usually does not cause complete paraplegia, might resemble the disease this patient had.

What evidence is there against carcinoma as the diagnosis in this case? There is no overwhelming evidence against it. There is a hard node in the neck, there are suspicious lesions in the pulmonary hilum, and there are radiolucent areas of bones that could indicate metastases. Bronchogenic is the type of carcinoma that has the greatest tendency to metastasize to the central nervous system. One in 10 or 15 cases of bronchogenic carcinomas may metastasize to the central nervous system. Certainly, this malignancy metastasizes more commonly to the brain than to the cord. As a matter of fact, metastasis of carcinoma to the cord is very rare. The absence of pain suggests that the lesion is inside the cord and not outside pressing on the cord. I have seen just one such carcinoma in my lifetime. The rarity of such a condition is against the diagnosis of bronchogenic carcinoma, with metastasis in the spinal cord.
Hypernephroma is a type of tumor that produces this kind of metastasis in the lung. It sometimes metastasizes to the central nervous system. I believe that carcinoma with metastasis is a diagnosis which is feebly supported by the observations in this case. I think it more reasonable to conclude that this patient’s illness was caused by an ascending myelitis. I am inclined to put carcinoma with metastases to the spine in second place.

*Senior Student:* Is the serologic test for syphilis still unknown?

*Dr. H. R. Spencer:* That is still unknown.

**PATHOLOGIC FINDINGS**

*Dr. H. R. Spencer:* This was the body of a fairly well developed, poorly nourished, 56 year old white male. There was moderate atrophy of the musculature of the lower extremities. Decubiti were seen on both hips, heels, lateral surfaces of the ankles, elbows, scapular areas, and over the sacrum. A firm lymph node was palpated in the anterior part of the posterior triangle on the right side of the neck. There was a healed surgical wound in the midline of the back over the lower dorsal vertebrae.

The abdominal viscera appeared normal in size and position.

The pleural sacs contained no excess free fluid. The right lung was bound to the parietal pleura by numerous dense fibrous adhesions. The pleura of the left lung was smooth and glistening. Sectioning of the right lung revealed a firm yellowish-white tumor mass in the lower main bronchus, the mass measuring about 3 cm. in diameter. It partially obstructed the bronchus. A small abscess was seen in the right lower lobe. The left lung appeared normal.

Except for slight sclerosis of the coronary arteries, the heart was normal. No unusual changes were noted in the liver, the gastrointestinal tract, or spleen. The kidneys were normal in size. Each was studded with tumor nodules. A yellowish white tumor nodule was seen in the left adrenal. The periaortic lymph nodes in the lumbar area were enlarged and invaded by tumor. A metastatic lesion was seen in the body of the third lumbar vertebrae.

Small tumor nodules were scattered through the white and grey matter of the cerebellar hemispheres, in the cerebrum, and in the brain stem. The lumbar portion of the spinal cord was removed. Sections revealed a small tumor mass occupying the center of the spinal cord. The lesion occupied about 75 per cent of the cross section area of the cord for a distance of about 1.5 cm. Sections of the primary tumor in the lung and from the metastases showed a poorly differentiated adenocarcinoma.

This case is an example of the tendency of bronchogenic carcinoma to metastasize to the central nervous system, particularly the brain, adrenals, and bone. It also shows that numerous metastases may occur in cases where the primary tumor is small.

**ANATOMIC DIAGNOSIS**

*Bronchogenic carcinoma, lower main bronchus, right, with metastases to regional nodes, periaortic nodes, spinal cord, brain, adrenal, kidneys and spine.*
OBSTETRICAL CASE REPORT

From the Department of Obstetrics, School of Medicine University of Maryland

M. S., a 26 year old, para 1-0-0-1, reported for care early in her second pregnancy. The only significant fact obtained in her past history was that during the first pregnancy, 5 years previous, it was noted that the blood pressure was moderately but persistently elevated, averaging about 136 mm. mercury systolic and 90 mm. mercury diastolic. There was no increase in blood pressure during the last trimester of the pregnancy. The urine on one occasion showed a small amount of albumin. The eye grounds were normal. The blood chemistry was essentially normal. Labor occurred spontaneously at term and was uncomplicated. Postpartum, there was no change in the blood pressure.

Following this pregnancy, she was under the care of an internist who reported a slight increase in the blood pressure, but no other signs or symptoms of disease except for an occasional mild albuminuria. When first seen in this her second pregnancy, five years later, the pressure was 140 mm. mercury systolic and 96 mm. mercury diastolic, the physical examination being otherwise negative. She was observed rather closely throughout her pregnancy and followed the anticipated course in that there was a mid-pregnancy drop in blood pressure, followed by a rise in the latter weeks to a point slightly above earlier readings (146/100) with a definite albuminuria on 3 occasions. Again, labor, delivery, and puerperium were without incident; and again the postpartum blood pressure did not fall to any appreciable extent. Except for occasional albuminuria, all laboratory examinations were negative, but the eye grounds showed evidence of beginning arteriolar changes. When seen 6 weeks postpartum, the blood pressure was still 146 mm. mercury systolic and 100 mm. mercury diastolic. There was a trace of albumin in the urine.

Question: What advice should be given this patient about subsequent pregnancies?

Discussion: It would appear that this is a case of hypertensive disease with early vessel changes and a minimum of kidney involvement. With advancing years there is usually a slow but definite worsening of the condition, and her life expectancy is probably less than normal. There have been 2 pregnancies without any discernable effect upon the disease either during pregnancy or later. On this basis one might be inclined to say that in this case the hypertensive disease was not adversely affected by pregnancy and that further pregnancies would cause no more damage. On the other hand, several recent long range studies upon groups of such patients would indicate that with continuing pregnancies, only half as many are alive after 10 years as compared to those in whom pregnancy did not occur. With this in mind, it would probably be good preventive medicine to advise against future pregnancies.

Much work has been done looking toward a reduction in immediate maternal mortality, and the results have been most gratifying, so much so that it would appear that we have now arrived at a point where we might expand our efforts and think of the long range effect of various conditions upon the life of the mother. A condition in which pregnancy affects longevity as greatly as hypertensive, arteriolar sclerotic disease appears to be affected certainly deserves serious consideration.
BOOK REVIEWS


The problems of industrial ophthalmology, with their many ramifications, are becoming more and more intricate and demand more attention as time goes on. The whole question is posed and answered very adequately in this concise and useful volume. The relationship between ophthalmology and industry and the results consequent upon this relation are skillfully presented. A dual result is produced: one is economic in nature, since maximal visual acuity of any given employee, irrespective of his particular job, is essential if industrial efficiency and maximal output are to be maintained. The second result is a program designed to correct as many visual hazards as possible and decrease to a minimum ocular injury, whatever the etiological factor may be.

Such a dual effect is brought about only after a tremendous effort is expended conjointly by industrialists and ophthalmologists. The latter alone do not formulate the entire program but act more in a consultative capacity.

The author shows the vital necessity of an industrial ophthalmologist in becoming not adequately, but perfectly, acquainted with all the industrial methods and problems in any given plant. It is essential that he have a working knowledge of all types of work in the plant, and what maximal visual acuity is necessary for any given employee. Conversely, industrialists should be taught the fundamentals of eye care, hazards and their prevention, protective measures, and above all, the visual adaptability of any given employee for his particular job. Employees not meeting the visual requirements for their jobs should be changed to other jobs with as much expediency as possible.

Constant emphasis is placed upon the importance of the eye consultant being a "visual engineer"; at the outset, he is to make a thorough tour of the plant, noting each branch of the plant, its methods, and the visual acuity of each employee at his job. Master charts are then made, along with a thorough analysis of the visual program to be formulated. Protective devices, illumination, possible hazards,—are all noted. The author then proceeds to the way in which a visual program is laid out.

The sections on eye corrective programs, methods of screening and testing of visual acuity of all employees, are carefully written, and much time is expended in the construction of these chapters.

There is an excellent section on the medical and surgical care of industrial eye diseases, the reading of which will prove very valuable not only to the industrial ophthalmologist, but to the general practitioner of ophthalmology.

The entire book is clearly and concisely written, with more emphasis on some aspects of the problem being given than on others, but achieving an over-all balance that intimates a full knowledge of the subject on the author's part, as well as a broad personal experience with industrial eye diseases.

*John C. Ozaczewski, M.D.*


The author has made a valuable contribution to all who are interested in the functioning of the eye and in the visual process. Although, as the title indicates, clinical applications of the fundamental phenomena are made, the major emphasis is upon the relations between anatomic structure and function. The book is elegantly illustrated in both the anatomic and physiologic aspects.

This reviewer is particularly impressed by the excellent treatment of the basic physiology of circulation of the blood, the anatomy and physiology of muscle, the nervous centers and pathways for voluntary movements and reflex activity, and electrical phenomena in nerves. From the fundamentals, Dr. Adler then proceeds to the development of the special and clinical aspects of each function in its relation to vision.

Without slighting the modern theories, the author in most cases, has adopted a judicious and unbiased treatment, emphasizing those concepts which have been most tested. This attitude is well illustrated in his brief but coherent treatment of color vision.
The range of the physiology of vision has become so broad that one is pleasantly surprised to encounter a single volume text which covers this field so completely and clearly.

R. H. Oster, Ph.D.

**Principles and Practice of Surgery.** Jacob K. Berman, Associate Professor of Surgery, Indiana University, School of Medicine; Associate Professor of Oral Surgery, Indiana University, School of Dentistry. 1378 pages; C. V. Mosby Co., St. Louis, 1950. Price $15.00.

This newest textbook of surgery was written primarily to correlate the basic sciences and the fundamental principles of surgery. The first four parts are devoted to the general concepts of the reaction of the body to injury and includes many valuable charts and tables to supplement the text. The chapters on the interchange of body fluids and acid-base balance are to be highly recommended.

The fifth part is devoted to the diseases and injuries of specific organs and systems and constitutes the major portion of the text. The author has emphasized the newer concepts of surgery and the newer operative procedures sometimes at the expense of the older and more acceptable procedures of surgery. The section on “Diseases of the Alimentary System” brings into one place the major disorders of man’s digestive tract; but at times, the more common afflictions of the intestinal tube are described briefly while a rather rare but more interesting disease is described at length.

Following the modern trend, fractures are discussed very briefly, that the portions of this text devoted to the healing of bone and to diseases of the bones are excellent.

This text book has in one volume condensed a vast amount of knowledge of pathologic physiology and biochemistry pertaining to the surgical patient not collected in any one text book before. It is an excellent text for the experienced surgeon.

E. Roderick Shipley, M.D.


This is an excellent source of information on pathologic conditions affecting the shoulder and the more frequently seen entities responsible for shoulder dysfunction. The author introduces his subject by chapters on the comparative and normal anatomy of the pectoral girdle. The abnormalities and diseases of the shoulder are then clearly and orderly presented in nine chapters followed by a discussion of the surgical approaches and procedures involved in this area.

This book is outstanding in its wealth of photographs and drawings which supplement the text. The author has presented with the text and illustrations many studies on individuals who were examined during life and at autopsy.

The shoulder is one of the rare medical texts that combines excellent organization and writing with superb manufacture.

E. Roderick Shipley, M.D.


The purpose of this volume is to bridge the gap between physiology and clinical medicine, a goal which it achieves in admirable fashion. Dr. Sodeman has gathered a group of 25 contributors each of whom is a recognized authority in the field of endeavor which he covers. The book is by no means intended as a substitute for the usual textbook of medicine since it does not deal in a systematic manner with etiology, symptoms and treatment. On the other hand, it attempts, to discuss diseases of each organ system in terms of disturbed physiology. The modern teacher of clinical medicine recognizes that this approach is the most successful one toward achieving a true understanding of disease entities. The material covered in each section is voluminous; the concepts presented are quite current. Probably because of spare limitations, the compression of complex data in as short a space as possible produces a telegraphic style which must be reviewed several times to become intelligible. Each section, however, is followed by a selected bibliography which permits the interested reader to pursue the subject in greater detail. The book can be heartily recommended as supplementary reading for the senior medical student, the house officer, and the practicing physician. The publishers, as usual, have prepared an extremely attractive format.

Milton S. Sacks, M.D.
In the period from November 1, 1950 to February 1, 1951, the following individuals made gifts of books and journals to the library:

- Mr. Leonard Flax
- Dr. H. S. Rubinstein
- Dr. Arthur M. Kraut
- Dr. Frank W. Hachtel
- Dr. Maurice C. Pincoffs
- Dr. A. F. Thompson, Jr.
- Dr. John E. Savage
- Dr. Margaret Ballard
- Dr. H. Boyd Wylie
- Dr. Donald E. Fisher

One alumnus has made an excellent suggestion and a generous offer. He knows that additional copies of much used texts are always needed in the library to meet students’ demands. Hence, he has asked for a list of texts needed in duplicate, so that he may furnish some of the additional copies as a gift. This is a fine and practical offer which will be appreciated by both students and library staff.

The library has been fortunate in procuring a copy of the medical dissertation of John Beale Davidge, 1768–1829, important figure in the early history of the School of Medicine and University of Maryland. This thesis is dedicated to Drs. James and William Murray of Annapolis, with whom Davidge began the study of medicine before going to Edinburgh to continue his education. In accordance with the classical tradition, the work is written in Latin and bears the following title-page:

Dissertation physiologica, 
de 
Causis Catameniorum. 
Auctore 
Joanne Beale Davidge, M.A.M.D. 
...
Birminghamiae, 
Ex Officina T. Pearson. 
-----------
MDCCXCIV

In February, 1951, the Maryland Historical Society borrowed the Medical Library’s portrait of Dr. Nathaniel Potter by St. Memin to be included in an exhibit of St. Memin’s work. The display of this eminent artist’s productions continued for about two months. The portrait, owned by the Medical Library, is well known, having been photographed years ago by the Frick Museum in New York for display there.

DRS. CATTELL AND CLUXTON TO HEAD LUTHERAN HOSPITAL SYMPOSIUM

Dr. Richard Cattell of the Lahey Clinic, speaking on the subject of “Thyroid Surgery”, will head the program of the annual Medical and Surgical Symposium to be held at the Lutheran Hospital on May 5, 1951, under the auspices of the
Medical Association of the Lutheran Hospital of Maryland. Dr. Harley Cluxton, head of the Research Division, Armour and Company, will speak on “Recent Developments in the Clinical Application of ACTH”.

While the program is as yet incomplete, other distinguished speakers include Dr. Richard P. Custer, Pathologist at the Presbyterian Hospital, Philadelphia. Dr. Custer will speak on “Certain Aspects of Leukemia and Hodgkin’s Disease”.

The organization of this annual Symposium is under the direction of Dr. Pierson M. Checket. All interested physicians are cordially invited. Details of the program may be secured through the Administrative Office of the Lutheran Hospital.

PROGRESS NOTE II

View of extent of construction of the new Psychiatric Building as of February 1, 1951

DEPARTMENT OF PHYSIOLOGY

Dr. William R. Amberson has recently received a grant of $6973.56 from the U. S. Public Health Service to continue his studies on the physico-chemical architecture of muscle cells.

Dr. John I. White has been appointed Research Fellow in Physiology.

Dr. William Amberson, Professor of Physiology and Miss Sylvia Himmelfarb attended the 18th International Physiological Congress in Copenhagen in August, 1950. Dr. Amberson presented to the Congress a paper entitled “Complex Formation in Protein Solutions Obtained by Mild Extraction of Skeletal Muscle”. After the Congress, Dr. Amberson visited various English and continental universities, lecturing on his research work concerning muscle proteins.

During the summer, Dr. D. C. Smith continued his study of the fish thyroid at the Lerner Marine Laboratory, Bimini, Bahamas.

Dr. D. C. Smith, Dr. Frederick Ferguson, and Dr. J. Mc. Turner gave a series of lectures in the fall of 1950, at the Fort Howard Veterans Hospital on the physiology of digestion, circulation, and the kidney.

Dr. D. C. Smith has received a grant of $450 from the American Philosophical Society to support his work on the physiology of the fish thyroid.
MERCY HOSPITAL

The Dental Department of Mercy Hospital has recently been approved by the American Dental Association for Resident training in Dentistry.


Dr. Charles E. Brambel, Chief of the Biochemistry Department at Mercy Hospital, was elected Chairman of the Maryland Section of the American Chemical Society for 1951. Dr. Brambel attended the Josiah Macy Junior Foundation Conference on Blood Clotting and Allied Problems, on January 22 and 23, at the Beekman Hotel, New York City. This is the fourth conference Dr. Brambel has attended.

Dr. Alyn F. Judd, Assistant Resident Physician at Mercy Hospital, left the hospital November 21, 1950, for service at Tinker Air Force Base, Oklahoma City, Oklahoma.

Dr. John A. Spittel, Jr., Assistant Resident Physician at Mercy Hospital, left the hospital November 4, 1950, for service at Sheppard Army Air Force Base, Wichita Falls, Texas.

Dr. Frank J. Theuerkauf, Jr., Junior Assistant Resident Surgeon at Mercy Hospital reported February 3, 1951, to Fort Sam Houston, Texas to serve in the U. S. Army.

Dr. A. Maynard Bacon, Pediatrician on the Mercy Hospital Visiting Staff, reported February 14, 1951 to Bolling Field, Washington, D. C. for service in the Army Air Force, as Captain.

Recently Appointed Hospital Visiting Staff Members:

Dr. Frank J. Ayd, Jr.  Dr. Edward L. Suarez-Murias
Dr. Harold P. Biehl  Dr. John F. Ullsperger
Dr. Arthur L. Davenport  Dr. Lawrence R. Wharton
Dr. Anthony F. DiPaula  Dr. Samuel F. Wolf
Dr. Burton V. Lock  Dr. John D. Young, Jr.
Dr. Walter K. Spelsberg

Recently Appointed Mercy Hospital Resident Staff—July 1, 1951, to June 30, 1952.
(incomplete list)

Surgery:

Karl A. Dillinger, M.D. ........................................ Resident in Surgery
Clyde D. Thomas, M.D. ........................................ Associate Resident in Surgery
Margaret L. Sherrard, M.D. .................................... Senior Assistant Resident Surgeon
Leonard G. Hamberry, M.D. ................................... Junior Assistant Resident Surgeon
William B. Rever, M.D. ........................................ Junior Assistant Resident Surgeon
Sim Penton, M.D. ................................................. Resident in Thoracic Surgery*
Pomeroy Nichols, Jr., M.D. ..................................... Junior Resident in Neurosurgery
(July 1, 1951 to January 31, 1952)
George W. Smith, M.D. ........................................ Senior Resident in Neurosurgery
(February 1, 1952 through June 30, 1952)

* Resident at Mercy, City and University Hospitals. Consult Dr. Brantigan regarding appointment date.
DEPARTMENT OF PEDIATRICS

The Pediatric Department has shared with the Department of Gynecology $5,000 from the Bressler Research Fund for several research problems relating to endocrinology.

Current research problems include:
1. The effect of B-12 on growth and development of normal infants.
2. The effect of B-12 on the growth and development of premature infants and its effect on the hemogram.
3. Identification of carcinoma of the gastrointestinal tract by cytological diagnosis.
4. The comparison of fetal and maternal diphtheria antitoxin levels.
5. Continued work on lead poisoning with particular emphasis on the significance of coprophyrin iii excretion.

The Cardiac Clinic in the Pediatric Department has been approved by the American Heart Association. The Cardiac Clinic is under the direction of Dr. Sidney Scherlis with Dr. Gibson Wells as Associate Director, and working in the Clinic at regular intervals is Dr. Mary Hayleck.

DEPARTMENT OF ROENTGENOLOGY

Dr. Robert E. Cato, Resident in Roentgenology, was called to active duty October 6, 1950 by the Navy Department, and is now on duty at the U. S. Naval Hospital, Philadelphia, Pennsylvania.

Dr. James F. Dougherty, Jr., Assistant Resident in Roentgenology, was called to active duty with the U. S. Navy October 21, 1950 and is now stationed at the U. S. Army Hospital, Camp Cooke, California.

Dr. John Brackin, Jr., Director of the Department of Roentgenology in the U. S. Veterans Hospital, Fort Howard, Maryland, has recently been appointed to the faculty of the School of Medicine as Instructor in Roentgenology.

Dr. Joseph C. Furnari, class of 1942, has been appointed Fellow in Roentgenology.

EASTERN CONFERENCE OF RADIOLOGISTS

The Eastern Conference of Radiologists met at the Lord Baltimore Hotel on March 8th, 9th and 10th. The following papers were given by members of the faculty of the School of Medicine.

"Pelvimetry as Related to the Mid Planes", Dr. D. Frank Kaltreider
"Discussion of Unusual Thoracic Surgical Patients", Dr. Otto C. Brantigan
"Tuberculous Peritonitis", Dr. John Brackin, Jr.
Mr. Tucker Retires

After completing thirty years of service Mr. John Tucker, Purchasing Agent, retired on February 1, 1951.

FACULTY NOTES

Dr. Robert E. Bauer, Instructor in Medicine, has begun organization of a long term project dealing with the behavior of body fluids and effusions, the study being conducted through the medium of radioactive phosphorous and iodine. The program is under the sponsorship of the Atomic Energy Committee through a grant in aid.

Dr. Eduard Uhlenhuth, Professor of Anatomy, was a recent guest speaker at the Urological Post Graduate Seminar sponsored by the American Urological Association held at the University of Texas, Dallas, Texas from January 29th to February 2nd, 1951. Dr. Uhlenhuth spoke on "The Anatomy of the Genito Urinary System and Congenital Anomalies of the Genito Urinary System."

Dr. Jacob E. Finesinger, Professor of Psychiatry, was recently guest speaker at a seminar of personnel attached to the Army Chemical Corps Medical Division at Edgewood, Maryland. Dr. Finesinger spoke on "Talking to People". Dr. Finesinger is principal investigator for the Chemical Corps on the psychiatric and psychologic aspect of chemical warfare.

Dr. Otto Charles Glaser, Professor Emeritus of Zoology at Amherst College, died at Northampton, Massachusetts, on February 8, 1951. Dr. Glaser will be remembered by alumni of the College of Physicians and Surgeons where he was a member of the Faculty about 1905.

NEW CLASSIFICATION OF CERVICAL CARCINOMA

As the result of a long study by numerous professional committees, the following standard Classification of Carcinoma of the Cervix was adopted on the occasion of the International and Fourth Congress on Obstetrics and Gynecology, the classification superseding that of the health Organization of the League of Nations in 1937.

The Classification is published herewith for your information.

Stage 0
Carcinoma in situ—also known as preinvasive carcinoma, intraepithelial carcinoma, and similar conditions.
Stage I
The carcinoma is strictly confined to the cervix.

Stage II
The carcinoma extends beyond the cervix but has not reached the pelvic wall. The carcinoma involves the vagina but not the lower third.

Stage III
The carcinoma has reached the pelvic wall. (On rectal examination no "cancer-free" space is found between the tumor and the pelvic wall.)
The carcinoma involves the lower third of the vagina.

Stage IV
The carcinoma involves the bladder or the rectum, or both, or has extended beyond the limits previously described.

Charles and George

To the many medical students, visitors, attending physicians and House Staff who have passed through the University Hospital during the past thirty years, Charles and George, the two uniformed porters, became almost legendary figures through their exemplification of gentle courtesy, willingness and politeness. Always ready to offer a cheerful greeting, their long tenure and the friendly spirit they created placed them well at the top of the hospital family.

Charles Newman became associated with the University Hospital in 1911 and George Fossett in 1924.

On December 4, 1950, George was admitted to the Accident Room in coma, dying shortly therafter of a cerebral hemorrhage. Charles was admitted to the Hospital the same morning with acute heart failure, dying on December 21st.

Two familiar and loyal figures for over a quarter century have thus passed. They will be missed by their many friends among the staffs of the University and the hospital.

Academic Calendar, 1951

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
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<tr>
<td>May 21</td>
<td>Monday</td>
<td>Junior examinations begin</td>
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<tr>
<td>May 28</td>
<td>Monday</td>
<td>Junior examinations continue</td>
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<td></td>
<td>Sophomore and Freshman examinations begin</td>
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<tr>
<td>May 30</td>
<td>Wednesday</td>
<td>Holiday—Memorial Day</td>
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<td>June 2</td>
<td>Saturday</td>
<td>Announcement of graduates</td>
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<td>June 7</td>
<td>Thursday</td>
<td>Alumni Day</td>
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<tr>
<td>June 8</td>
<td>Friday</td>
<td>Pre-commencement exercises</td>
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<tr>
<td>June 9</td>
<td>Saturday</td>
<td>Commencement</td>
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POST-GRADUATE COMMITTEE SECTION

POST GRADUATE COMMITTEE, SCHOOL OF MEDICINE
Howard M. Bubert, M.D., Chairman and Director
Elizabeth Carroll, Executive Secretary
Post Graduate Office: Room 600
29 South Greene Street
Baltimore 1, Maryland

DO WE NEED TO TRAIN MORE PHYSICIANS?

PAGE C. JETT, M.D., Chairman
Committee on Rural Medicine
Medical and Chirurgical Faculty of Maryland

Doctors seem to be the only people who are not convinced that we need to train more physicians. Most students of medical care have felt that the most vulnerable point in the present system of medicine is the failure of the medical profession to anticipate and fill the ever-increasing demand for physicians. Dr. Lowell Reed of Baltimore, Chairman of the Surgeon-General's Committee for Medical Education, states, "Out of this experience, I believe that we need a sizable increase in the number of doctors in order to carry on medicine in the framework of private enterprise which we hope to maintain."

Physicians have argued that their income structure and limited hospital facilities will not support any more physicians, that the problem is only one of distribution from urban to rural communities and, further, that the efficiency of doctors has been multiplied by advances in medicine, transportation, and hospital services.

This conclusion would seem to be refuted by the fact that the 79 medical schools in this country are training the same number of physicians they did in 1905 despite the tremendous growth in population, the increased demands of the armed services, the U.S. Public Health Service, the Veterans Administration, and research. In addition, a higher percentage of physicians are entering specialties, thus further reducing the ranks of the general practitioner to such an extent that there is scarcely a community in the United States which is not asking for more. Thus, the problem becomes one of supplying this need; however, this is rendered more difficult by the difference in the fees of the general practitioner and the specialist, a subject which will not be discussed here.

It is felt that a better qualified general practitioner can be produced if we follow this plan. First, every medical school would realize an obligation to the surrounding community, hospitals, and physicians, and organize within its geographical and traffic area, a center with a regional hospital plan, embracing all rural hospitals within such an area. The relationship between the medical school and the area would be a benevolent type of advisory service supplying postgraduate education, rotating interns through rural hospitals, and, in unusual cases, serving to take the responsibility from the general practitioner and at the same time using these cases for teaching purposes in the center.
The general practitioner today receives one year of intern training. For this reason, one of the great deterrents to men entering rural general practice is the fear of having to meet serious medical emergencies without aid of consultation. Secondly, it is suggested that the medical schools set up a two-year residency in general practice so that the name of the general practitioner might be dignified by adequate training and so that hospital affiliation with the "center" institution, the first year to be spent in a general rotating internship and the second year to be divided between a regional hospital and the "center's" out-patient department.

When the deans of the medical schools were approached as to the means of increasing the number of doctors, they stated that a 15 per cent increase in physicians is being planned at the present time. This would supply 750 doctors. Their feeling was that they could not expand without materially impairing the quality of the graduate. Further, they felt that there are certain areas of the United States which are without a medical school, and with the increasing state medical licensure barriers that are being erected, each state, in all probability, would be forced to have its own medical school. The cost of increasing the number of medical students to an adequate figure has been estimated at approximately forty million dollars a year. There is no source at this time with the exception of tax-supplied funds, which could possibly meet this need; and the present Congressional bill for Federal support of medical education, with its provision for creating a professional advisory council, would be a safeguard from political interference in the management of our medical schools.

In reviewing the Hippocratic Oath, the following is pertinent: "To reckon him who taught me this art equally dear to me as my parents; to share my substance with him and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this art, if they shall wish to learn it, without fee or stipulation . . . ."

Therefore, it is suggested that each physician, as he comes to his twentieth anniversary, make a pledge to his alma mater of at least one thousand dollars to be paid over a five-year period. In doing this, he would be fulfilling his Hippocratic obligation and accomplishing something to solve the needs of current medical education. Thereby he shows that he is cognizant of the problem and means to do something about it.

INDUSTRIAL MEDICINE

The November 14, 1950 meeting of the current series of Post Graduate Lectures given in Hagerstown, Md., was devoted to industrial medicine. Dr. Robert Chenowith presented a paper on "The Role of the Physician in Industrial Accidents," and Dr. Nathan B. Herman spoke on "A Survey of the Occupational Disease Situation in Maryland." Both Drs. Chenowith and Herman are members of the Committee of Industrial Medicine of the Medical and Chirurgical Faculty and have been cooperating with the Post Graduate Committee in this venture. The meeting was well attended, and those present evidenced a great deal of interest in the subject matter presented. The possibility that similar presentations might be repeated during later extramural sessions would seem worthy of serious consideration. Most of the physicians in the State are familiar with the compensation law as it applies to
industrial accidents, in view of the fact that it has been in force for some 35 years. However, occupational diseases have been compensable only since 1939, and it would seem desirable for the profession at large to familiarize themselves with this provision. Further, they should consider the possibility that diseases under treatment might be occupational in nature.

The Post Graduate Committee wishes to express its appreciation to Drs. Cheno-with and Herman and to express to this Committee of the Medical and Chirurgical Faculty its desire to cooperate in every possible way in disseminating information about this important subject.

MARYLAND ACADEMY OF GENERAL PRACTICE

A varied and interesting program, arranged with the Post Graduate Committee by Dr. Lauriston L. Keown, was presented to the Maryland Academy of General Practice at the University Hospital on December 7, 1950. The Committee was delighted with the size of the attendance, the large area represented, and the interest displayed.

Officers of the Academy are: Dr. Charles F. O'Donnell, President; Dr. Irving Baumgartner, Secretary-Treasurer; and Drs. Paul Knotts, Nathan Needle, and B. B. Kneisley, Vice-Presidents. The Committee shares their hope that similar programs may be repeated many times in the future.

Murray-Baumgartner
SURGICAL INSTRUMENT COMPANY, INC.

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CHOOL AND HOSPITAL PLATES

Plates of the School of Medicine, University of Maryland, a New Hospital, and the Old Hospital are available. These fine plates are 10 inches in diameter with black print. They are $2.50 each, plus 25 cents insurance and postage. Send order stating the plates desired, with check to Mrs. Bessie M. Murray, Box 123, University Hospital, Baltimore, Maryland. The check payable to NURSES ALUMNAE ASSOCIATION OF THE UNIVERSITY OF MARYLAND.
ALUMNI ASSOCIATION SECTION

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The names listed above are officers for the term beginning July 1, 1950 and ending June 30, 1951.

AMERICAN MEDICAL ASSOCIATION MEDICAL EDUCATION FOUNDATION

In December, 1950, the Board of Trustees of the American Medical Association created the American Medical Education Foundation, the purpose of which is to support medical education through distribution of voluntary contributions to schools of medicine on an unrestricted basis.

The announcement of this important step was carried in a two page article in the February 17, 1951 Journal. Since that date a revision of policy concerning contributions has been made. As a further stimulus towards voluntary contributions from physicians, the Board of Directors of the Medical Education Foundation voted that individual physicians might designate the school or schools to which their contributions might go. All funds thus collected will be promptly acknowledged and will be assigned as of July 1, 1951 to the schools so designated.

The creation of the American Medical Education Foundation offers organized medicine another challenge to governmental dictation for control of medical education. Furthermore, through a non-profit central organization it affords a physician an opportunity to contribute to the financial assistance of his Alma Mater or other schools with the knowledge that if specified, the entire contribution will revert to the recipient of his choice.

Alumni of the School of Medicine will find in the American Medical Education Foundation another progressive and realistic move toward the defeat of the forces

ALUMNI ASSOCIATION SECTION

which would, through the use of public funds, seek to ultimately change current concepts of medical education.

This Foundation has the wholehearted support of the Faculty of the School of Medicine and you are urged to participate in it. You may feel certain that your contribution will be used wisely and that every dollar will serve a most useful purpose.

In order that your contribution may be received by the School of Medicine in time for inclusion in the 1951–52 budget, contributors should send their contribution to Dr. Donald G. Anderson, Secretary-Treasurer of the Foundation, 535 N. Dearborn Street, Chicago 10, Illinois, certainly before June 1, 1951.

PRESIDENT’S LETTER

The Alumni of our Medical School, now living, number about six thousand, practically all of whom are actively engaged in the practice of medicine. Their locations are as widespread as the geography of our country. However, the greater majority of them are along the Atlantic seaboard. This being the case, it seems to me they are in a position to make a helpful contribution to medicine in general and to our University in particular. I have the temerity to offer a suggestion in the name of our Alumni Association and am hopeful it will be fully considered by all to whose attention it may come.

It cannot be that there are any among the group of six thousand who are not familiar with the shortage of nursing personnel, a condition which is widespread throughout the entire country. It must be equally well known that this condition is seriously hampering medical progress, damaging the good name of medicine, and denying to doctor and patient alike a service for which there is no substitute. With the preparedness program of our government now in process of development, we must expect to further deplete our roster of trained nurses by dividing generously with the various armed services. Who will doubt that the services will determine a required minimal quota of nurses and take steps necessary to get them? The method by which medical officer personnel was recently procured should satisfy everyone that necessity knows no bounds. The prospect is not bright for even the minimum number of available nurses needed to keep our hospitals open and operating after the service requirements have been satisfied. This is indeed a gloomy outlook, but we should take it in stride and immediately set about doing something to remedy it. Here is where I come forward with the previously mentioned suggestion.

Every alumnus should be able to influence at least one qualified young woman of his acquaintance to embrace nursing as a profession and her life’s work. A fine School of Nursing is among those professional schools that make up our great University and one of which we have just reason to be proud. The excellence of its curriculum, the quality of its staff, the scope of its training, and the high standing of its graduates shine out as a beacon light to prospective students when its merits are forcefully brought to their attention. Each of our six thousand alumni should so completely familiarize himself with what this school has to offer that he would be ready and willing to explain its advantages so convincingly that applications for admission would far exceed the capacity not only of our school but also that
of our affiliated teaching institutions. If a campaign could be agreed upon and actually launched and each of our alumni be imbued with sufficient interest to try and recruit just one qualified applicant, I am satisfied the result would be not only astounding but also a notable contribution to the furtherance of good, practical medicine. To attempt to carry on in medicine without the aid of adequate nursing is unthinkable, but unless we loyally help develop in young women of our acquaintance a deeper interest in entering the profession, we have no other prospect. I, therefore, in the name of the Medical Alumni Association offer a plan and throw out a challenge feeling that the urgency is great, the cause worthy, and the reward promising.

"There are thousands to tell you it cannot be done,
There are thousands to prophesy failure;
There are thousands to point out to you, one by one,
The dangers that wait to assail you.
But just buckle in with a bit of a grin,
Just take off your coat and go to it;
Just start to sing as you tackle the thing
That "cannot be done", and you'll do it".*

William H. Triplett, Chairman
Board of Directors

ALUMNI DAY PROGRAM, 1951

Annual Alumni Day Exercises on June 7th promise to be even more interesting and attractive than the successful meeting of 1950. The Alumni Association this year pays honor to the members of the class of 1901 who will receive at the annual banquet their life membership in the Alumni Association and the 50-year certificates from Dr. Louis A. M. Krause, President of the Alumni Association.

Activities will begin at 9 A.M. with registration in the Alumni Office and in the rotunda of the University Hospital. From 10 A.M. until 12 noon, a Scientific Session has been planned which will include papers on current researches at the School of Medicine with Clinical Pathologic Conferences to be discussed by Drs. Pincoffs and Spencer.

At 12:30 P.M., a complimentary luncheon will be served in the Gordon Wilson Amphitheater in the University Hospital, this to be followed at 2 P.M. by the annual business meeting of the Medical Alumni Association.

The Alumni Honor Award for 1951 will be presented to Dr. George E. Bennett of the class of 1909. Dr. Bennett's address, which should be of great interest to those alumni who attended the School of Medicine during the years from 1905 to 1910, is entitled "Reminiscences of the Class and Faculty of 1909". The "reunion classes" will no doubt hold their individual reunions from 5 to 7 P.M.

The annual banquet this year will be held at the Lord Baltimore Hotel. The high spot of the program will be the presentation of the fifty year certificates to the class of 1901. Details of the program will be mailed to each alumnus.

* "It Couldn't Be Done" is from the book The Path to Home by Edgar A. Guest; copyright 1919 by The Reilly & Lee Co., Chicago.
Printed herewith is a reservation form for hotel accommodations which should be secured in advance through the Alumni Office.

RESERVATION FORM

Secretary of the Medical Alumni Association
I will/will not be present for the Commencement Activities beginning June 7, 1951.
Kindly reserve a room at the Lord Baltimore Hotel—single—double
Date and time of arrival. ..................................................
Name. ................................................................. Class
Address. ........................................................................

CLASS OF 1941 PLANS 10TH REUNION

Plans are now underway for a reunion of the class of 1941. The Chairman of the Committee for Organization is Dr. Pierson M. Checket, 1801 Eutaw Place, Baltimore 17, Maryland. All members of the class of 1941 are urged to contact Dr. Checket for reservations and details of the class reunion which will be held on June 7, 1951.

RECEIVES "UNSUNG HERO AWARD"

Dr. Theodore E. Woodward, class of 1938, Associate Professor of Medicine, was recently the recipient of the McCormick and Company (Baltimore) "Unsung Hero Award".

This citation established in 1940 was originally designed to call public attention to and to reward members of local scholastic football and lacrosse teams who had contributed wholeheartedly and diligently to the success of their team, but who had missed the headlines, thus remaining the unsung heroes of the team.

In 1948 the award was broadened to include a prominent citizen of Baltimore, who, although not foremost in the public press, nevertheless contributed much toward his community.

Previous recipients of this award have been George Sauer, Coach of the Naval Academy football team and Arthur R. Watson, Director of the Baltimore Zoo.

In the presentation ceremony which took place on December 8, 1950, Dr. Woodward was awarded a silver tray in recognition for his extensive investigation of infectious diseases. The inscription on the tray reads as follows:

“To Dr. Theodore E. Woodward

The McCormick Company Unsung Hero Award for his personal risks and sacrifices in the field of research medicine which have produced immeasurable contributions to the welfare of mankind.

December 8, 1950
Baltimore, Maryland”
TO RECEIVE ALUMNI HONOR AWARD

Dr. George E. Bennett, internationally known orthopedic surgeon and Adjunct Professor of Surgery Emeritus of the Johns Hopkins University School of Medicine, and a member of the University of Maryland School of Medicine, class of 1909, will be honored at the Alumni Day Activities on June 7th. Dr. Bennett will be presented with a gold key and a certificate for “outstanding contribution to medicine and distinguished service to mankind.”

Dr. Bennett was born in Claryville, New York, on April 15, 1885. During his senior year in medical school, he served as intern at the University Hospital and following his graduation served as house surgeon at the Hospital for the Ruptured and Crippled in New York City. In 1914 he joined the faculty of the Johns Hopkins University School of Medicine and rose to the rank of Adjunct Professor of Surgery, which post he held from 1942 until his retirement in 1947.
An internationally known authority on problems in orthopedic surgery, an eminent clinician and a noted contributor to the advancement of his specialty, his nomination for this high alumni honor climaxes a career which not only distinguishes the man but which adds dignity and prestige to the institution wherein he began his career.

**APPOINTED MEDICAL DIRECTOR**

Dr. Thomas S. Sexton, class of 1939, was recently appointed Medical Director of the Massachusetts Mutual Life Insurance Company of Springfield, Massachusetts.

![Dr. Thomas S. Sexton](image)

**DR. THOMAS S. SEXTON**

Associate Medical Director

Massachusetts Mutual Life Insurance Co.

After graduating in Medicine, Dr. Sexton served as rotating intern at Mercy Hospital, Baltimore. He then entered the United States Army Medical Corps during World War II and served for four years.

Following his separation from the Army, he was appointed Fellow in Medicine at the Mayo Clinic after which he joined the Medical Staff of the Massachusetts Mutual Life Insurance Company in 1947.
FRATERNAL NEWS SECTION

ALPHA OMEGA ALPHA

The semi-annual dinner of the Beta chapter, Alpha Omega Alpha Honor Medical Society was held on December 8, 1950. Following the dinner, initiation ceremonies were held for five new members from the class of 1951. Dr. H. Boyd Wylie, Dean of the School of Medicine spoke on "Problems of Medical Education".

The following were the new initiates from the class of 1951.

Earl M. Beardsley   Frank R. Perilla
Nancy Blades        Henry G. Reeves, Jr.
Leo H. Ley, Jr.

The initiation was followed by a business meeting. A policy for the election of alumni members was discussed and a recommendation was made to the school regarding research by students.

PHI BETA PI

On November 19, 1950, the Alumni Association of Phi Beta Pi Fraternity, Zeta Chapter, elected Dr. Frank C. Marino to the office of president. Dr. Marino succeeds Dr. W. C. Duffy, who was the key figure in the reactivation of Zeta in 1947.

The active members of Zeta administered the initiation rite to 27 pledges on the evening of February 10, 1951.

A series of medical lectures has been planned for the coming year. Dr. Emil Novak will deliver the first lecture on the topic of ovarian tumors. Dates for these lectures will be announced at a later time.

PHI DELTA EPSILON

Guest speakers at the monthly scientific meetings of Phi Delta Epsilon recently included Drs. Louis A. M. Krause, Lewis Hill, Harold Himwich and Philip Bard. These scientific forums have been well attended by the student body and faculty of the School of Medicine. Future guest speakers will include Dr. Helen Taussig.

Dr. Louis V. Blum, class of 1934, was recently elected President of the Graduate Club of Phi Delta Epsilon.

Dr. George Greenstein, class of 1950, has been appointed House Surgeon at the New York Hospital for Joint Diseases.

Dr. Arnold Traymer, class of 1949, has been appointed Assistant Resident in Pediatrics at Baltimore City Hospitals beginning in July, 1951.

Dr. Wallace Sadowsky, class of 1942, is now serving as Assistant Resident in Surgery at Perry Point Veterans' Hospital, Perry Point, Maryland.

Dr. Shipley Glick, class of 1925, Assistant Professor of Pediatrics at the School of Medicine, has recently been elected National Grand Vice Counsel of Phi Delta Epsilon.
THE DIAGNOSIS AND TREATMENT OF THE ACUTE ABDOMEN

L. KRAEER FERGUSON, M.D.*†

The acute emergencies of the abdomen are the most frequent and interesting of the lesions with which the practitioner has to deal. His primary duty is the recognition of the condition as an emergency, because most emergencies can be handled easily and successfully if treated early. They may lead to serious if not fatal results if delay or procrastination is practiced. In acute abdominal disease, the doctor is often called for the first time at night, after a day spent in trial of home remedies, enemas, etc. It is inconvenient to the doctor, but lifesaving to the patient if he is seen promptly and not allowed to "ride over 'till morning". The practice of simply relieving pain by an injection of morphine and perhaps also one of penicillin, without a thorough enough examination to arrive at a diagnosis, may permit a simple appendicitis to go on to perforation or a strangulated intestine to progress to gangrene. The acute abdomen cannot be put off lightly.

There are certain symptoms which indicate the probability of serious intra-abdominal trouble. Abdominal pain lasting six hours or more, especially if the patient was previously well, usually indicates some definite abdominal difficulty. If this is associated with nausea and vomiting, elevation of pulse and decreased peristalsis, there is good reason to believe that the difficulty may need surgical intervention, and hospitalization is advised.

It is important to make a diagnosis, if possible, in every case of acute abdomen. This is sometimes difficult if not impossible in many cases because the symptoms of many conditions are very similar and the findings on examination may also be much alike. In such cases the diagnosis may be less important than the recognition that there is an acute abdominal lesion present that requires surgical treatment. Ogilvie, in his characteristic fashion, expresses the surgical viewpoint thusly: "Surgery, broadly defined, is a method of treatment by manual processes. Surgery does not, like medicine, look upon diagnosis as the chief expression of its art, but rather as a means to an end. A correct decision concerning the cause and pathology of a symptom-

* Professor of Surgery, Woman's Medical College of Pennsylvania and Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania.
† Read before the Baltimore City Medical Society Joint Meeting with The Section on Surgery, March 16, 1951.
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complex is of great importance but only insofar as it points the way to correct treatment. A decision is more important than correctness because, very often in surgery, treatment must be immediate to be effective; and that ultimate solvent, the lapse of time, is apt to lead to the final court of pathological exactitude—the post-mortem room". I do not mean to convey the idea that any means should be ignored to arrive at the definitive diagnosis in acute abdominal disease, but I do want to point out that frequently a definitive diagnosis in acute abdominal disease can be made only by surgical intervention, and the important thing is to recognize this position early.

The basis of diagnosis in the acute abdomen is a careful history and a thorough and complete physical examination. Roentgenology and laboratory data add to, or confirm, the clinical impression gained from the history and physical examination but can never replace the information gained from the patient. The history gives much information if it is developed so as to present the symptoms in the order of their appearance. I prefer to obtain first the history of the present attack, in minute detail and then to explore the past medical history for previous attacks, other abdominal diseases, operations, menstrual history, etc. In analyzing the symptoms, pain is the most significant. The site of the first pain often gives a clue to the location of the lesion which may be marked by a more diffuse pain when the patient is seen by the doctor. The following case illustrates this statement.

A 52 year old male was taken suddenly ill in a movie with abdominal pain in the left lower quadrant. He went home immediately, having vomited several times en-route, and was admitted to the hospital several hours later. On examination, he exhibited diffuse abdominal pain and rigidity, most marked in the epigastrium and the left lower quadrant. Air was demonstrated under the diaphragm in the roentgenograph, and a diagnosis of ruptured ulcer was made. At operation, the patient was found to have a ruptured sigmoid diverticulum.

The colicky remitting pain of smooth muscle spasm is easily recognized, and the radiation or reference of pain to specific anatomic areas is often an aid to diagnosis. Testicular pain in renal and urethral lesions and the reference of pain to the angle of scapula in biliary colic are familiar examples. The agonizing pain associated with a "frozen attitude" is characteristic of the diffuse abdominal contamination of perforation. If the abdominal pain is not localized, the lesion is usually not one demanding surgical care.

Nausea and vomiting are, in themselves, not diagnostic signs and symptoms. They may occur with many extra-abdominal as well as intra-abdominal diseases. When nausea and vomiting occur with diarrhea and abdominal pain, the cause is more likely to be medical than surgical. The character of the vomitus may help in the diagnosis. The colics usually cause vomiting of gastric contents with bile staining. Strangulation of gut or cysts often causes retching with little vomitus. The vomiting with obstruction is true regurgitation of gastric and later intestinal contents.

The physical examination should be thorough and not only confined to the abdomen. The simple inspection of the patient may give some indication of the underlying condition. The patient writhing in attacks of colic; the tense rigidity of the patient with perforation; the shock-like quiet of the patient with strangulation or pancreatitis, and the pallor of the bleeding patient are quite characteristic.
The degree of fever helps to differentiate intra-abdominal from extra-abdominal causes of the acute abdomen, especially in the onset of the attack. It is rare that acute abdominal pain ushered in with a chill and high fever is caused by an intra-abdominal lesion. The lungs or genito-urinary tract should be under suspension.

A thorough physical examination should include the throat, heart and lungs, as well as the abdomen. This is especially true if the symptoms are those of an upper abdominal lesion.

Palpation of the abdomen probably gives the surgeon some of his most important information. It is best begun at an area away from the pain, to gain an impression of the normal, and to relieve the patient’s apprehension. This is especially important in children. As the area of pain is approached, the patient should be encouraged to tell the examiner of tenderness and to differentiate degrees of tenderness, if possible.

When palpating the abdomen, the examiner should distinguish between muscular rigidity, muscle guarding, muscle tension, tenderness, and rebound tenderness because each gives somewhat different information about the underlying pathology.

Muscular rigidity is a continuing contraction of the abdominal muscles and is an indication of the spread of irritation or inflammation to the underlying parietal peritoneum. It, therefore, indicates the site and degree of the intra-abdominal process in most cases.

Muscle guarding is an involuntary contraction of the abdominal muscles when an area of tenderness is pressed upon. It, therefore, is of value to localize the area of the acute process, and it usually indicates that the process does not lie adjacent to the abdominal wall.

Muscle tension is a finding elicited by a comparison of the tension on the two sides of the abdomen. The difference in tension may be slight, but careful examination may show it to be definite. This finding I have taken to result from an axon reflex, producing slight muscular contraction via the somatic nerves of the involved cord segment. Increased tension may occur from either intra-abdominal or extra-abdominal causes. It may be associated with hyperesthesia of the abdominal wall which must be distinguished from deep tenderness.

Tenderness is a subjective finding demonstrated by pressure which increases the tension in an area of inflammation. It is a localizing sign, and the area of maximum tenderness usually overlies the area of maximum inflammation.

Rebound tenderness is a confirmatory sign by which pain is produced at an area of inflammation by sudden release of pressure on the abdominal wall. The sudden release of pressure produces a sudden readjustment of intra-abdominal relations with increase in tension in the inflammatory process.

In palpation of the abdomen, distinction must be made between true and voluntary findings. These can often be distinguished by diverting the patient’s attention while the abdomen is being palpated. True findings are the same with repeated examinations. Voluntary (false) findings change with each examination. In general, it may be said that diffuse findings except when associated with true rigidity are usually indicative of a non-surgical lesion, whereas localized findings usually suggest an acute surgical process.

Along with these observations, a search should be made for the presence of masses and palpable organs, and the effect of respiration on their movement should be noted.
Palpation should also include a search of the loins and costovertebral angles for tenderness, muscle guarding, and a palpation of the inguinal and femoral areas for masses and tenderness.

Rectal and vaginal examinations may also give valuable information that should never be neglected in examining the acute abdomen. In rectal examination, an effort should be made to have the patient distinguish between the discomfort caused by the strange sensation of the finger in the rectum and the tenderness produced by pressure on an inflammatory area. I believe the most information can be obtained by examining the patient on his back with his knees drawn up on the abdomen in what may be termed the foetal position. In this position, the palmar side of the index finger can palpate more easily the cul-de-sac, and the abdominal contents are pushed downward toward the examiner. In other positions, the abdominal organs tend to fall away unless they are fixed. The finding of blood on the examining finger may be an added observation of significance on rectal examination.

Auscultation of the abdomen gives much information. The hyperactive peristalsis of normal gurgling pitch is indicative of a diffuse irritation of the intestinal tract. Hyperactive peristalsis of high pitch is the telltale sign of thedistended, usually obstructed gut. Absence of peristaltic sounds points to a diffuse involvement of the peritoneal cavity when associated with other signs, and the degree of reduction of peristalsis denotes indefinitely the severity of the inflammation. Peristalsis is usually reflexly silenced in the early phases of strangulations such as twisted cysts or tumors, volvulus, and hernias.

The examiner should be able to form at least a clinical impression with the information obtained from the history and physical examination. The blood count and urinalysis add further light on the diagnostic problem. When positive findings are reported, they must be explained in the diagnosis; but in my opinion, the most reliance is to be placed upon the history and physical findings in making a diagnosis. Additional help may be obtained from roentgenographs of the abdomen and chest in certain cases.

*PRINCIPLES OF TREATMENT IN THE ACUTE ABDOMEN*

Before discussing the symptoms and treatment of specific acute abdominal diseases, I would like to mention two general principles that may be well applied in the treatment of any acute abdomen.

(1) The emergency is rarely so urgent that the necessary time cannot be taken to prepare the patient for operation. This means a restoration of fluid and electrolyte balance, a typing and cross match for transfusion if it seems advisable and appropriate sedation.

(2) The operation performed should be the most simple surgical procedure which will deal adequately with the lesion causing the emergency. Our only responsibility at this time is to save the patient’s life. If the operation performed can be both lifesaving and curative without adding to the operative risk, as an appendectomy in perforated appendicitis, it fulfills the requirements. On the other hand, if a curative procedure should increase the operative risk, as a cholecystectomy in acute gallbladder disease, the surgeon should keep lifesaving uppermost in his mind and delay the curative procedure until more ideal conditions are obtained.
INFLAMMATION

The acute inflammations usually have a less rapid onset than many of the other acute abdominal conditions. They are ushered in with a short period of malaise and loss of appetite. At first, a mild peritoneal irritation shows itself as a periumbilical pain, nausea, and vomiting. As the inflammation progresses, the pain shifts to the area of inflammatory tension; local tenderness, muscle guarding, or rigidity are found on examination.

Slight, slowly rising fever and leukocytosis complete the aspects of an acute abdominal inflammation. The problem is then to diagnose the definitive inflammatory lesion.

APPENDICITIS

This is the commonest acute abdominal inflammation and is responsible for fully 50 per cent of all emergency abdominal operations and for almost 90 per cent of acute abdominal surgery in children. It must be considered in the diagnosis of any age, but mostly in childhood and young adult life. The symptoms and local signs of appendicitis vary with the position of the appendix with relation to the cecum, surrounding organs, and the peritoneum. Further, the position of the appendix varies with the position of the cecum in its various degrees of rotation and fixation to the posterior abdominal wall. Thus, if the appendix lies below the normally placed cecum against the abdominal wall, the usual right lower quadrant pain, tenderness and rigidity are found. If the position of the appendix is the same but it is covered over by ileum or a thick omentum, the parietal peritoneum may not take part in the inflammation; and although tenderness is present, rigidity is absent. An appendix lying lateral to the cecum gives local tenderness and rigidity in the loin and often at a higher level than usual. If it lies behind the peritoneal reflection so that the early stage of peritoneal irritation is absent, the periumbilical pain, nausea, and vomiting resulting from this irritation are not noted, and the first symptoms appear in the right side. When the appendix extends upward or lies under the liver because of non-rotation of the cecum, upper right quadrant signs are produced which are often confused with acute gallbladder disease. When the appendix lies in the pelvis, the early pain is often epigastric rather than periumbilical, and abdominal tenderness may be minimal as compared to that elicited on a rectal examination.

The most common differential diagnosis is between appendicitis and acute gall bladder disease in the upper right abdomen, and between pelvic appendicitis and pelvic disease in females.

To make the differential diagnosis between acute cholecystitis and appendicitis in the short fat individual is often difficult, if not impossible, even with all the historic facts and diagnostic findings at hand. The important thing is to recognize the acute abdomen that demands surgical intervention. Either condition can be taken care of if the incision is properly placed.

The differentiation between pelvic appendicitis and lesions of the female pelvis is even more difficult and more important because many female pelvic lesions are cured without operation. There are some findings that point more strongly to the pelvic lesions than to appendicitis. Acute pelvic inflammatory disease is really a pelvic
peritonitis producing bilateral pelvic tenderness, pain on motion of the cervix, a more rapid elevation of temperature and blood leukocytes, and a more diffuse abdominal tenderness lower in the abdomen. The history and finding of a vaginal discharge are common. All of these are more suggestive of pelvic disease than of appendicitis, and are usually absent in the latter. With all of this information at hand, I believe the differentiation between appendicitis and pelvic inflammatory disease in certain young females is the most difficult of all diagnostic problems in the acute abdomen.

The occurrence of pain midway between the menstrual periods and a tendency for the symptoms to become less rather than worse helps to differentiate a ruptured graafian follicle cyst from appendicitis. Ruptured endometrial (chocolate) cysts and cysts twisted on their pedicles are frequently diagnosed as pelvic appendicitis. This is not a serious error. When the diagnosis between appendicitis and a pelvic lesion cannot be made with certainty, I believe the performance of a laparotomy is safer than a policy of watchful waiting. I have never seen any serious consequence result from the removal of a normal appendix in a case of pelvic inflammatory disease.

The acute phase of regional ileitis is not infrequently confused with acute appendicitis. There is a similarity of symptoms and signs; and in this instance, the differential diagnosis is worthwhile, because surgery can be avoided if regional enteritis is present.

The points in the differentiation that are helpful are several. Enteritis is invariably known to cause a chronic diarrhea or frequent loose stools. This is infrequent with acute appendicitis. A tender indefinite mass in the lower right quadrant may be found with ileitis. This is less common in the case of early appendicitis. From a practical point of view it is often difficult if not impossible to differentiate between acute appendicitis and acute regional enteritis with certainty. Under such circumstances, an operation should be advised. There is considerable controversy over the surgical procedure to be followed when one encounters a red, edematous ileum instead of an inflamed appendix. Some surgeons fear secondary fecal fistula if the appendix is removed in the presence of an acute ileitis. I have never seen a fistula develop following appendectomy with inversion of the appendiceal stump, and I believe appendectomy is safe unless the base of the cecum is involved.

In childhood, it is often difficult to rule out mesenteric adenitis as a cause of lower right quadrant pain and tenderness. The history and findings very closely simulate those of acute appendicitis. In a general way, the symptoms of mesenteric adenitis are less acute, the pain is less marked, the tenderness less, and not quite so well localized. One can usually examine the abdomen of the child with mesenteric adenitis quite easily, whereas the child with acute appendicitis permits examination with reluctance and apprehension. With the anxious parents demanding to know if the child has appendicitis, I invariably recommend surgery because it is impossible to be sure that the process is not appendicitis and because, I believe, that the most effective treatment for mesenteric adenitis is appendectomy.

I have followed many of these cases and my experience has been that appendectomy not only relieves the acute symptoms, but also seems to result in an improvement in the general health of the child. The scrawny, complaining child who is often a feeding problem generally seems to take a new lease on life after removal of his appendix for mesenteric adenitis.
The treatment of appendicitis is appendectomy. If the patient is not seen until late in the course of the disease when the condition is really a peritonitis or abscess, non-operative therapy consisting of large doses of antibiotic drugs, intravenous fluids, and intestinal intubation appears to give the best results. Delayed surgery to drain abscesses will be necessary later.

**ACUTE GALLBLADDER DISEASE**

Acute cholecystitis occurs most often in early mid-life and in the relatively obese patient. In the younger patient, the acute attack may be the first sign of gallbladder disease; but in the older patient, a history of chronic indigestion, food intolerance, and of attacks of biliary colic may be obtained. In almost every case, acute gallbladder disease occurs because of impaction of a stone in the cystic duct. The initial pain in the right epigastrium with radiation to the back and the angle of the scapula gives way to a tension pain in the upper right quadrant as the gallbladder becomes distended and edematous. Subcostal tenderness appears more marked as the tense gallbladder is forced against the examining fingers by deep inspiration. If the obstruction of the cystic duct continues, the process may continue on to hydrops or empyema of the gallbladder in younger people; but in the older age group, necrosis, gangrene, and perforation of the gallbladder is the common course. Jaundice is present in at least one fourth of the cases, and the temperature and white blood count vary with the progress of the disease.

In the usual case, the diagnosis is not difficult, especially if typical symptoms and a typical history are obtained. If the patient is seen for the first time late in the course of the disease, in many cases a distinction must be made between ruptured peptic ulcer and acute pancreatitis. Here, a detailed history of the early and of the previous symptoms is of considerable aid if it can be obtained. The obese gallbladder patient as compared to the thin ulcer type is suggestive but not diagnostic. In the early phase, tenderness over-shadows the abdominal rigidity in acute gallbladder disease, whereas the reverse is true of ruptured peptic ulcer. Roentgenographs of the abdomen in the erect position may show gallstones in cholecystitis or air beneath the diaphragm in ruptured ulcer. In late cases, where either may have progressed as far as to produce a local peritoneal collection, the diagnosis may be impossible because the findings are alike. Both diseases may be treated the same at that stage.

The differentiation between acute cholecystitis and acute pancreatitis may be most difficult from a clinical point of view. They both occur most commonly in individuals with previous symptoms suggesting gallbladder disease. The onset of an attack of pain an hour or so after a meal is more typical of pancreatitis than of acute gallbladder disease. The more sudden the acute epigastric pain, the more persistent the vomiting, the more diffuse the tenderness extending across the abdomen to the left of the midline, the more the likelihood of pancreatitis than cholecystitis. So, too, the bilateral tenderness in the costovertebral angles, the pain in the back, and the relatively slight degree of muscle guarding are more suggestive of pancreatitis. The definitive diagnostic study is the serum amylase, but even this may be elevated in cases of indisputable cholecystitis.

Pancreatitis is believed to be caused, in many cases, by reflux of bile in the pancreatic duct. Therefore, it would appear that drainage of the biliary tree by cholecystos-
tommy would be worthwhile in cases where the patient seemed to be getting worse and where a definite diagnosis could not be made because the amylase test was not available.

There is usually not the urgency for surgery in cases of acute gallbladder disease as in appendicitis, ruptured ulcer, or intestinal obstruction. Time can be taken to prepare these patients for operation as a rule; by gastric intubation, hydration, intravenous glucose and electrolytes, and the administration of penicillin. If the patient's findings appear to be regressing and there is an elevation of blood amylase indicating an associated pancreatitis, it may be wise to delay surgery. In older patients, however, decision for early operation is the best plan because necrosis and gangrene of the gallbladder occur rapidly. In addition, associated pulmonary difficulties often arise.

No patient should be denied surgery because he is too sick. The gallbladder can be drained easily, if necessary, under local anesthesia. The decision as to what is to be done at the operation must rest with the operative findings. In a very ill patient of 70 with an acute gangrenous gallbladder, often nothing more than drainage of the gallbladder and removal of the stones are indicated. It is important to remove the obstructing stones in the cystic duct. In most cases, these can be dislodged backward and removed with the other stones in the gallbladder. It often occurs that a single stone is obstructing the ampulla of the gallbladder. Failure to remove the obstructing stone results in a subsequent gallbladder sinus. If the acute gallbladder is drained only, it may be wise to have the patient return for cholecystectomy at a later date. In most patients, however, cholecystectomy can be performed and the common duct explored if necessary, without increasing the operative risk. Cholecystectomy can usually be performed more safely during the first 48 hours than later when the edema of the gallbladder has been replaced by fibrosis.

**PERFORATION**

A perforation of a peptic ulcer is one of the commonest, acute upper abdominal lesions in males. It may occur in younger people without any preceding history of ulcer disease as a perforation of an acute ulcer. It more commonly appears in a patient who has had a history of ulcer distress for many years. There is often a day or two of increased discomfort which precedes the appearance of sudden pain in the epigastrium. Depending upon the size of the opening, there may be a rapid leak of gastric and duodenal contents into the abdomen, or there may be a relatively small leak. The acid-pepsin contents which contaminate the peritoneal cavity are extremely irritating and produce the characteristic “frozen attitude” noted in these patients. They lie holding themselves tense in a single position. Any movement, as turning over in bed, is done with such caution and evident distress that the diagnosis can frequently be made by simply observing the patient. Vomiting occurs as the result of the peritoneal irritation but is not marked, as a rule. The temperature may be subnormal at first and never very high. There is a definite pulse hurry.

On examination, the typical board-like rigidity is easily demonstrated in the upper abdomen and in a wider area, depending on the spread of contamination. Peristalsis is usually markedly reduced or absent. Because of the tendency of the contaminating fluid to leak laterally above the colon and then downward between the ascending colon
and the lateral abdominal wall, the area of tenderness and muscle rigidity often is found to involve the right side of the abdomen and may be quite marked in the appendiceal area. When the overlying liver has protected the anterior abdominal wall from contamination from the leaking ulcer, these findings may lead to a mistaken diagnosis of appendicitis. The presence of air between the diaphragm and the liver in roentgenograph taken in the erect position establishes the diagnosis of ruptured ulcer, but a negative film does not rule it out.

The differential diagnosis between acute cholecystitis and acute pancreatitis and ruptured ulcer has already been mentioned. In a typical case, there should be no confusion. In a late case the diagnosis may be impossible. The important thing is to diagnose the acute peritonitis and to treat it.

Perforations of peptic ulcers will respond well to simple closure of the perforation if the operation can be performed early. The danger is from a continuing leak with production of widespread peritonitis. The indication is to stop the leak and prevent the peritonitis rather than to treat the ulcer. The abdomen is opened through an upper right transverse incision, displacing the rectus muscle medially. Closure of the perforation by plugging the opening with omentum, held in place with sutures, gives excellent results. Aspiration of the fluids from the abdominal cavity and closure without drainage is a treatment of choice. Postoperatively, gastric suction, antibiotics, and intravenous fluids are administered until peristalsis is resumed. This is a program that gives a low mortality rate. The patient who still has his ulcer must be treated for it after recovery from perforation.

If the patient is not seen until more than 24 hours have passed following the perforation, the problem of the associated peritonitis over-shadows that of the perforation. Experience has shown that the mortality is high with surgery for diffuse peritonitis and that better results are obtained with a regime of continuous gastric aspiration, intravenous alimentation, and massive doses of antibiotics. When walling off and localization occur, abscesses may require drainage and more definitive surgery reserved for a later date.

**PERFORATED SIGMOID DIVERTICULUM**

Perforation of a diverticulum of the colon, most commonly of the sigmoid colon, usually occurs without any antecedent history as an acute lower abdominal pain associated with nausea and vomiting. In many cases, the process is an erosion and eventual rupture of the diverticulum into the free peritoneal cavity, so the process is really a peritonitis from the onset. The redundancy of the sigmoid loop which may permit this structure to lie any place in the lower abdomen from the left lower quadrant to well past the midline toward the right, accounts for the variability of the point of maximum tenderness and leads to confusion in diagnosis. The fact that a spreading peritonitis is present from the first, explains the high fever and leukocytosis that occurs early in the disease. Since diverticuli are uncommon before the age of 40, and occur with increasing frequency after that time, the diagnosis of perforated diverticulum should be considered in all cases of acute lower abdominal pain in the older age group.

Although any acute abdominal lesion may at times be confused with acute per-
Forcated diverticulum, acute appendicitis and acute diverticulitis are the two conditions that must be most often differentiated from it. It is important to make this distinction, if possible, because, opening the abdomen through a gridiron incision may be wrong if the lesion is a mis-diagnosed appendicitis. Conservative treatment may be employed if diverticulitis is present. There are a few points that help in the differential diagnosis. Perforated diverticulitis is a rapid process, producing diffuse abdominal tenderness and blood leukocytosis of 15,000 to 30,000 per cu. mm. within a relatively few hours. The signs and symptoms are usually slower in development, more definitely localized, and the leukocytosis is not so marked in appendicitis. Diverticulitis usually is associated with signs of colon irritability, diarrhea, crampy pain, and left lower quadrant tenderness. These signs and symptoms usually develop over a period of days. If perforation and peritoneal abscess occurs, the signs become more marked but localized to the area of inflammation.

There is usually no question about the necessity for operation in the acute abdomen resulting from a perforated diverticulum. There is some disagreement among authors as to the proper way of treating these cases. We have the following rules. If the perforation is of a single diverticulum without inflammatory change in the bowel, the diverticulum may be excised or inverted and the hole in the bowel closed. A drain is usually inserted at the site. If the diverticulum is a part of an inflammatory mass or abscess, drainage is instituted. The real difference of opinion concerns the advisability of a complimentary colostomy or cececostomy. We believe that fecal diversion or colon decompression is indicated only when the lesion is associated with obstruction.

**Intestinal Obstruction**

The patients with intestinal obstruction usually present such typical symptoms early in the course of their disease that the diagnosis should not be difficult. Colicky pains in the abdomen, a history of no passage of feces or gas per rectum, are characteristic symptoms. When these are associated with the active high-pitched peristaltic sounds of a distended gut, the diagnosis is almost sure. The roentgenologic demonstration of gas-filled loops of gut and the fluid levels in the erect position are practically diagnostic. Vomiting and abdominal distention are later symptoms and they depend, to some extent, upon the site of obstruction. As time goes on, a diagnosis becomes further complicated by strangulation and interference with the blood supply of the obstructed gut. The appearance of strangulation adds new symptoms to the clinical aspects, such as local tenderness, fever, and blood leukocytosis. In addition, the inability to take fluids by mouth, and the loss of fluid by vomiting as well as into the distended gut produces marked systemic dehydration with electrolyte and nutritional imbalance. In former days the dictum was preached: "Never let the sun go down on a case of intestinal obstruction. The longer a case of intestinal obstruction lives before operation, the shorter he will live after the operation." The point was well taken. It the patient can be operated upon and his obstruction relieved early, before fluid and electrolyte disturbances and vascular damage to the gut have taken place, the chances of early recovery are good.

The difficulty lies in that the patient frequently is not seen until several days of obstruction have passed and he is already in a serious condition.
In dealing with cases of intestinal obstruction, it is important to make a diagnosis between obstruction of the large intestine and that of the small, because the treatment in somewhat different. From an analysis of 210 cases of intestinal obstruction in patients over 60 years of age, we were surprised to find that at least two-thirds of the obstructions occurring in the small gut resulted from hernias. I should judge that a greater percentage appear in younger age groups. Because of this high occurrence of strangulation of hernias as a cause of small intestinal obstruction, in every case of small gut obstruction, regardless of the age, the patient should be suspected of having a strangulated hernia. A Richter's type of hernia in the femoral opening in older people is a common cause of small gut obstruction. This is diagnosed with difficulty because the hernia is so small that it cannot be palpated. On numerous occasions even with the abdomen open, I could not palpate such a hernial mass. The important thing is to make the diagnosis of small gut obstruction and to operate before gangrene and peritonitis make their appearance. A history of previous operations, especially of pelvic surgery in females, and other operations requiring drainage, makes one consider mechanical obstructions from intra-abdominal adhesions.

It is important to make the diagnosis of small intestinal obstruction demanding operation. The exact cause of the obstruction may be evident, as in a strangulated hernia; but in many instances, the cause may not be apparent until the abdomen is opened. Although it is recognized that those patients require early operation, a few hours spent in overcoming the electrolyte and fluid imbalance may pay great dividends. In addition, the decompression of the gut by the Miller-Abbott tube may be carried out at the same time.

In operating for a small gut obstruction, except those resulting from hernia, the operative procedure is varied according to the condition of the patient. If this condition is good, an exploratory laparotomy may be performed, usually through a lower midline incision. The collapsed small gut is picked up at the ileocolic valve, traced upward to the site of obstruction, and dealt with as the occasion demands. If gangrenous or non-viable gut is found, resection and primary end-to-end anastomosis has proved to be the most successful method of therapy in our hands. In the extremely ill patient, with obstruction of long duration, any general exploration of the abdomen is to be avoided. The only operative indication is to decompress the gut. If this can be accomplished by the Miller-Abbott tube, we are justified in delaying operation. On the other hand, if the Miller-Abbott tube fails to pass the pylorus and advance downward into the small gut, it is preferable to perform a simple enterostomy by picking up and opening a loop of the distended gut in the lower left abdomen through a gridiron incision. This may be done under local anesthesia. After the gut is decompressed, the abdomen may later be explored and the obstruction dealt with definitively.

Acute obstruction of the large intestine is most often caused by a malignancy, usually located in the left side of the distal colon. The failure of passage of gas or feces and the distention of the colon with gas and fluid are characteristic clinical and roentgenologic findings. Small gut distention may not occur if the ileocecal valve is competent; hence, decompression by the Miller-Abbott intubation is not nearly as successful in large gut obstructions as is true in small gut obstruction. Often a carefully given barium enema may reveal the point of obstruction.
The indication for treatment in small gut obstruction, as in large gut obstruction, is the adjustment of fluid and electrolyte balance and decompression of the colon. Definitive surgery must be deferred to a later date. We still prefer to decompress the colon by simple tube cecostomy. This may be performed under local anesthesia through a gridiron incision even in seriously ill patients. Although this may appear to be a temporary and emergency measure, it frequently happens that with decompression the edema about the obstructing tumor subsides, and feces and gas pass the obstruction in two or three days. Definitive surgery should be delayed until the patient has recovered from the effects of an obstruction.

**Mesenteric Thrombosis**

Thrombotic or embolic occlusion of the mesenteric vessels presents one of the most striking pictures of the acute abdomen. Fortunately, it is relatively rare, and for this reason is misdiagnosed more often than not. The sudden onset of central abdominal pain which is severe and constant is the usual characteristic feature. Depending on the extent of the thrombosis, faintness or even shock may be present. In addition to the constant pain, severe exacerbations of a colicky type of pain occur with repeated vomiting so that the diagnosis of intestinal obstruction is usually entertained.

Examination shows a pale restless patient with blood pressure near shock level. Tenderness and rigidity of the abdominal wall indicate a diffuse abdominal irritation, but intestinal sounds may be increased. A rectal examination may reveal blood on the finger, or the return of an enema may be bloody. This is almost diagnostic.

Mesenteric thrombosis is frequently misdiagnosed as acute hemorrhagic pancreatitis, ruptured ulcer, acute gallbladder disease, and intestinal obstruction. With a careful history and diagnostic studies, the mesenteric thrombosis should at least be considered among the diagnostic possibilities.

The clinical features are so striking that operative intervention is usually imperative as soon as the patient can be prepared. The escape of blood stained fluid as soon as the abdomen is opened and the appearance of the black hemorrhagic gut makes the diagnosis certain. Resection of the involved gut is the only hope of cure. We prefer end-to-end anastomosis because it takes less time and needs but one suture line. Exteriorization of the infarcted gut has proved unsuccessful in our hands. Post-operatively, anticoagulants and antibiotics help to prevent further thrombosis and complications of infection.

**Summary**

In dealing with a patient with an acute abdomen, it is important to recognize early the dangerous possibilities inherent in his condition. He should be taken to a hospital where he can be given the benefits of thorough study and surgical consultation. It may be impossible to make an exact diagnosis, but it is more important to recognize that a surgical lesion is present. Surgical exploration should be looked upon in many cases as a diagnostic method as well as a therapeutic procedure. The fundamental principle in dealing with these acute abdominal surgical emergencies is to carry out the simplest operative procedure which will deal with the lesion which creates the emergency.
PENICILLIN IN BRONCHIAL ASTHMA*†

HOWARD M. BUBERT, M.D.

The part played by respiratory infection in initiating asthmatic episodes and in prolonging them in cases primarily caused by specific agents is larger, in our opinion, than is usually believed. Further, it is our conviction that infection is almost solely responsible for those cases presenting, from time to time, intractable asthma which responds little, if at all, to conventional anti-asthmatic procedures usually dramatically effective.

The introduction of the antibiotics placed at the disposal of the profession agents of incalculable value in controlling infections. Those usually occurring in the respiratory tract, being, as a rule, of a mixed type, are less responsive than infections with a susceptible organism. However, with adequate dosage, surprisingly good results can be obtained at times, and a significant number of respiratory infections can be controlled sufficiently to terminate severe and distressing asthma, occurring as a result of such infection.

Because the problem of controlling respiratory infection in these individuals loomed so large, and because the methods currently used presented disadvantages, ranging from the need for hospitalization to discomfort and costliness, it was our desire to evolve a method of treatment that would avoid these disadvantages insofar as such was practicable. Several criteria were established as being desirable; namely, the introduction of a potent drug, the use of a drug that was not excessively expensive, and a method of administration that involved a minimum of discomfort and inconvenience.

The depository type of penicillin preparations seemed best suited for our purpose because, if a prolonged effect could be obtained, the number of injections required would be reduced. In addition, in our attempt to secure and maintain the maximum possible concentration of penicillin in the body of the patient, we administered enormous doses in the hope that their action might be further prolonged. Also, we desired a form of the drug that was not too expensive. It was deemed necessary to use a preparation that caused the least possible discomfort and the fewest possible untoward reactions.

Initially, several types of penicillin were used. These consisted of a procaine penicillin in peanut oil, aluminum penicillin by mouth, and a "fortified" procaine penicillin in peanut oil to which was added penicillin G. In addition, and in a few cases, a depository type penicillin which required more frequent administration was given; but the added number of doses plus the discomfort resulting soon caused us to abandon this material. It seemed to offer no advantages, but to offer distinct disadvantages. Likewise, the number of untoward reactions occurring from the use of crystalline penicillin, in our experience, caused us to avoid these preparations.

* From the Section of Allergy, Department of Medicine, University of Maryland School of Medicine.
Shirley W. Correll, Technician, assisted in this study.
† Received for Publication January 12, 1951.
As will be shown later in this study, more and more reliance was placed upon the procaine penicillin that gave the most prolonged action because it seemed to us definitely more effectual, caused few, if any, local reactions, and few untoward reactions of a general nature. The aluminum penicillin, within a very narrow field, seemed to be of value although many times it was not effectual, and resort to the most frequently used type was necessary.

Initially, it was our hope that properly selected cases would respond with prolonged relief to a course of this antibiotic, arbitrarily given at a set time. These cases, along with a group of untreated cases studied as controls, were observed over a period of months. Careful chest examinations and vital capacity estimations were done periodically, and the bacterial flora of the sputum was repeatedly determined. However, no changes of significant importance resulted in these cases except for the immediate improvement experienced during the period of therapy.

Because we were dissatisfied with these results, this method was discontinued; and we shifted the emphasis of our study toward the prevention and treatment of acute respiratory infection. Cases were selected because the patient was in the midst of an acute respiratory infection associated with bronchial asthma, or because their history showed a marked tendency to have asthma whenever an acute respiratory infection was contracted.

Our method was to have patients report to the office or clinic promptly when respiratory infection occurred. If (after careful consideration of their history, questioning as to the immediate infection, temperature readings, and chest examination) bronchitis was found, they were given penicillin. A further requirement was that asthma be present or that its occurrence be likely, in view of our past experience with the patient under consideration.

If these criteria were satisfied, the drug was administered in one of the following ways.

*Depo-Penicillin:* 1,200,000 units (4 cc.) were injected into the buttock and repeated every 3 or 4 days for several doses until the infection was controlled or until the procedure seemed to be ineffectual. In children, the doses were reduced proportionately to their age with 600,000 units (2 cc.) being the minimum dose given.

*Aluminum Penicillin:*† Originally these cases were given a course of 32 tablets, 50,000 units per tablet, over a period of 4 days in an effort to duplicate the total number of units in the injectable material administered at any given time. However, we found that it did not control the infections adequately; consequently, the number of doses was increased to 5, the fifth dose being given during the night.

*Depo-Penicillin (Fortified):* This drug was administered in 1 cc. doses (400,000 units) when a respiratory infection occurred and was repeated every three days for a total of three doses, if such was necessary.

Our results were classified as Good, Fair, and Poor. “Good” indicates that an episode of bronchitis and asthma was terminated promptly; if bronchitis was present alone, then it was terminated and asthma did not occur. “Fair” indicates definite

* Generous quantities of this drug were supplied by the Upjohn Company; Kalamazoo, Michigan
† Generous quantities of this drug were supplied by Hynson, Westcott, and Dunning; Baltimore, Maryland.
improvement that would not have been expected in a given patient when the past history of that patient was given critical consideration. "Poor," obviously, represents a failure to abort or to terminate asthma in the face of a given infection.

\[ \text{TABLE 1} \]

<table>
<thead>
<tr>
<th>DRUG</th>
<th>NO. OF CASES</th>
<th>NO. OF EPISODES</th>
<th>AVG. DOSE</th>
<th>GOOD RESULTS</th>
<th>FAIR RESULTS</th>
<th>POOR RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depo-Penicillin (300,000 u/cc.)</td>
<td>50</td>
<td>68</td>
<td>3.5 cc.</td>
<td>47</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Depo-Penicillin (Fort.) (400,000 u/cc.)</td>
<td>16</td>
<td>17</td>
<td>1 cc.</td>
<td>9</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Aluminum Penicillin (50,000 u/tab.)</td>
<td>14</td>
<td>14</td>
<td>32 tabs./course</td>
<td>6</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

Consideration of the foregoing figures reveals that the plain, unfortified, deposit type of penicillin achieved good results in 69 per cent of 68 episodes. Fair results occurred in 15 per cent of 68 episodes, and poor results in 16 per cent of 68 episodes. With the fortified type deposit penicillin, 17 episodes were treated with definitely smaller total dosage as advocated by the manufacturer. Here 53 per cent good results were obtained; 18 per cent fair results; and 29 per cent poor results. With the aluminum penicillin by mouth, 14 episodes were treated with 43 per cent good results; 21 per cent, fair results; and 36 per cent, poor results. Attention is called to the fact that in these latter cases, the "good" results obtained occurred in children with one exception.

It seems obvious from these findings that the method under discussion, namely, large doses of a plain, deposit type penicillin, represents the method of choice.

Because hospitalized cases usually represent severe, intractable asthma that the attending physician has been unable to control at home, it was thought worthwhile to compare hospital admissions, comparing two successive twelve-month periods. Our experience here is as follows.

\[ \text{TABLE 2} \]

<table>
<thead>
<tr>
<th></th>
<th>February 1, 1948—February 1, 1949</th>
<th>February 1, 1949—February 1, 1950</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our Cases</td>
<td>24 (Avg./month—2)</td>
<td>11 (Avg./month—0.9)</td>
</tr>
<tr>
<td>All Other Cases</td>
<td>66 (Avg./month—5.5)</td>
<td>Total</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>36 (Avg./month—3)</td>
</tr>
</tbody>
</table>

It will be noted that our cases were reduced in number 54 per cent, and the admissions of all other physicians in the same hospital, 45 per cent, showing a 9 per cent greater reduction in our cases. The overall reduction in admissions of severe asthma was 47 per cent. Furthermore, from the experience shown by all cases of severe asthma admitted, it is obvious that antibiotics have probably accounted for the more favorable total admission rate experienced in the latter year shown above.
Parenthetically, it may be mentioned that, occasionally, we encountered cases of asthma unresponsive to penicillin. In these, it was our practice to resort to the use of other antibiotics. In some instances, they have proved effectual. However, their greater cost, together with the tendency of one of them to cause untoward reactions in a considerable number of patients, militates (in some degree, at least) against their routine utilization.

SUMMARY

We were interested in evolving a simple and inexpensive method of controlling infectious asthma with as few untoward reactions as possible. A depository type penicillin, in large doses, was administered to infectious asthmatics in the midst of respiratory infection. Fortified depository penicillin and aluminum penicillin, by mouth, were also utilized.

CONCLUSIONS

1. The method outlined would seem to be a satisfactory one for the control of a large percentage of episodes of infectious asthma.

2. It would seem that the antibiotics have contributed to the reduction of asthmatic attacks of sufficient severity to warrant hospitalization, no matter what method of administration was used.
A NEW TYPE PULL-OUT WIRE FOR TENDON SURGERY:
A PRELIMINARY REPORT*

ARLIE R. MANSBERGER, JR., M.D., ERWIN R. JENNINGS, M.D., EDWARD P. SMITH, JR., M.D. AND GEORGE H. YEAGER, M.D.

Basic problems in successful tendon repair are: accurate approximation of the severed tendon without tension, immobilization and prevention of formation of surrounding cicatrix. Various techniques and types of suture materials have been devised in an attempt to minimize surgical trauma and to reduce the use of foreign materials.

To evaluate and compare results, a standard form has been adopted at the University Hospital. An attempt is now being made to evaluate various methods of tendon repair. It is the purpose of this paper to describe a new barbed pull-out wire suture and discuss the technique for its use.

Description

The suture consists of a braided tantalum wire with a weldon curved cutting needle at the proximal end, and a weldon straight cutting needle at the distal end. It is approximately 42 centimeters long with a semi-flexible weldon barb approximately 12 centimeters from the curved needle or proximal end. The barb points toward the distal end of the suture. The original wire of twisted stainless steel was unsatisfactory because of lack of pliability.† The tantalum wire suture now being used is extremely flexible, has excellent tensile strength, and is easily removed.‡

Technique

After identification of the severed tendon ends, the straight needle is introduced through the center of the proximal segment, starting a varying distance from the cut end and threaded through until the barb is engaged. Engagement of the barb is facilitated by a slight downward pull of about 90 degrees to the direction of the tendon fibers. Careful engagement of the barb prevents tearing of the tendon. The straight needle is then threaded through the center of the distal cut tendon end for a varying distance and brought out through the skin. Traction on the distal end of the wire further engages the barb and pulls the proximal tendon distally, affording easy approximation of the cut edges. Handling and maceration of the lacerated edges is reduced to a minimum. The distal end of the wire is then fixed over a button placed next to the skin. Tension sufficient to maintain good approximation is exerted.

* From the Department of Surgery, University Hospital and University of Maryland School of Medicine, Baltimore, Maryland.
Received for Publication May 10, 1951
† Developed by Dr. Med. Fritz Lengemann, an Austrian surgeon.
‡ The braided tantalum barbed pull-out wires were supplied to us by the Ethicon Company. We wish to express our thanks to Dr. Herbert F. Davis and Mr. Zoller of the Ethicon Company for their cooperation.
By means of the curved cutting needle, the proximal end of the wire is brought out through the skin and secured without tension over a button. The wound is closed in layers and the area immobilized by external fixation.

At the end of 21 days, the distal end of the wire is cut flush with the skin and the wire removed by gentle traction on the proximal end. Fifteen barb pull-out wires have been used in 10 patients, and no difficulty has been encountered in their removal. This method of tenorrhaphy presents the following advantages:

1. Simplicity.
2. No tissue constrictive factors.
3. Minimal foreign body implant with minimal tissue reaction.
4. Surgical trauma and maceration of the cut tendon ends is reduced to a minimum.
5. Internal immobilization of the proximal end of the cut tendon is provided by means of a single suture.
6. Removal is easy.

**Summary**

A new braided tantalum barbed pull-out wire suture and the technique for its use is described.

TORULOSIS OF THE CENTRAL NERVOUS SYSTEM: BIOCHEMICAL BEHAVIOR OF THE CAUSATIVE ORGANISM*†

WILLIAM H. MOSBERG, JR., M.D. AND JAMES D. McALPINE, Ph.D.

INTRODUCTION

In 1916 Stoddard and Cutler (1) in their monograph placed the pathology and clinical aspects of central nervous system torulosis on a firm basis. Since that time the causative organism has been widely studied and extensive descriptions of its macroscopic and microscopic appearance and cultural characteristics may be found in the recent literature (2). Other investigators have clarified the life cycle of the organism (3), its nutritional requirements (4) and the chemical composition of the capsule of the organism (5). The biochemical behavior of the *Cryptococcus neoformans* has remained a source of controversy. With the exception of studies made by Harrison (6), Fitchett and Weidman (7) and Cox and Tolhurst (2), the opinions of various authors have varied from “no fermentation of carbohydrates” (8, 9, 10, 11, 12, 13, 14) to “slight if any fermentation of carbohydrates” (15, 16, 17, 18). In this study an attempt was made to obtain as many different strains of *Cryptococcus neoformans* isolated from the human central nervous system as possible and study the reaction of these strains on a series of carbohydrate media.

METHODS

The material used as inoculum was obtained from the central nervous systems of 30 different patients who were suffering from torulosis. These subcultures were tested for purity by both plating and direct examination of stained smears. Cultures from 6 to 7 days old, growing on Sabouraud’s media, served as the source for inoculating the media used in this study.

Twenty-eight sets of media were then inoculated with each of these subcultures. Fermentation tests were made using 1 per cent concentrations of the carbohydrates. Uninoculated tubes of the various media served as standard for comparison of the color. All inoculations were made in duplicate. Following inoculation the media were incubated at 38 C. for 24 hours and, following this, kept at room temperature. Observations were continued for 90 days.

RESULTS

The results obtained in the 30 strains studied are presented in Table I. It is noteworthy that no strain formed gas and that every strain fermented dextrose. Media frequently fermented in this study were sucrose, galactose, levulose, d-mannose, rhamnose and trehalose. No fermentation was noted on erythritol, inositol or adonitol. Each of the strains exhibited different biochemical characteristics.

* From the Departments of Neurosurgery and Bacteriology, University of Maryland, School of Medicine, Baltimore, Maryland.
† Aided by a grant from the Hoffberger Neurosurgical Fund.
* Received for publication December 26, 1950.
TABLE I
Biochemical Behavior of 35 Strains of Cryptococcus Neofor mans

| Strain | Yeast Man | Malt Sug | Dextrose | Raffinose | Raffinose | Raffinose | Raffinose | Raffinose | Raffinose | Raffinose | Raffinose | Raffinose |
|--------|-----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|        |           |          |          |           |           |           |           |           |           |           |           |           |           |
| 1 M, SP | +         | -        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 2 M, SP | +         | -        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 3 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 4 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 5 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 6 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 7 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 8 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 9 M, SP | +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 10 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 11 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 12 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 13 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 14 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 15 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 16 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 17 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 18 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 19 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 20 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 21 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 22 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 23 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 24 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 25 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 26 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 27 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 28 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 29 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 30 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 31 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 32 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 33 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 34 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |
| 35 M, SP| +         | +        | -        | Doubt    | Doubt    | Doubt    | SG, A, NL | -         | -         | -         | -         | -         | -         |

M = Mucoid  SG = Slight growth  NL = No liquefaction  + = Fermentation, no gas
SP = Slight precipitate  A = Aerobic  — = No fermentation  Doubt = Questionable fermentation
DISCUSSION

Harrison (6) was probably the first to divide torula and mycotorula into groups according to their sugar fermentations. In his study the organisms were divided into 9 groups according to their reaction on carbohydrate media. His results were not confirmed by this study.

In a comprehensive investigation Fitchett and Weidman (7) employed 20 strains of torula from cerebrospinal cases and found that: "dextrose and levulose were fermented by all 20 strains; dextrose and levulose alone were fermented by 7 of the strains; dextrose, levulose and saccharose were fermented by 4 strains; inulin, dextrose, levulose, saccharose and melitose were fermented by 2 strains, and these 5 sugars and manitite by 2 strains." Weidman in an earlier paper (19) stated that the higher concentration of sugar in carbohydrate media seemed to hasten the reaction and cause a definite amount of gas to be formed in some of the sugars.

More recently Cox and Tolhurst (2) have studied 10 strains from their cases and have concluded that: "The fermentative power of Torula histolytica is weak and variable." They suggested that the biochemical behavior varied according to the time which had elapsed since isolation of the organism.

Weidman in 1933 (19) made the statement: "It appears from this that such differences in acid production cannot be invoked to create new species of this Torula, at least at the present time." This study, carried on sixteen years later and employing organisms isolated from many cases diagnosed since that time, confirms that opinion.

Acknowledgments: The authors are indebted to Drs. John Wagner and Frank Hachtel for their advice and encouragement and to the many laboratories and clinics for their contribution of subcultures without which this study could not have been undertaken.

SUMMARY

1. A study was made of the biochemical behavior of the organism isolated from the central nervous system of 30 patients suffering from torulosis.
2. In no instance was gas formed, but each strain fermented dextrose. Other frequently fermented media were sucrose, galactose, levulose, d-mannose, rhamnose and trehalose. Erythritol, inositol, and adonitol were not fermented by any of the strains.
3. Each strain studied exhibited a different biochemical behavior.

REFERENCES

GOUT—RECENT ADVANCES

EDWARD S. McCABE, M.D.*

The word "gout" has been adapted from the Latin etymon, gutta, which implies a drop or coagulation. It is descriptive of the articular dyscrasia thought to be caused by a deluxion of humors into affected joints. The chalky tophus is essentially a large accumulation of sodium urate crystals with the initial lesion a microscopic gutta of urate.

Hippocrates in 400 B. C. is credited with the first recorded description of podagra (attacks foot, Greek) although it seems probable that Hieron recognized the malady prior to that. Aretaeus added much to the description of the symptom complex, and Alexander of Tralles made a significant advance (sixth century A. D.) with the successful use of colchicum autumnale. It was not until 1820 that Pelletier (1) isolated the alkaloid colchicine from this herb. For modern history of gout see Chart I.

There is increasing interest in human genetics and in the early detection of carriers of hereditary disease. Talbott (2) observed 136 blood relatives of 27 gouty patients and found no roentgenologic evidence of gout. However, 25 per cent were found to have hyperuricemia, and 80 per cent of these were male. Stecher and later Freyberg came to the conclusion that hyperuricemia results from a single autosomal dominant gene, and only a small percentage of the heterozygotes manifest gouty arthritis. Thus the homozygotes are prone to go on to tophaceous gout. Also, there is evidence now to show that a similar relationship holds as regards hypercholesterolemia and xanthoma lesions. In addition, about one-third of the patients show both errors in metabolism.

The incidence of gout is roughly 5 per cent of all cases of arthritis seen at the large general hospitals and clinics. Thus, there are about 350,000 cases in the United States. Sex, age, climate, and occupation are additional predisposing factors.

Metabolism: Purine nitrogen is excreted as urate because no enzyme is present in man to oxidize urate to allantoin. Uric acid is partially endogenous. About 200 mgms. are excreted daily on a purine-free diet with an adequate caloric intake. Nucleoproteins are the principal source. The primary exogenous sources are liver, kidney, thymus, pancreas, sardines and anchovies. Of the bases, thymine, cytosine, and uracil are the pyrimidine bases which form uric acid as the nitrogenous end product. On the other hand, adenine and guanine (purine bases) are deaminized and oxidized to form hypoxanthine and uric acid. The maximum solubility of sodium urate in distilled water is 100 mgm. per cent; but in the presence of saline, it is reduced to 1/8 or 1/10, depending on other ions present; yet the solubility in body fluids is somewhat higher, and hence the existence of a colloidal form is suggested. Talbott feels that 98 per cent of patients with gout irrespective of the phase, will show a serum uric acid above 6 mgms. per cent, just the reverse of a control group. In the urine the more alkaline it is the greater the solubility. However, for a given pH the more sodium ions, the less soluble are the urates. One must keep excretion at less than 50 mgms. per 100 cc. of urine. There is a higher value in gouty subjects for the ratio,

* 133 S. 36th St., Philadelphia, 4, Pennsylvania

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serum urate concentration

urine urate concentration

Thus, there may be a selective constitutional inferiority of the kidney in its ability to concentrate urate. Synovial fluid is in agreement with serum urate concentration. The only exception is the spinal fluid which represents 60–80 per cent of the serum level.

Renal clearance is calculated as the volume of plasma needed to carry the quantity of the substance excreted per minute. For inulin or mannitol a normal person forms 125 cc. glomerular filtrate although only 2 per cent reaches the urinary bladder. Ninety per cent of urate in glomerular filtrate is reabsorbed, so that renal clearance is about 10 cc. per minute. Urea is about six times greater. This applies to gouty subjects as well. Urate clearance tends to be maintained at the expense of per cent reabsorption as glomerular filtration rate is impaired in gouty patients by progressive damage. Retention of urate from kidney damage is manifest only when glomerular filtration rate is depressed below 35 cc. per minute.

See (3) in 1875 was the first to observe that salicylates increased urate excretion. It is probable that while the tubules are busily engaged in the excretion of salicylate, they are unable to give proper attention to resorption of urate. The action of cincho-

CHART I

HISTORICAL REVIEW

SYDENHAM 1683 Differentiation of gout from other joint diseases.

SACHELE 1776 Identified uric acid in a kidney stone.

WOLLASTON 1797 Discovered uric acid in tophi.

PELLETIER 1820 Isolated colchicine from the meadow saffron.

GARROD 1848 Discovered hyper uricemia.

MIESCHER 1871 Nucleoproteins in cell nuclei.

KOSSEL 1891 Purines are building stones of nucleic acid.

FISCHER 1907 Chemical structure of uric acid and purines.

FOLIN 1913 Method for uric acid determination in blood.

KOCH 1939 Method for determination of "true uric acid" with uricase.

ALDERSBERG 1942 Abnormal uric acid partition (ultra filtration).

SMYTH 1948 Genetics of gout and hyper uricemia.

HENCH 1949 Pituitary Adrenocorticotropic Hormone.

phen is probably the result of a mildly toxic activity to the renal tubular cells. Colchicine has no demonstrable effect in urate clearance. Salygan® does have an effect as does Diodrast®, p-amino hippuric acid and Caronamide®. Glucose at high plasma levels takes precedence over urate reabsorption.

There appears to be a gout cycle starting with a diminished excretion of urate; then a gain in body weight accompanied by diuresis. A drop in barometric pressure precedes the latter. Harkary (4) recently emphasized the allergic aspect of the chemical manifestations with the joints as the major shock tissue. Experiments in the rat have shown (Selye) that anaphylactic reactions from egg white can be inhibited by injections of ACTH and cortisone, while Desoxytocicosterone acetate (D.O.C.A.) increases the mortality. Also formaldehyde arthritis can be minimized or exaggerated by the above agents. The hypo-activity (5) of the adrenal cortex with reference to the 11 oxysteroids in the prodromal period may be responsible for release of inhibition
of the xanthine oxidase in the liver and hence to rise to serum uric acid (Chart II). In phase 4, despite innumerable liver function tests, the only consistent abnormality is a high blood fibrinogen which would account for the increased sedimentation rate. The low keto steroid excretion may be caused in part by an unsuccessful attempt to convert to 11 oxysteroids.

_Urate Deposition:_ The fact that the earliest changes observed at microscopic examination of joints are deposits of urate in the upper layer of cartilage, suggests that urate comes from synovial fluid rather than directly from the capillaries of bony structures. Focal necrosis is unlikely because of the long span of life and synovitis, unless allergic, is not seriously entertained. Urate deposits are prone to develop in avascular tissues with the exception of the kidney. Fibrous ankylosis may follow extensive erosion and destruction of the cartilage. A tophus has 60 per cent urate, 30 per cent organic material, and 10 per cent cations, mainly sodium. It may be assumed that urate deposits in apposition to bony trabeculae inhibit osteoblastic activity; and as bone is resorbed normally, it is not replaced in the immediate vicinity of a tophus. The exostoses are characteristic of degenerative joint disease and may be associated with calcium deposition but are not necessarily a part of gouty joints.

**CHART II**

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<th>ARTHRITIS</th>
<th>FIRST STAGE</th>
<th>SECOND STAGE</th>
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<tr>
<td>Phase 1</td>
<td>Early attacks of acute recurrent arthritis</td>
<td>Phase 2</td>
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<tr>
<td>Phase 3</td>
<td>Residual joint disease.</td>
<td>Exacerbations or active chronic arthritis.</td>
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<td>Phase 4</td>
<td>Late, relatively painless, inactive residual arthritis.</td>
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<th>HYPERURICEMIA</th>
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Gout would appear to be the result of an inborn error of metabolism, which at some time or other manifests itself as a hyperuricemia and or gouty arthritis. The tophaceous form and chronic arthritis is more likely to be seen in the individual with a double gene defect (6). Certain factors involved in endogenous uric acid metabolism are (1) diminished destruction, (2) diminished excretion, and (3) increased formation. The last would appear the most likely if a threshold is exceeded, overtaxing the first two factors. It appears that the alarm reaction precipitated by emotion, infection, surgical procedures, and drugs, i.e. liver extract, physical exertion, allergy and alcohol or dietary indiscretion with the resulting pouring out of steroid hormones, especially if dissociation with D.O.C.A. in preponderance is possible, will disturb metabolism enough to account for all symptoms. An allergic factor on a constitutional diathesis may be the synergist that magnifies small changes in the desoxycorticosterone 11 oxysteroid ratio. Fitch (7) has shown very nicely that synovial permeability is increased by D.O.C.A. and hyaluronidase and that cortisone, artisone, and other
11 oxysteroids decrease permeability. It has been shown before that any increase in sodium ions at a given pH necessarily decreases urate solubility. Thus, since the pituitary is probably under "hormostatic control", a large single dose (8) such as 50 mgms. of adrenocorticotropic hormone (A.C.T.H.) may ameliorate acute gout by creating a more favorable ratio since it stimulates primarily the mid zone or oxyster-

![Fig. 1. (Top): Roentgenograph showing mild gouty arthritis of hand](image1)

![Fig. 2. (Bottom): Roentgen photograph showing advanced gouty changes](image2)

oids, thus helping mainly at the many sites of inflammation or by covering the lag period until the D.O.C.A. falls low enough to again stimulate the pituitary.

The first attack (Stage I) of acute gouty arthritis usually occurs suddenly, lasts about 3 to 10 days, and then disappears completely. It affects a great toe or with almost equal frequency an instep, ankle, knee, or other region. The typical attack may
come on at night and the pain, moderate at first, increases in severity. Often the weight of the bedclothes adds to the patients' distress. On examination the affected joint is swollen and exquisitely tender. The skin is a deep color, almost purplish, and veins are prominent. There is often local itching and some desquamation as swelling subsides. Hyperuricemia may or may not be present.

The disease usually increases in tempo and severity, attacks coming semi-annually or more often. Later attacks (Stage II) are prone to be polyarticular and febrile. Despite this, the joints recover full symptomless function. The stage of chronic gouty arthritis begins after a variable period of time, i.e., ten years or so. At first, exacerbations are superimposed with incomplete remissions. Then these cease, and there exists a relatively painless chronic arthritis. At some time all the patients with exacerbations show a hyperuricemia, but in the chronic stage the sedimentation rate is a much better guide as to activity than the uric acid level which is within normal limits. With the polyarticular stage, subcutaneous tophi and involvement of bursae are rather common. Osseous tophi may be demonstrated in chronic gouty arthritis. Fig. 1 and 2.

One aspect (9) of this disease that has not been emphasized enough is the mental side. This is more frequently seen in phase 3 of the disease when the patient's memory, especially, for recent events, is impaired, as is the ability to calculate. The speech then becomes thick, garbled, or slurred. The individual may become quite irritable. This does not appear to be on a toxic drug basis, as the clinical signs disappear while the patient is still under therapy.

Complications may arise in the cardiovascular-renal system. Nephritis and renal colic occur in about one-fifth of the cases in the second stage. It would appear that degenerative vascular complications are more frequent in gout, especially when associated with arteriosclerosis. The differential diagnosis would therefore include rheumatoid arthritis, osteoarthritis, intermittent hydroarthrosis, menopausal arthritis, palindromic arthritis, and erythema nodosum.

Treatment: The important points in treatment are an early recognition and prophylaxis which includes demonstration of symptomless hyperuricemia. The early monarticular attack may be aborted by taking a saline cathartic and the use of colchicine, gr. \( \frac{1}{2} \), every 2 hours for 6 or more doses. This may be followed by sodium salicylate gr. XX 4 times daily or cinchophen gr. VII 3 times daily for a few days to combat hyperuricemia. If the attack becomes established, bed rest with a cradle to keep the weight of the bed clothes from the affected part is needed and should be maintained until pain and tenderness subside. Warm compresses are usually more effective than cold. The colchicine must be pushed to toxic dose level although once this is known, on subsequent attacks the patient may stop a few tablets short of the toxic level. Paregoric or codeine may be necessary to control the diarrhea resulting from colchicine. Aldersberg (5) believes that colchicine lowers the bound uric acid. It seems that one could use the difference in the determinations of spinal fluid uric acid and serum uric acid as the protein-bound portion and thus easily prove the validity of this hypothesis with simultaneous determinations before and after institution of therapy.

At times a narcotic as strong as morphine gr. \( \frac{1}{4} \) may be necessary to relieve the
pain of gout. The diet should be low in purines and fats and high in carbohydrate. Alcohol should be avoided. Cocoa which contains theobromine is preferable to tea and coffee as the latter yield uric acid.

The fact that the patient has a gouty diathesis and must adhere faithfully to the interval treatment needs to be stressed. The diet may be individualized but should be free of purines 3 days a week and low (200 mgms.) on other days. If an allergic background is evident, then those substances should be avoided at all times. There seems to be evidence that an increased vitamin requirement exists, particularly thiamine demands. Acetylsalicylic acid gr. XX three times daily, alternating with Chlor-Trimeton® 4 mgm. three times daily, seems to be a useful interval regimen. The gouty patient should always carry a few colchicine tablets along for prompt use as necessary.

Cinchophen® therapy is a calculated risk since it is very effective in lowering serum uric acid. It is necessary to maintain a good urinary output, i.e., 1500 cc. daily, and to insure an alkaline urine. Potassium Citrate gr. XX three times daily may be used in order to prevent precipitation of urates bringing about renal colic. The cases of liver damage from cinchophen appear to have occurred in cases of rheumatoid arthritis that were misdiagnosed. In chronic gouty arthritis fever therapy, using typhoid vaccine may be required. If tophaceous ulcers occur, a careful debridement usually results in prompt healing. One should always institute the above regimen to prevent post-operative exacerbation. In gouty nephritis, a low protein diet and a more generous fluid intake are demanded in addition to other measures. Lithium salts greatly increase the solubility of urates in vitro but have been disappointing clinically. The pituitary adrenocorticotropic hormone (10) has been shown to influence uric acid excretion and probably both solubility and partition. It is able to hasten the control of the acute attack probably by substituting for the lag period in the thermostatic type, control of the pituitary gland for its release. The final result awaits more intensive clinical trial. A.C.T.H. can precipitate an attack if given in a remission period. Cortisone does not appear to be of as much value as the adrenals tend to become atrophic under this therapy.

CONCLUSION

The later in life the gout develops, the better the prognosis. It would appear that the disease only progresses rapidly in the individuals who do not enter wholeheartedly into a therapeutic regime.

BIBLIOGRAPHY

PERFORATION OF GASTROJEJUNAL ULCER FOLLOWING SUBTOTAL GASTRIC RESECTION FOR DUODENAL ULCER*

CASE REPORT

EMIL BLAIR, M.D. AND OTTO C. BRANTIGAN, M.D.

Baltimore, Maryland

It is of unusual interest that the first report in the literature of a gastrojejunal ulcer was that of a perforated ulcer (14). As a complication following surgical treatment of peptic ulcers, gastrojejunal ulcers occur less frequently following subtotal gastric resection than after gastro-enterostomy alone. In the order of diminishing frequency, the site of perforation of anastomotic ulcers appears in the jejunum, at the anastomosis, and finally in the stomach (13). The greater majority of perforated ulcers open into the free peritoneal cavity, although a small number communicate with the bowel to form fistulas. Toland and Thompson (13), in a review of 103 case of perforated anastomotic ulcers, found that only six communicated with the bowel. These authors also found that most fistulas occur following gastro-enterostomy, whereas marginal ulcers follow subtotal gastric resection and are more likely to perforate into the free peritoneal cavity (19).

The following case is presented because, as far as is known, this is the first instance reported in which there was perforation at the site of the stomach in a gastrojejunal ulcer following subtotal gastric resection for duodenal ulcer. This perforation penetrated into the free peritoneal cavity.

CASE REPORT

B. C., a 47 year old negro male was admitted to the surgical service of the Baltimore City Hospitals on April 6, 1948, with a chief complaint of “pain in the stomach” of six months’ duration. The symptomatology and clinical findings were fairly typical of duodenal ulcer. A roentgenologic examination revealed distortion of the duodenal cap caused by an ulcer and by spasm of the duodenum and pylorus. Surgery was recommended because of the severe persistent pain, and a subtotal gastrectomy of the Polya type and an antecolic gastro-enterostomy were performed. The ulcer proper was removed by the resection. The patient withstood the procedure well; and following the customary progressive dietary regimen, he was discharged on the eleventh postoperative day.

He was followed for seven months in the Out-Patient Department. During this time, he was entirely free of symptoms. Then he was not seen for a period of nine months, at the end of which he was admitted to the accident room, presenting signs indicating an acute surgical abdomen. Twelve hours previously, he had been seized suddenly with severe pain in the right upper quadrant. The distress soon spread over the entire abdomen. Two hours later, he noticed an aching pain in his left shoulder. On physical examination the blood pressure, pulse, and temperature were found to be normal. The positive findings were limited to the abdomen which had a boardlike rigidity and was generally tender. An upright roentgenogram of the abdomen revealed air under the diaphragm.

The patient was taken immediately to the operating room where a laparotomy was performed. There was a moderate amount of free peritoneal fluid present, but only a small amount of contaminant. A perforation 3 mm. in diameter was found in the stomach just above the site of the anastomosis. The perforation was closed with an invaginating suture of No. 00 chromic catgut and then

* From the Department of Surgery, Baltimore City Hospitals, Baltimore.
† Received for Publication, August 19, 1950.
reinforced with silk. An omental tag was sutured over the site of the perforation. The patient tolerated the procedure well, and his postoperative course was uneventful.

Inasmuch as the factors which had produced the ulcer were still present, further treatment was obviously indicated. To avoid a possible recurrence of this distressing complication, a trans-thoracic bilateral vagectomy was performed. Again the surgery was well tolerated. Repeated insulin-induced hypoglycemic gastric analyses revealed no free acid. The patient was asymptomatic during hospitalization. Roentgenographic studies revealed normally functioning anastomosis and no evidence of ulcer. The patient was discharged on the twenty-first postoperative day after the second operation. A hypoglycemic study made four months later again revealed no free acid. The patient has had no recurrence of symptoms to date, eight months after dismissal.

**Fig. 1.** This is an illustration of the site of the perforation in the stomach, just adjacent to the anastomosis.

**DISCUSSION**

It has been estimated that about 1 per cent of gastrojejunal ulcers perforate (13). In 1936 Toland and Thompson (13) reported 93 instances of perforated anastomotic ulcers found in the literature. They added 10 of their own, making a total of 103. In 1938 Bracci (2) recorded 200 cases, and Warren and Fallis (15) reported 17 more in 1944. Ogilvie (8) added another in 1947, and in 1948 3 additional cases appeared in the literature (6, 9). Easton and Cole (3) reported 1 instance in 1949, as did Lurje (7). Although there are certainly more instances of perforated marginal ulcers than those reported, a search of the literature revealed only 239 cases including the case report discussed here. The greater majority of perforations occurred in ulcers following gastro-enterostomy. This is to be expected because gastro-enterostomy is more frequently complicated by anastomotic ulcer than subtotal gastrectomy.

The conditions that produce duodenal ulcers will produce gastrojejunal ulcers; i.e., hyperacidity, hypersecretion, and hyperactivity. In addition, there are the factors of sensitivity of the jejunal mucosa, the role of infection, the presence of obstruction, and the finesse of surgical technic. The choice of doing an anterior or a
posterior anastomosis and the length of the loop may be contributing factors. The locale of the perforations would be in direct proportion to the most common locale of gastrojejunal ulcers. These occur most frequently on the efferent limb of the jejunal anastomosis and most rarely in the stomach.

A perforated marginal ulcer presents an emergency problem. The quickest and simplest treatment is the best. In an instance where an adequate subtotal gastrectomy has been performed, the choice of a simple closure is obvious. In short, the treatment is similar to that prescribed for perforated duodenal ulcer. Where only a partial gastrectomy has been done, dismantling of the anastomosis and resection are advocated (7, 13, 15, 17). Uncomplicated gastrojejunal ulcers lend themselves to various methods of treatment (5, 7, 11).

When the ulcer has been closed and the patient has recovered, there should be no delusion concerning the final end results. The distressing factors that produced the ulcer still persist, and further perforation can occur. The conditions threatening further ulceration must be eradicated. In this connection, the role of the vagus resection is believed to be of great value. Vagotomy has even been advocated as the sole treatment of uncomplicated gastrojejunal ulcers (4, 18). The rationale, in its application for treatment of gastrojejunal ulcers, is identical to that applied to gastroduodenal ulcers. In the wake of experience with perforated ulcers, vagotomy is an essential and mandatory procedure. Thus, vagotomy serves not simply the beneficent role of a valuable adjunct, but assumes a major role in the prevention of recurrence of gastrojejunal ulcers.

SUMMARY

1. A case of a gastrojejunal ulcer perforating into the free peritoneal cavity 16 months following subtotal gastrectomy is presented.
2. Treatment consists of simple closure of the ulcer, followed by transthoracic vagotomy.
3. A brief review of the literature concerning perforated gastrojejunal ulcers is presented.

BIBLIOGRAPHY

CLINICO-PATHOLOGIC CONFERENCE

From the Case Histories, University Hospital, Baltimore

Clinical History

A 49 year old white male was admitted to the surgical service of the University Hospital because of a spot on his lung. On April 17, 1950, he had a roentgenograph of his chest taken by a mobile x-ray unit and 6 weeks later was advised to have a larger film taken. He was told then that he had a “spot” on his lung, and hospitalization was advised. He denied having any chest pain, hemoptysis, cough, or night sweats. The patient smoked 2 or 3 cigars per day but had gained weight recently. He had been told that he had tachycardia and high blood pressure. There was no evidence of dyspnea, palpitation, and ankle edema. In 1927 he had had an attack of gonorrhea. The remainder of the past history was negative.

His father died of appendicitis at the age of 58. His mother, 76 years old, was living and well. There was no family history of heart disease, tuberculosis, cancer, diabetes or asthma.

The patient was a well developed, moderately obese, middle-aged, white male. There was no evidence of dyspnea, cyanosis, jaundice or edema. The pupils were round, equal, and central and reactive to light. Accommodation was normal. The trachea was in the midline, and there was no tug. The thyroid was of normal size. There was no cervical venous distention or lymphadenopathy. The axillary lymph nodes were not palpable. The lungs were clear to percussion and auscultation. The area of cardiac dullness was extended to the left anterior axillary line. The sounds were regular in rate and rhythm. There were no murmurs. The abdomen was obese. There were no palpable viscera, tendernesses, masses or spasm.

Laboratory data included the following determinations: Blood hemoglobin concentration was 110 per cent, (16.1 grams); hematocrit, 45 mm.; and blood urea nitrogen, 14 mgm. per cent; blood sugar, 80 mgm. per hundred cubic centimeters of blood. A urine specimen was yellow and acid. Its specific gravity was 1.018. A trace of albumin was present. Two concentrated sputum smears stained for acid-fast organisms were negative. Roentgen studies of the chest were repeated (Fig. 1).

On August 4, 1950, an exploratory thoracotomy was performed. Post-operatively, the patient’s course was satisfactory; and on August 16, 1950, he was discharged from the hospital.

Clinical Discussion

Dr. William L. Garlick: We have the problem of a questionably healthy individual who has hypertension and a slightly enlarged heart and a shadow or spot in his lung. The word “spot” doesn’t indicate “tumor” to me. In reviewing the statistics of mass roentgenographs, one finds that some 30 to 40 types of lesions have been discovered. On the basis of probability, one can make an almost exact diagnosis, since few symptoms were presented by this patient. The least common of the lesions demonstrated by mass roentgenographic surveys are the neurologic tumors. A tumor arising in nerve usually would cause neuralgia. There is pain that encircles the body in the
instance of neuroma Such was not reported in this case. Bone disease should be considered. Pott's disease is not an uncommon condition, particularly in the 20 year old group. The radiologic defect lies usually behind the heart and sometimes in the mediastinum. Patients with this disease, however, do not feel well. They have symptoms of chronic illness. This man obviously had no chronic disease. Chondromas, lymphomas, and plasmacytomas are seen occasionally in the ribs. I have had experience with metastatic tumors of ribs which had been "silent" and which were found on "plates" of the chest. I recall one rib tumor that turned out to be a metastasis from a hypernephroma. Another patient whom I saw had 20 to 30 small metastases in his left chest after pneumonectomy. He also had a hypernephroma. In both cases there were no symptoms referable to the kidney. Tumors of the breast, colon, and

![Fig. 1. Roentgenogram showing circumscribed area of increased density at periphery of right lung.](image-url)

oesophagus may metastasize to the chest before causing symptoms in the organ of origin. In classifying radio-opacities of the lungs and mediastinum, one must consider cardiovascular structures such as a dilated pulmonary conus, aneurysm, hypertrophied left auricle, and pulmonary infarcts. In hemangiomas and arteriovenous aneurysms that occur in the lung, one usually finds a thrill over the anterior portions of the second to the fifth ribs. One might think of coarctation of the aorta, but this will usually give murmurs in the dorsum of the chest. An arteriovenous aneurysm in the lung field with a cystic cavity that is visible radiologically would cause a thrill or murmurs.

The physical examination here states that no murmurs or thrills were heard. On routine roentgenographic films, a spot in the lower left or right chest close to the
heart border can be seen in patients who apparently are otherwise normal, but the history reports that the patient has been in an accident. Hernias in the chest should be thought of in such cases. In the anterior mediastinum, one might see a rounded shadow that is typical of a teratoma or dermoid cyst. These tend to occur in the mediastinum or near the pericardium. Occasionally, they will occur in the posterior mediastinum. Patients with dermoid cysts usually have a history of some vague complaint. For instance, we treated a woman who had a sensation of shifting weight in her chest every time she leaned over. She had been treated for neuroses, but roentgenographic studies revealed a large dermoid cyst. Because there was no lymphadenopathy, I assume that Hodgkin's disease may be dismissed. Thyroid, parathyroid, and pleural tumors are eliminated on the basis of their rarity and inconstant roentgenographic characteristics. One of the more common lung lesions is solitary or multiple cysts. These are usually discovered in younger people. They frequently have a history of repeated attacks of pneumonia and pneumonitis, or else history of spontaneous pneumothorax is obtained. An emphysematous bleb or cystic cavity may be seen in a roentgenograph. About 1 in 800 persons in a mass roentgenographic series have congenital cystic lesions, but cysts of this type constitute the third largest group of tumors that are discovered.

I think we can rule out most inflammatory lesions in this patient, because he did not have a feeling of morbidity. Too, these inflammatory lesions are very easily diagnosed by roentgenography. The most commonly encountered pulmonary disease, (and the incidence is 1 out of 60 people) is tuberculosis. Its type may be a healed tuberculosis, a Ghon tubercle, an early acute active tuberculosis, or a reactivation of an old lesion. I think we can rule out bronchiectasis because this man did not have cough or hemoptysis. The second most common group of lesions, particularly if they are circumscribed, is primary bronchogenic carcinoma. The next most common lesion in such a patient would be adenoma. In bronchoscopic clinics, we frequently see adenomas that cause atelectasis and thereby throw a shadow. I want to emphasize that every circumscribed lesion in the lung should be considered as carcinoma until proven otherwise. I would pick as the first diagnosis on this patient a Ghon tubercle or tuberculoma, because this is the most common lung tumor that causes a roentgenographic shadow. The diagnosis that I would choose secondly is bronchogenic carcinoma, and lastly, bronchogenic cyst.

Dr. D. J. Barnett: We called this lesion a tuberculoma. The lesion is about 1\(\frac{1}{2}\) cm. in diameter, peripheral in the lung, and solitary. In the solitary lesion there are plaques of calcification which are more dense at the center of the lesion than in the periphery. The heart is slightly enlarged.

Senior Student: Is there a relationship between tuberculoma and malignancy?

Dr. D. J. Barnett: No. However, I have seen carcinomas arising in tuberculomas. They usually arise in the periphery of the tuberculoma.

Dr. H. R. Spencer: I do not know of any definite relationship that might exist between the two. As Dr. Garlick has suggested, any inflammatory lesion or destructive process of the lung may instigate squamous metaplasia which might be a site for the development of squamous carcinoma. Some years ago I saw a man who gave a history of tonsillectomy and subsequent pain in his chest. Three years later, a lung
lesion was found. It was thought that following the tonsillectomy he had an infected embolus with infarction and lung abscess. At autopsy, he was found to have a carcinoma in the periphery of his lung, which had had its origin in the squamous lining of an old cavity.

Senior Student: Did subsequent films in this case show that this lesion had grown any?

Dr. Barnett: I can’t answer that. This is the only film we have. The films made elsewhere are not available to us.

Dr. R. C. Sheppard: One doesn’t wait for tumors to increase in size. Take them out and look at them.

Dr. R. M. Cunningham: Calcium in a peripheral lesion probably indicates a lifelong duration of the lesion. If one doesn’t see any indication of calcification, remove the lesion. In such a case, carcinoma cannot be ruled out by clinical procedures. There has never been a carcinoma reported that had calcium in it.

Dr. Spencer: I would like to ask Dr. Garlick to comment on that point.

Dr. Garlick: My feeling is exactly that. With the assistance of films, one ought to be able to show calcareous matter in most of these lesions. On the basis of one film or a series taken in a short time, I see no reason to remove the tumor surgically. If surgical treatment is needed to make a diagnosis, a segmental resection of the lung should be performed. If the tumor should be carcinoma of the lung, a lobectomy may cure the carcinoma as readily as a pneumonectomy.

Pathologic Discussion

The gross specimen, S.P. #69662, in this case consisted of a small piece of lung tissue which contained a round, well circumscribed encapsulated lesion that was approximately 2.5 cm. in diameter. The lesion consisted of a laminated caseous mass which presented the characteristics of tuberculosis. Histologic sections showed caseation surrounded by fibrous tissue. There was no evidence of recent activity.

Anatomic Diagnosis

Tuberculoma.
OBSTETRICAL CASE REPORT*

Mrs. R. E. was admitted to the hospital on May 23, 1950, in active labor and with the following significant history. She had had 4 previous full term pregnancies and normal labors. All of the babies lived and were healthy. There were no other pregnancies. Her present pregnancy was characterized by more than the usual amount of abdominal pain, probably on the basis of muscle relaxation. The estimated date of confinement was May 30. On the morning of the day of admission the membranes ruptured spontaneously; and after a latent period of 4 hours, labor began. The patient reached the hospital about 6 hours after rupture of the membranes. Abdominal palpation at this time revealed a transverse presentation, the diagnosis being R.Ac.A. The fetal heart was easily heard near the umbilicus; the rate was 140 and the sounds regular. A rectal examination was most interesting in that the cervical canal was only about one half effaced and the external os about 3 cms. dilated. There was a loop of umbilical cord protruding through the cervix but still within the vagina. The pulsations in the cord were synchronous with those of the fetal heart. The estimated size of the fetus was 3400 g (7½ lbs.). Her pains were 4 to 6 minutes apart and moderately severe. The mother's condition was entirely normal.

Discussion: Thinking about the treatment of a transverse presentation has changed considerably in recent years, especially since antibiotics have made abdominal delivery so much safer. For years the dangers of internal podalic version and breech extraction were recognized; but in the treatment of certain cases of transverse lie, it appeared to be the lesser of two evils. Most physicians could not bring themselves to do a decapitation or another destructive operation on a living healthy baby and deliberately accepted the increased risk to the mother which accompanied version and extraction. All too frequently the results were bad. Fortunately, modern methods of combatting infection permit the use of the abdominal route today under circumstances which would almost certainly have been fatal a few years ago. And the case cited above is one in point. Abdominal delivery should be quite safe for this mother and offers the best possible chance for the baby.

Since this is her fifth term pregnancy, and if cesarean section is to be performed it will be undoubtedly more satisfactory for the patient if she does not conceive again. Sterilization should be considered.

Actual treatment: Cesarean section and sterilization were performed. The patient had a normal convalescence, both mother and child being discharged in good condition.

* From the Department of Obstetrics, University of Maryland School of Medicine, Baltimore.
BOOK REVIEW

Methods in Medicine, 2nd Edition, 1950 (1st, 1924) George R. Herrmann, M.D., Ph.D., C. V. Mosby Company, St. Louis

This book is a re-issue of The Manual of the Medical Service of Dr. George Dock published in 1924. It is apparently designed for the guidance of the intern in working up his cases and of the clinical student in observing the way those patients are studied.

History taking and physical examinations are given a brief outline. Techniques and procedures are briefly described for routine hematologic studies, urinalysis, examination of sputum, gastric contents, spinal and paracentesis fluids, staining of bacteria, blood chemistry determination, and a few other clinical tests. The brevity maintained in this 132 page section limits its interest to the medical student and intern. They could be expected to have classroom notes outlining all the methods described in this text.

To special studies in suspected infectious disease cases six pages are devoted. The specific tests described in two or three paragraphs include the tuberculin test, the Kveim reaction (sarcoidosis) the Schick, Dick, and brucellergin tests. A few other studies are mentioned.

Other chapters on various classes of disorders present special features of the history, physical examination, and laboratory studies which are to be remembered and performed. These classes include endocrine, metabolic, nutritional, allergic, pulmonary, cardiac, and the other systemic disorders. Clinical pathologic testing comprises the bulk of material in this section.

The book ends with some general therapeutic procedures and practical dietetic methods for the management of various conditions.

For the intern or practitioner who has limited time for brushing up on a large number of specific laboratory tests, this book can have definite value.

Joseph H. Bird, M.D.
Aided by a grant from the Bressler Research Fund of the School of Medicine, the Department of Psychiatry has been engaged in a project relating to the study of psychiatric education. The success experienced in the early stages of the project has resulted in a decision to broaden the study into other fields of medical education.

The Department of Psychiatry plans to conduct a series of seminars led by competent workers in the field of general education and medical education to discuss and perhaps formulate the best available information as to the theories and practice of medical school teaching.

The first seminar was held on April 16 at which time Dr. John R. Reid, Professor of Philosophy at Stanford University, California, who is currently visiting Professor of Psychiatry, initiated the seminar with a talk on "Human Values in Medical Education."

The Department of Psychiatry will distribute copies of the Proceedings of these seminars throughout the school year.
APPPOINTED ASSISTANT PROFESSOR OF PHYSIOLOGY

The Department of Physiology has announced the appointment of Dr. John McCullough Turner as Assistant Professor of Physiology, effective in August, 1950.

Dr. Turner was born in New York City on March 5, 1908, receiving his undergraduate college training at Yale University and graduating in 1931. From 1932-33 he traveled extensively on the Continent and in 1934 entered the pre-medical department of Columbia University. In 1935 he entered the Cornell University School of Medicine, transferring to the Yale University Graduate School at the end of the second year. While at Yale, he was associated with Dr. Howard W. Haggard in the department of Applied Physiology, receiving his Doctor of Philosophy degree in 1943 on the subject of "The Oxidation and Elimination of Exogenous Acetone." From 1942-45 he served as a Lieutenant in the United States Navy, conducting research relating to physiologic problems associated with certain internal combustion engines and certain noxious gases in closed ships' spaces. From 1946-49 he was Associate Professor in the Department of Applied Physiology at Yale University, following which he served a year as Assistant Professor of Pharmacology and Physiology at the University of Connecticut College of Pharmacy.

Dr. Turner is married and has two children.

Dr. John McCullough Turner.
FACULTY-STUDENT COUNCIL DINNER

Members of the Faculty and Student Council gathered on May 10th for the annual Faculty-Student Council dinner.

This meeting, inaugurated almost 10 years ago and highly popular with the Student Government, Administration, and Department Heads, provides a common meeting ground for the exchange of constructive ideas to further student-faculty relations and to discuss informally at dinner, problems arising in the student body which perhaps would not otherwise be brought to faculty attention.

This year discussion centered principally about certain curriculum changes, the possible introduction of the honor system for student examinations, and for a closer faculty-student association.

A student plan for the elimination of grade consciousness was also presented for faculty consideration. Presentations by class Presidents and the President of the Student Council, Mr. William Matthews, were most constructive and entertained considerable discussion from most of the faculty present.

MEDICAL LIBRARY NOTES

Gifts continue to come to the library from generous alumni and other friends. Between February 1 and May 1, the following donors presented material to the library:
Dr. Margaret B. Ballard  Dr. Page C. Jett
Dr. H. K. Fleck  Dr. Arthur M. Kraut
Dr. Frank W. Hachtel  Mr. Morton Krieger
Mr. W. L. Holder  Dr. H. B. McDonnell
Dr. H. Boyd Wylie

The Medical Library is benefited greatly from the revised and expanded exchange list of the BULLETIN OF THE SCHOOL OF MEDICINE. Many significant new periodical titles are being added to the library collection on an exchange basis. There has been a good response from both foreign and domestic journals interested in receiving the BULLETIN and providing the Medical Library with their publications.

The annual meeting of the Medical Library Association was held in Denver, Colorado, at the end of June this year. Librarians in all divisions of the health sciences attended this meeting, not only from every corner of the United States, but from foreign countries as well. Each year the Schools of Medicine, Dentistry, and Pharmacy of the University of Maryland have made it possible for their librarians to attend the meeting and represent the libraries. This year, the librarian, Mrs. Ida M. Robinson and the assistant librarian, Miss Hilda Moore, attended this meeting.

MERCY HOSPITAL

New Medical Statistician

On April 16, Mr. L. Omer Huesman came to Mercy Hospital as Statistician in charge of the Statistical Department. A graduate of Calvert Hall High School, class of 1926, Mr. Huesman has been active in the field of medical statistics and for the past 14 years has been Supervisor of the Statistical Department at the Johns Hopkins Hospital.

Armed Forces Section

Dr. Joseph C. Sheehan, class of 1941, of the Obstetrical Visiting staff of Mercy Hospital, left March 15, 1951, for service as a Captain in the United States Army, at Fort George G. Meade, Maryland.

WOMEN’S AUXILIARY OF MERCY HOSPITAL ORGANIZED

On February 28, 1951, the first general meeting of the Women’s Auxiliary of Mercy Hospital was held at the hospital. Sister Mary Veronica, R.S.M., Administrator, addressed the members and stressed the necessity of a Women’s Auxiliary to help raise funds and act as volunteer workers in the hospital.

Meetings will be held on the fourth Wednesday of each month at 11 A.M. in Room 33 of the hospital. Sister Mary Frances Louise, R.S.M., will serve as moderator of the group.

Mrs. Charles R. Goldsborough has been elected Chairman of a benefit which will be held in the fall of 1951 at the Alcazar.
DEPARTMENT OF MEDICINE

Department of Clinical Pathology

Dr. Milton S. Sacks, Director of the Department, spoke on “The Biochemical Defect in Pernicious Anemia: A Review of Recent Work with Comments on Oral Therapy,” at the Sinai Hospital, Baltimore, staff meeting on April 26, 1951. A series of lectures entitled “Blood Groups and Blood Transfusions” were given by Dr. Sacks at the Veterans’ Hospital, Fort Howard, Maryland, during May and June, 1951. Dr. Sacks has also contributed the section on “The Treatment of Erythroblastosis Fetalis” in the 1952 edition of Current Therapy, edited by Dr. Howard F. Conn. An editorial written by Dr. Sacks entitled “Ion Exchange Resins” appeared in the Annals of Internal Medicine in April, 1951.

Dr. Joseph Workman, Baltimore Rh Typing Laboratory Fellow in Medicine, recently read a paper entitled “The Lupus Erythematosus Cell Phenomenon” at the meeting of the Dermatology Section of the Baltimore City Medical Society.

Dr. Marie Andersch, Chief Biochemist of the Department of Clinical Pathology, attended the Federation meetings in Cleveland, Ohio, on April 29, 1951, where she read a paper entitled “Studies in Alkali Denaturation of Hemoglobin.”

DEPARTMENT OF SURGERY

The Department of Surgery is fortunate in being able to extend its clinical teaching programs so that Baltimore City, Mercy, Kernan, and University Hospitals are intimately involved in the subdepartments of Orthopedics, Genito-Urinary and Neurosurgery. Certification by the respective boards covering training in these departments has been obtained.

Dr. Russell S. Fisher, Associate Professor of Legal Medicine at the School of Medicine and Chief Medical Examiner of Maryland, has recently been awarded a United States Public Health Service Grant for research in unexpected death in infancy and for continued study of the human cervix for carcinoma.

UNIVERSITY OF MARYLAND BIOLOGICAL SOCIETY

At the Program Meeting held on March 14, 1951, Dr. Gordon E. Gibbs, Associate professor of Clinical Research of the Department of Pediatrics, presented a paper entitled “The Effect of Pressure within the Pancreatic Ducts upon Pancreatic Histology and Serum Amylase”, an abstract of which follows.

The Effect of Pressure Within the Pancreatic Ducts Upon Pancreatic Histology and Serum Amylase

Ligation of all pancreatic ducts in 3 dogs was followed during 24 hours by a gradual rise in serum amylase to a value 2.8 times the initial level. Edema and slight leukocytic infiltration of the capsule and interlobular septa of the pancreas were present at the end of this period. In 5 other dogs, the pancreas was subjected to a pressure of 30 cm. water within the duct system by means of a reservoir of sterile saline. Serum amylase rose approximately twice as fast, and most dogs failed to survive the
full 24 hours. The pancreatic changes were edema, a greater degree of inflammatory reaction (including acinar areas), slight hemorrhage, and small areas of acinar cell degeneration. Some fluid rich in enzymes filtered through the surface of the pancreas and collected in the peritoneal cavity. That this fluid probably accounted for part of the amylase that appeared in the serum was indicated by the fact that a rise of serum amylase followed injection of pancreatic juice intraperitoneally in two other dogs. One of these had been depancreatized and maintained with insulin. The other showed no histologic evidence of damage to the pancreas.
Extramural Courses

The demand for post graduate instruction has grown at an ever increasing tempo. Two major factors have contributed to this: first, an aroused interest and desire upon the part of many physicians for such instruction and, secondly, the dramatic discoveries of the recent past that have rendered obsolete many of the therapeutic and diagnostic mainstays of previous years.

Superficial consideration might seem to indicate that the problem of satisfying these needs was a relatively simple one, but this, for various reasons, is far from true. Chief among these are the apathy exhibited by many of those men most in need of instruction and the crushing burden of work borne by most busy physicians.

In an effort to overcome the obstacles encountered, the Committee has endeavored with, we believe, some measure of success to evolve new techniques. Not the least of these has been the establishment of extramural courses in which the teaching is done at points selected because of their proximity to the participating physicians' zone of operations. It seemed better to take the few to the many rather than the many to the few.

Certain of the county medical societies have acted as sponsors for these programs and have made all local arrangements while the Post Graduate Committee has assumed responsibility for providing competent instructors.

Those men interested in taking part in this activity might well communicate with the president or secretary of their society or directly with the Post Graduate Committee Office. If sufficient interest is evidenced in a given area, such a course could be arranged with little difficulty.

It is our ardent wish that this important phase of our work will grow and that extramural courses will become an established custom in an increasing number of counties throughout the state.

Pediatric Residency

Decentralization of pediatric graduate training has been carried on successfully in many parts of the country. In September, 1948, the Pediatric Department of the University of Maryland Hospital began a resident affiliation plan with the Peninsula General Hospital in Salisbury, Maryland. Initially, the period of rotation was
three months, but it has now been extended to four. Assistant residents who have had some training in pediatrics, when assigned to Peninsula General Hospital, act in the capacity of resident, supervising the care of patients admitted to the pediatric service as well as providing supervision for the well baby nursery. In addition to their hospital duties, they conduct the well baby and pre-school clinics for the Maryland State Department of Health and work with some of the other local civic organizations who are interested in child health.

Immediate hospital supervision is provided by the local pediatrician in charge of the service while periodic visits are made at six-week intervals by a staff member of the Pediatric Department of the University Hospital. In the experience of the Pediatric Department with this type of program, it has been concluded that it is of considerable value to the participating assistant resident, primarily, in that he becomes familiar with pediatric practice in a smaller community. Also, he is faced with responsibility and forced to make use of his diagnostic training, thus, discouraging dependency upon expensive and often needless laboratory measures. Experience with the local health units is a broadening one in that it has tended to provide men in training with a knowledge of the relationship of the practicing pediatrician to the local health effort.

The advantages of the program are not, however, all on the side of the University. The value of the local hospital is increased in the eyes of the community by its association with a medical center. At the same time, the presence of residents acts as an educational stimulus for the local physicians, and the community is made more attractive to pediatricians who are contemplating practicing in that area.

When the affiliation was begun, there was only one pediatrician in the community eligible to take the Pediatric Board examination. There are now three pediatricians practicing in the community—one having been certified and the other two, eligible to take the examination. Affiliations of this type should be utilized as a vital part of the post graduate instruction. They offer opportunities of on-the-spot instruction for local physicians and, through this means, it is possible for us to offer broader vistas of pediatric knowledge to the practicing physicians of the community with resulting, improved pediatric care for the patients.

It is the hope of the Pediatric Department of the University of Maryland School of Medicine that this affiliation will be continued, strengthened, and enlarged and that similar affiliations eventually can be carried out with other hospitals in the State of Maryland.

Thoracic Surgery Residency

The Post Graduate Committee is happy to announce that Dr. Otto C. Brantigan has succeeded in initiating a plan for the training of thoracic surgeons. The first year of resident training is spent at the University of Maryland in research, and the second year, as thoracic surgeon at University, Mercy, and City Hospitals. Upon completion of these two years, he will then be eligible for examination by the American Board of Surgery and The American Board of Thoracic Surgery. We take pride in the completion of another step forward in this field.
Orthopedic Residency

It is with great pleasure that the Post Graduate Committee calls attention to the approval of the three-year resident training service program in orthopedic surgery, described in previous issues of the BULLETIN, by the American Medical Association.

Maryland Academy of General Practice

Because of the interest evidenced by members of the Maryland Academy of General Practice in the seminar sponsored by their society in December, 1950, Dr. Lauriston L. Keown, in cooperation with the Post Graduate Committee, arranged a similar day of lectures which were presented on May 24, 1951. The following program was presented, the material of which, we believe, is varied and timely. These sessions were held in the Gordon Wilson Amphitheater of the University Hospital.

10:00-10:50 Chest Diseases

Otto C. Brantigan, B.S., M.D. Professor of Surgical Anatomy, Professor of Clinical Surgery, University of Maryland

11:00-11:50 Melena

Harry C. Hull, M.D., Professor of Clinical Surgery, University of Maryland

12:00-12:50 Acute Nephritis

Milton S. Sacks, M.D., Head of Clinical Pathology, Associate in Pathology, Associate Prof. of Medicine, University of Maryland

1:00-1:50 Cardiac Emergencies

William S. Love, Jr., A.B., M.D., Associate Prof. of Medicine, University of Maryland

1:50-2:50 Luncheon

T. Nelson Carey, M.D., Professor of Clinical Medicine, University of Maryland

3:00-3:35 ACTH and Cortisone in Relation to Arthritis and Allied Conditions

J. Edmund Bradley, M.D., Professor of Pediatrics, Head of Dept. of Pediatrics, University of Maryland

3:40-4:15 ACTH and Cortisone in Relation to Acute Rheumatic Fever

Howard M. Bubert, M.D., Associate Prof. of Medicine, Chief, Section of Allergy, University of Maryland

4:15-4:50 ACTH and Cortisone in Relation to Allergic Conditions

Members of the Maryland Academy of General Practice were guests of the Post Graduate Committee at a luncheon served in the Hospital dining room at which Dr. H. Boyd Wylie, Dean of the University of Maryland School of Medicine, greeted those present.

In December, 1950, 64 physicians attended these lectures, representing the following counties in Maryland: Allegany, Baltimore, Caroline, Carroll, Frederick, Garrett, Harford, Prince Georges, Talbot, Washington, and Worcester.

Officers of the Maryland Academy of General Practice are: Dr. Charles F. O'Donnell, Towson, Maryland, president; Dr. Irving Baumgartner, Oakland, Maryland, secretary-treasurer; and Drs. E. Paul Knotts, Nathan Needle, and B. B. Kneisley, vice-presidents.
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The names listed above are officers for the term beginning July 1, 1950 and ending June 30, 1951.

A LETTER TO THE CLASS OF 1951
FROM THE MEDICAL ALUMNI ASSOCIATION

The diploma which now hangs on your wall is certainly an acknowledgment of a long cherished ambition and a recognition of your perseverance and ability as witnessed by the Faculty of Medicine which has seen fit to bestow it upon you. You are no doubt quite proud in your new office and most certainly do you covet the enviable, professional status which has been your just reward.

We, of the Alumni Association, do congratulate you upon your achievement and extend a welcoming hand of friendship as you become one of the several thousand living alumni of the School of Medicine. Your days as an undergraduate medical student are now at an end. As a physician and an alumnus, you have entered the second sphere of the practice of medicine and upon your shoulders now rest obligations which far exceed those which you have considered heretofore as being weighty. You will have obligations to family, to your patients, and to the community in which you reside; for indeed, the profession which is yours to enjoy is an honorable one and must be defended by what you know as ethics, by community leadership and by exemplary behavior. In the Hippocratic Oath to which you have now subscribed, there is an explicit statement concerning your obligation to enlarge and perpetuate the medical training of those who would follow in your footsteps. The implementation of this, your subscribed promise, no doubt at this moment seems vague. No doubt you consider it wise to maintain an active interest in medical education, for as a student you have at times voiced both criticism and praise of educational methods as they applied to you. You were perhaps impressed and
sometimes depressed at the physical surroundings; the adequacy or inadequacy they presented in the furtherance of your educational desires. These physical surroundings and their facilities resulted from the work and attention of men who were your predecessors in medicine. As you now become an alumnus, the continuation of such facilities and their improvement becomes an increasing part of your obligation.

At Commencement, the class of 1951, as a unit, became dismembered. You will no longer attend classes together, and there will be no more class dances. However, the unity of your class is now maintained through the unity of your Alumni Association. What advances you as an individual can make in the perpetuation of the good name of your Alma Mater rests not alone in your personal achievements but through your activities in the Alumni Association whose sole purpose is the advancement and the guardianship of the traditions of the school from which you have drawn so bountifully. The Alumni Association is not a social group nor is it a political venture. It is not a subsidiary of the faculty nor a branch of the Dean's office. It is an autonomous organization of all alumni through which their interest and activities can be focused toward a common goal: a better school of medicine.

Your Alumni Association has voted you a free membership for the year 1951-52 and at the same time has purchased for you a subscription to the official Alumni-Faculty journal, the Bulletin. We feel that our desire to have you as an interested alumnus and to have you grow into the Association is expressed not only by our overt gestures but by an abiding faith in your interest to the effect that it shall continue unbroken through the many years that lie ahead.

Congratulations to you all.

William D. Triplett, M.D.
Chairman, Board of Directors

Correction

In the Bulletin (36: Alumni Section, p. xxi, January, 1951) it was stated that Dr. Wilbur S. Brooks, class of 1938, was Chief Radiologist at the University of Syracuse, Syracuse, New York. Dr. Brooks is attending radiologist at the General Hospital of Syracuse.

The Bulletin sincerely regrets the error.

ITEMS

Dr. Hiram P. Upton, class of 1927, of Burlington, Vermont, has been appointed a member of the Vermont State Health Commission. Dr. Upton has recently served as president of the Vermont State Medical Society.

Dr. Charles A. Neafie, class of 1909, of Pontiac, Michigan, was recently elected a founder member of the American Board of Preventive Medicine and Public Health. He has been identified with public health administration in Pontiac since 1917, receiving the degree of Master of Science in Public Health from the University of Michigan in 1924.

Dr. Otto C. Brantigan presented a paper entitled “Thoracoplasty in the Treatment of Pulmonary Tuberculosis” at the April, 1951 meeting of the Southeastern Surgical Conference.
Dr. John C. Ozazewski, class of 1943, and until recently Resident in Ophthalmology at the University Hospital, will be associated with Dr. Frank Walsh in the practice of Neuro-ophthalmology.

Dr. George W. Smith of the Department of Neurosurgery has recently been elected a member of the American Association of Electroencephalographers.

Dr. John H. Shaw, class of 1947, until recently Resident in Medicine at the St. Agnes Hospital, Baltimore, has recently opened his office for the practice of Internal Medicine at 701 Charing Cross Road, Baltimore.

Dr. Arthur T. Hall, class of 1945, who completed his Residency in Surgery at the St. Agnes Hospital in Baltimore on July 1st, has opened his office at 7 East Mt. Royal Avenue in Baltimore where he will begin practice of General Surgery.

Dr. Robert M. N. Crosby, class of 1943, who completed his Residency in Neurosurgery at the School of Medicine on July 1, 1951, has been appointed to the Faculty of the University of Chicago School of Medicine. Dr. Crosby will devote his practice to Pediatric Neurology under the preceptorship of Dr. Douglass Buchanan.

With the completion of his Residency year in Obstetrics on June 30, 1951, Dr. William C. Covey, Jr. plans to enter private practice in his home town of Beckley, West Virginia.

Dr. Frank J. Ayd, Jr., class of 1945, recently lectured at the 19th Annual Convention of the National Conference on Family Life which was held in St. Louis, March 5-7, 1951. Dr. Ayd is currently on the faculty of the Catholic University in Washington and is a member of the Department of Psychology at Loyola College in Baltimore.

Dr. Frank J. Ayd, Jr., class of 1945, was guest lecturer at the University of Notre Dame, South Bend, Indiana, on April 26, 1951, at a meeting held under the joint auspices of the Department of Religion and the General Program of Liberal Education. Dr. Ayd spoke on the subject of “Religion and Psychiatry.”

Dr. William E. McGrath, class of 1943, who was called to active duty in the United States Army in October, 1950, has been separated from the armed forces and has returned to his practice at 3534 Edmondson Avenue, Baltimore.

Dr. Louis O. J. Manganiello, class of 1942, a former resident in Neurologic Surgery at the University Hospital, has been appointed Chief of the Department of Neurologic Surgery at the University of Georgia School of Medicine, Augusta, Georgia.

Dr. Robert A. Moses, class of 1942, has recently opened his offices at 110½ South Third Street, Delevan, Wisconsin. Dr. Moses will limit his practice to ophthalmology.

Dr. J. Morris Reese, class of 1920, Associate Professor of Obstetrics, has been appointed Councilor of the Southern Medical Association for a five year period beginning in the Fall of 1951. Dr. Reese will succeed Dr. F. A. Holden, also of the class of 1920, who has served for a number of years on the Council of the Southern Medical Association.

Dr. Frank Concilus, class of 1942, for the past two years has resided at 470 Summit Drive in Pittsburgh where he has been engaged in the practice of Internal Medicine.
Dr. Edward Siegel, class of 1938, has served as co-author with Dr. Conrad Berens, of a new textbook entitled *Encyclopedia of the Eye.*

Dr. Siegel currently practices ophthalmology in Plattsburg, New York.

Dr. Melvin B. Davis, class of 1931, was recently elected President of the Baltimore County Medical Society.

Dr. Thomas P. Murdock of Meriden, Connecticut who is currently serving as a member of the Board of Trustees of the American Medical Association was honored at a testimonial dinner at New Haven, Connecticut on November 29, 1950. Dr. Murdock is a graduate of the Baltimore Medical College, class of 1910.

Dr. Fred R. McCrumb, class of 1948, has been appointed Fellow in Medicine at Rockefeller Institute in New York where he will continue his studies in infectious diseases.

The Mayo Clinic announces the following appointments from the Class of 1950:

Dr. Louis G. Chelton, has been appointed Fellow in Medicine, Dr. John L. Bacon, Fellow in Pediatrics and Dr. Stanley W. Henson, Jr., Fellow in Surgery effective July 1, 1951.

These three Alumni are currently serving their internships at the United States Marine Hospital in Baltimore before proceeding to the Mayo Clinic.

**CORRESPONDENCE**

December 11, 1950.

Thanks very much for your interesting letter of November 20, giving me Dr. Rowland’s address and giving me data, etc. about the Reunion, June 7th, 1951.

Just celebrated my 77th birthday and am looking forward to being present and receiving my 50 year certificate. I will try to get Dr. H. E. Anthony of Moravia, New York, to join me. He is a member of my class.

I am going to write Dr. Rowland today. We all thought a great deal of him as a teacher and a friend.

Hoping to see you in June and wishing you the compliments of the season, I am Fraternally yours,

M.D. Lipes, Class of 1901, B.M.C.
1440 Broadway
Watervliet, New York

February 11, 1951.

I am cleaning house but hesitate to throw away my Bulletins before learning if you have any use for them. If you have, I will be glad to take them over to the library the next time I go to Baltimore.

Very truly yours,

H. B. McDonnell, class of 1888, P & S
7400 Dartmouth Avenue
College Park, Maryland

*(Ed. Note: The Medical Library is always grateful for such valuable contributions.)*
December 11, 1950

Please accept my thanks for the beautiful fifty year certificate issued by the Alumni Association which was presented to me in person June 9th. I also apologize for the delay in doing so.

Very sincerely yours,

G. Allen Troxell, class of 1900, B.M.C.
1622 Charlotte Street
Sarasota, Florida.

February 9, 1951

I wish to thank the Medical Alumni Association for placing my picture in the October number of our Bulletin of the School of Medicine. My son and I are deeply appreciative of the fine compliment.

... The likenesses (of all—Ed.) are good and faithful, and you all look happy.

The slightest turn of the mind takes me back in memory to my beloved Library in Davidge Hall, within whose walls I worked happily for over thirty-two years and laid the foundations of many precious friendships. You were all marvelous to me, and I owe you an eternal debt of gratitude. I was happy in my library work, and I am happy in my leisure. I have nothing left to wish for. I feel as though I have "warmed my hands at the fire of life". God bless you all!

With deep affection from your devoted librarian and friend,

Ruth Lee Briscoe, Librarian Emeritus
OBITUARIES

Dr. Albertus Cotton

Dr. Albertus Cotton, professor emeritus of orthopedic surgery and roentgenology at the University of Maryland School of Medicine, died May 3, 1951, after an illness of several weeks.

Dr. Cotton was born in Marysville, Kansas, on September 23, 1872. He attended Ohio University and received the M.A. degree there in 1891, after which he came to Baltimore and entered the College of Physicians and Surgeons where he was graduated with honors in 1896. After graduation he served his internship at City Hospital (now Mercy Hospital) from 1896 to 1898.

A pioneer in the study of roentgenology, an orthopedic surgeon and an educator for almost half a century, Dr. Cotton was active in his profession until declining health forced his retirement several years ago.

In 1906 Dr. Cotton went abroad, studying in Berlin and Vienna and returning to begin his long association with the University of Maryland School of Medicine.

Until the time of his retirement, he was professor of roentgenology and orthopedic surgery at the University of Maryland, attending orthopedic surgeon at Mercy Hospital, and visiting orthopedic surgeon at Kernan’s Hospital for Crippled Chil-

DR. ALBERTUS COTTON

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dren. He conducted orthopedic clinics for crippled children at Snow Hill and Salisbury, Maryland for 15 years.

Dr. Cotton was a member of numerous medical societies and the author of numerous papers on orthopedic surgery and roentgenology.

His wife, the former Florence Brown of Baltimore survives.

Dr. Francis M. Matulaitis (Lait)

Dr. Francis M. Lait, class of 1907, Baltimore Medical College, died at his home at 7829 Euclid Avenue, Cleveland, Ohio, on January 31, 1951.

Born in Lithuania in 1876, he came to this country in 1902 and entered the Baltimore Medical College the following year. After his graduation, he settled in Boston, Massachusetts where he practiced until 1919. After a period of post-graduate training, he moved to Cleveland, Ohio, where he practiced ophthalmology from 1933 until his death.

Dr. Washington Lee Mack

Dr. Washington Lee Mack, class of 1892, College of Physicians and Surgeons, of Walla Walla, Washington, died on September 17, 1949, aged 81, of coronary thrombosis.

Dr. Mack practiced at Cordova, South Carolina, for over 55 years and was retired but a short time prior to his death.

Dr. Charles A. Knox

Dr. Charles A. Knox, class of 1904, B.M.C., died on March 9, 1951, at the Hackensack Hospital, Hackensack, New Jersey, aged 72.

Dr. Knox was a former president of the Ridgefield Park Trust Company and was a member of the staffs of both the Hackensack Hospital and the Holy Name Hospital in Teaneck, New Jersey.

Dr. Francis L. Bagli

Dr. Francis L. Bagli, class of 1921, died at his home in Baltimore on March 12, 1951, aged 54.

A native of Italy, Dr. Bagli came to this country at the age of 2 and spent his childhood in Paterson, New Jersey. In 1921 he was graduated from the School of Medicine, serving his internship at Baltimore City Hospitals. After a short period of general practice, he specialized in obstetrics. He was a member of the staffs of St. Agnes, Maryland General, and Bon Secours Hospitals. Aside from his medical accomplishments, Dr. Bagli was a talented musician.

Dr. Franklin B. Anderson

Dr. Franklin B. Anderson passed away very suddenly at his home, 8419 Loch Raven Boulevard, Baltimore, Maryland, on Tuesday, January 23, 1951.

Dr. Anderson was born on August 31, 1886, at Monkton, Maryland, the only son of Charles W. and Ozello B. Anderson. His early education was obtained in the Baltimore County Schools and his high school training at the Baltimore Polytechnic Institute. He entered the University of Maryland School of Medicine in 1912, and was awarded his M.D. degree in 1916.
Soon after graduation, Dr. Anderson became interested in diseases of the Eye, Ear, Nose and Throat and practiced this specialty until his death. He was an active and interested teacher in the School of Medicine, beginning as an Assistant in Otolaryngology, being promoted to Associate, Assistant Professor, and then to Associate Professor of Otolaryngology, which title he held at the time of his death. Dr. Anderson was a member of the Staff of the University Hospital and Consulting Aurst and Laryngologist for the Kernan Hospital, Baltimore. For years he had been in charge of Otolaryngology at the Maryland House of Correction.

Dr. Franklin Anderson had a distinguished career in the Military Service of his country. He was commissioned a First Lieutenant in the Medical Corps June 29, 1916, and was called to service January 6, 1917, during the Mexican Border Incident. During World War I he was promoted to Captain and commanded the 113 Ambulance Company of the Centre Section in France at Haute Alsace, Meuse, and Argonne. He was honorably discharged on June 23, 1919, after serving overseas from July 5, 1918 to May 22, 1919. Returning to Maryland, he continued his Army Service with the Maryland National Guard, holding successively the ranks of Major, Lieutenant Colonel, and Colonel, retiring January 31, 1940, as Brevet Colonel.
On December 2, 1916, he married Miss Wilma M. Schmitt. A daughter and only child, Phyllis, was born on May 2, 1922. Phyllis is now a Medical Artist employed at the Walter Reed Hospital in Washington, D. C.

As a kind, considerate physician loved by his patients and friends, he will be greatly missed by all who knew him.

EDWARD A. LOOPER, M.D.

DR. JOHN GIRDWOOD

Dr. John Girdwood, class of 1894, Medical Examiner for the City Service Commission for many years, died on September 25, 1950, at Baltimore, Maryland, aged 79.

Born in the Barbados, West Indies, he came to Baltimore as a child. Following his graduation from the School of Medicine, he served in the Federal Government and was then appointed examining physician for the city, being the first physician appointed in connection with the administration of the local Merit System.

DR. WILLIAM C. LOWE

Dr. William C. Lowe, class of 1941, died at the University Hospital on February 4, 1951, of injuries received in an automobile accident.

Dr. Lowe, 33, who was engaged in practice near Centreville, Maryland, was a native of Stevensville, Maryland. He served his rotating internship at Mercy Hospital, Baltimore, from where he entered the Army, serving as a Captain in the Medical Corps from 1944 to 1946.

DR. GIDEON TIMBERLAKE

Dr. Gideon Timberlake, formerly Professor of Urology at the School of Medicine and a founder of the American Board of Urology, died at St. Petersburg, Florida on March 1, 1951.

A graduate of the University of Virginia, Dr. Timberlake was active for many years in Baltimore, serving on the staffs of St. Agnes and Franklin Square Hospitals and the Church Home and Hospital.

DR. WILLIAM GWYNN QUEEN

Dr. William Gwynn Queen, class of 1908, aged 67, died at his home in Baltimore on January 3, 1951, of a heart attack.

Dr. Queen was born in Bryanttown, Charles County and was a graduate of Rock Hill College in Elicott City.

Following his graduation in the School of Medicine, he interned at the University Hospital, later limiting his practice to pediatrics, becoming Pediatrician-in-Chief at Bon Secours Hospital with membership on the staffs of Mercy, St. Agnes and St. Joseph's Hospitals, Baltimore.

He is survived by his wife, two daughters and a son, Dr. J. Emmett Queen of the class of 1943.
DR. MOSES LICHTENBERG

Dr. Moses Lichtenberg, class of 1912, died on December 26, 1950. He was born in Baltimore, graduated from the Baltimore City College, and obtained his medical degree from the School of Medicine, University of Maryland.

In World War I Dr. Lichtenberg was a member of the Medical Corps of the United States Army. During his long career he was constantly associated with the activities of the Athletic Department of the Baltimore City College serving for many years as team physician, an appointment through which he was rewarded only by the satisfaction of assistance to the youth of Baltimore.

From 1930 until his retirement in 1948 it is said that he rarely, if ever, missed a game, being constantly with the City College athletic teams. At the close of the 1948 season he was awarded a rising ovation and a Varsity letter by the student body of the City College.

DR. JAMES HERBERT WILKERSON

Dr. James Herbert Wilkerson, class of 1921 and former Associate Professor at the School of Dentistry, died in Baltimore on December 22, 1950 aged 53. He had been in poor health following a heart attack three years ago.
Abramovitz, Morris, Baltimore, Md.; B.M.C., class of 1906; aged 71; died, February 7, 1951, of cerebral hemorrhage.

Carpenter, Eugene H., Oneida, N. Y.; P & S, class of 1894; aged 81; died, November 21, 1950, of chronic myocarditis.

Culverhouse, John Burnett, Baltimore, Md.; class of 1914; aged 59; died, recently, of acute coronary occlusion and hypertension.

Driscoll, William Thomas, Norwich, Conn.; P & S, class of 1912; aged 64; died, recently, of coronary thrombosis.

Esker, Harry Hood, Clarksburg, W. Va.; P & S, class of 1906; aged 66; served during World War I; died, January 23, 1951, of heart disease.

Gallion, William Edwin, Jr., Darlington, Md.; class of 1912; aged 64; died, recently, of coronary thrombosis.

Gardiner, William Robert, Herrin, Ill.; class of 1910; aged 65; died, February 13, 1951, of cerebral hemorrhage.

Gott, Ernest Fred, Charleston, W. Va.; P & S, class of 1915; aged 63; served during World War I; died, December 31, 1950, of heart disease.

Gurley, Hubert Taylor, Baltimore, Md.; class of 1925; aged 51; died, recently, of coronary thrombosis, arteriosclerosis and diabetes mellitus.

Hartshorne, George Ewing, Tulsa, Oklahoma; class of 1893; aged 83; served during World War I; died, January 19, 1951, of arteriosclerotic heart disease.

Kelley, James Turner, Rixeyville, Va.; B.M.C., class of 1893; aged 86; died, December 22, 1950, of congestive heart disease.

Hess, James Mercer, Tylersburg, Pa.; P & S, class of 1905; aged 67; served during World War I; died, January 21, 1951, of myocarditis.

Kafer, Oswald Ottmar, Edward, N. C.; class of 1905; aged 70; died, January 28, 1951, of coronary thrombosis.

Mace, Charles Herbert, West Springfield, Mass.; B.M.C., class of 1900; aged 79; died, December 10, 1950, of arteriosclerosis.

Matthews, Alva Adair, Oak Hall, Va.; class of 1910; aged 66; died, December 31, 1950, of cerebral hemorrhage and arteriosclerosis.

Milliken, Walter S., Madison, Me.; B.M.C., class of 1897; aged 80; died, November 20, 1950, of cardiovascular disease.

Missildine, John Gurley, Wichita, Kansas; class of 1911; aged 66; served during World War I; died, January 30, 1951, of coronary thrombosis.

Robertson, Wilburn Burdett, Burnsville, N. C.; B.M.C., class of 1898; aged 76; died, January 6, 1951, of carcinoma.

Roop, William P., Absecon, N. J.; class of 1907; aged 71; died, December 27, 1950, of cerebral hemorrhage.

Ross, Samuel Boyd, Philadelphia, Pa.; B.M.C., class of 1912; aged 69; served during World War I; died, October 25, 1950, of chronic myocarditis.

Saul, Henry Wilson, Kutztown, Pa.; B.M.C., class of 1894; aged 81; died, February 12, 1951, of carcinoma of the pancreas.

Schneider, Charles Augustus, Newark, N. J.; B.M.C., class of 1900; aged 74; died, February 2, 1951, of lymphoblastoma.
Stuart, LeClare, Rome, N. Y.; P & S, class of 1908; served during World War I; aged 67; died, December 22, 1950, of injuries received in an automobile accident.

Swank, Peter L., Boalsburg, Pa.; P & S, class of 1889; aged 88; died, December 5, 1950, of carcinoma of the rectum.

Tumbleson, Charles Cumming, Sandy Spring, Md.; P & S, class of 1905; aged 72; died, November 30, 1950, of carcinoma of the kidney.

Tweedie, Hedley Vicars, Rockland, Me.; B.M.C., class of 1897; served during World War I; aged 84; died, December 6, 1950, of carcinoma of the colon.

Walsh, John Edward, Revere, Mass.; B.M.C., class of 1898; aged 77; died, November 8, 1950, of heart disease.

Aptaker, Albert J., Forest Hills, N. Y.; class of 1927; aged 47; died, October 19, 1950, of coronary occlusion.

Devlin, Hugh Joseph, Newark, N. J.; B.M.C., class of 1905; aged 77; died, October 24, 1950.

Dobson, James Furman, Ridgeway, S. C.; class of 1914; aged 59; served during World War I; died, September 22, 1950, of cancer.

Douthirt, Cranford H., Santa Fe, New Mexico; class of 1914; died, December 1, 1950, of coronary occlusion.

Foster, Ruth, New York, N. Y.; class of 1931; aged 56; died, September 29, 1950, of carcinoma.


Halliday, Charles H., Baltimore, Md.; P & S, class of 1904; aged 70; died, September 30, 1950, following a gallbladder operation.

Hershner, Newton W., Mechanicsburg, Pa.; class of 1906; aged 72; died, October 8, 1950, of coronary occlusion.

Jaffe, Benjamin Meyer, Baltimore, Md.; class of 1916; aged 55; died, recently.

MacConnell, John Wilson, Davidson, N. C.; class of 1907; aged 72; served during World War I; died, September 26, 1950, of carcinoma.

Stevens, Thomas H., San Diego, Calif.; B.M.C., class of 1893; aged 89; died, October 17, 1950, of carcinoma of the colon.

Walsh, John E., of Revere, Massachusetts, B.M.C., class of 1898, died on November 8, 1950, at the age of 78.
During the past six months the Beta Chapter of the Alpha Omega Alpha Honorary Medical Society has enjoyed an active and productive period in the extra-curricular events of the School of Medicine. An annual fall banquet took place on December 8, 1950. Dean H. Boyd Wylie, a member of Beta Chapter was the speaker of the evening. His topic was entitled “Medical Education and Its Problems.”

Three business meetings were held during the month of March, 1951, at which time, policies of the Society were studied; and activities which may benefit the University at large were discussed.

A series of 3 lectures, dealing with the doctor and society was sponsored by the Society. These open lectures were given in the Gordon Wilson Hall, University Hospital, at 5 P. M. The lectures and their respective dates are listed:

Dr. Maurice C. Pincoffs, Professor of Medicine; Medical Ethics; Mar. 27, 1951.

Dr. John C. Krantz, Professor of Pharmacology and Head of the Department; The Doctor and the Population; Apr. 3, 1951.

Dr. Jacob E. Finesinger, Professor of Psychiatry and Head of the Department; Recent Trends in Medical Education; Apr. 10, 1951.

On May 2, 1951, Beta Chapter held its second annual Spring Banquet. At the meeting, three senior students, Messrs. J. H. Stone, Charles P. Watson, Jr., and Robert D. Weekley were initiated. Also 5 junior students were initiated. These included Messrs. Charles B. Adams, Richard E. Ahlquist, Daniel Clyman, William Mathews and Alvin Stambler. The following alumni were also initiated as members of this Chapter: Dr. William Long, class of 1937, and at present a practicing surgeon in Salisbury, Maryland, and Dr. J. Hornbaker, class of 1930, a practicing internist at Hagerstown, Maryland.

The newly appointed officers for the coming year were announced:

President: William Mathews
Vice-President: Alvin Stambler
Assistant Secretary: Daniel Clyman

The offices to be continued are Counselor: Dr. John E. Savage; and Secretary-Treasurer: Dr. Milton S. Sacks. The evening was made memorable because of a most stimulating and instructive lecture given by Dr. William Dameshek, Professor of Clinical Medicine, Tufts College Medical School. The title of his talk was “The Blood, The Spleen, and The Bone Marrow.” The lecture was open to the medical profession and was well attended. This lecture by Dr. Dameshek was the first of a series of annual talks to be given by well known members of the profession and sponsored by Beta Chapter. The chapter sincerely hopes that the lectures to follow will realize the success of the initial experience.

In an attempt to stimulate the interest of both students and faculty in academic fields in which students may participate, Beta Chapter terminated its school year
with a group of 6 papers delivered by senior students of the University of Maryland. These papers represented extra-curricular work in the academic fields of medicine, in which the speakers were privileged to participate. The detailed program follows.

Program of Student Research Papers
University of Maryland School of Medicine
Gordon Wilson Hall
May 16, 1951

Sponsored by Beta Chapter, Alpha Omega Alpha Society

1. Preliminary Study of Distribution of a Naturally Occurring Hemagglutinins in Human Sera, David Kipnis; Discussion by Dr. Milton S. Sacks
2. Preliminary Study of Personalities of Medical Students by Use of Rorschach Test, Jack Leibman and Fred Johnson; Discussion by Dr. Jacob E. Finesinger
3. A Personality Study of Junior High School Problem Children, Jack Liebman; Discussion by Dr. Jacob E. Finesinger
4. Convulsant and Anticonvulsant Effects of Some Antihistaminic Drugs, William G. Esmond; Discussion by Dr. Harold E. Himwich, Chief, Clinical Research Branch, Medical Research Division, Army Chemical Center, Maryland
5. Cardiovascular Responses to Tilting and Standardized Exercise in Young and Old Males, Charles Ferguson; Discussion by Dr. Dietrich Smith, Department of Physiology
6. An In-Vivo Antibiotic Protection Study Against Leptospirosis Icterohemorrhagica, Leonard Lister; Discussion by Dr. T. F. Woodward

All junior and senior classes were suspended, and the student body and faculty were invited. Dr. Milton Sacks acted as moderator. It is hoped by the Society that a similar series of papers may be given annually.

PHI DELTA EPSILON

Recently the fraternity has had the pleasure of serving as host to several distinguished lecturers. Dr. Louis Soffer, of Columbia University School of Medicine, delivered the annual Phi Delta Epsilon, guest lectureship at the School of Medicine. His discussion of the physiology and clinical applications of ACTH was warmly received by a large audience. Dr. Helen Taussig and Dr. Emanuel Schoenbach, both of Johns Hopkins, delivered lectures at the house during the regular monthly scientific meetings. Dr. Taussig’s lecture concerned persistent truncus arteriosus, and Dr. Schoenbach spoke on the selective use of antibiotics.

At recent elections, Alvin Stambler was elected consul to succeed David Kipnis. Other officers chosen were: Joseph Schuman, vice-consul; Norman Miller, secretary; Jonas Rappaport, treasurer; Leonard Glick, historian.

Three members of the fraternity deserve special mention. Alvin Stambler and Daniel Clyman have become members of Alpha Omega Alpha honorary fraternity. Israel Weiner has been awarded the Aaron Brown prize for the best scientific paper submitted by a member of the national fraternity.
The graduate club of this city is now under the leadership of Dr. Louis Blum of the Department of Medicine. At the last national convention in New York, Dr. Samuel S. Glick of the Department of Pediatrics, was elected to the office of Vice-Grand Consul; and Dr. I. A. Siegel of the Department of Obstetrics, was appointed District Deputy Grand Consul to supervise chapters in this region.

Dr. David Silberman recently led a gynecology symposium at Johns Hopkins and Sinai Hospitals. The symposium was sponsored by the Gynecology Club, composed of fraternity members throughout the nation. A similar event takes place each year in a major city.

In April Dr. Ephraim Lisansky of the Department of Medicine and Psychiatry, delivered a lecture in Arlington, Virginia, entitled “Psychosomatics in Cardiovascular Diseases.”

Dr. Albert E. Goldstein, of the Department of Urology and Pathology, was a discussant of papers delivered in April before the Mid-Atlantic section of the American Urological Association. He will also discuss papers in June at the national meetings of the A.U.A. in Chicago, and of the A.M.A. in Atlantic City.

NU SIGMA NU

Dr. Jacob W. Bird, class of 1908, recently visited the house and presented a large, framed picture of his class to be hung on the wall.

The annual Spring Formal was held at the Stafford Hotel on April 7, 1951, and was well attended.

All Alumni Brothers are invited to see the new and valuable bookcase purchased for the house library.

On April 25, 1951, a smoker was held for pledges. Among the Alumni attending were: Drs. T. Conrad Wolff, 1917, Dr. Ernest I. Cornbrooks, Jr., 1935, Dr. Edward F. Cotter, 1935, Dr. Karl F. Mech, 1935, and Dr. John A. Wagner, 1938. The attending Alumni each gave a few valuable words to the new pledges.

PHI BETA PI

There will be twelve Phi Beta Pi members in this year’s graduating class. The last time a Phi Beta Pi graduated from the School of Medicine was in 1940. In the years to come, this number will become much larger.

The annual initiation ceremony was held in February, and 25 pledges were accepted as members of the fraternity. At the first meeting after the initiation, a plan was inaugurated which called for a dinner, business meeting, and seminar to be held on the first Friday of every month. A guest speaker is invited to each of these sessions so that the clinical aspect of important diseases might be presented along with student speakers who cover various phases of the topics selected.
In March, 1951, Dr. Emil Novak, a Phi Beta Pi, gave an interesting talk to fraternity members and their guests. His topic was "Primary Dysmenorrhea". An interesting question and answer discussion of this topic followed Dr. Novak's speech. Fraternity officers are planning to hold similar meetings during the coming year.

A picnic was held on the last Sunday of April at Dr. Theodore Kardash's shore home. Phi Beta Pi hopes to make this one of its big annual events.

The Chapter Library is progressing slowly, and we wish to thank those who have made contributions. Alumni of Phi Beta Pi are solicited for contributions of books and Journals. The mailing address is in care of the School of Medicine.
THE EFFECT OF CORTISONE IN THE TREATMENT OF
TYPHOID FEVER*

THEODORE E. WOODWARD, M.D., JOSEPH E. SMADEL, M.D. AND
ROBERT T. PARKER, M.D.

The control of infectious diseases has progressed markedly in the last few decades as a result of the control of the microbial causes of disease. We are now entering an era when emphasis is shifting from the microbial agent to the host.

The use of ACTH and cortisone in the collagen diseases and in those of endocrine or hypersensitive origin is well known. Moreover, the momentous contributions of Kendall, Hench, Thorn and Harvey pertaining to cortisone and ACTH have again reemphasized the importance of the host factor. Indeed, Finland and his collaborators observed that during the course of pneumococcal pneumonia the patient receiving ACTH was rendered free of symptoms in spite of continued bacteremia. Our interests have been directed toward typhoid fever.

Clinicians need hardly be reminded of the two mechanisms that damage typhoid patients. These are: 1—a septicemic disease with local lesions throughout the body certain of which are prone to accidents, for example, hemorrhage and perforation of the intestinal ulcer and: 2—a severe toxemia which is more difficult to define but is apparent to all clinicians. In 1926 Jaffé and Plaske noted that in the absence of accessory cortical tissue adrenalectomized rats were highly susceptible to the toxic effects of typhoid vaccine for as long as 5 months after the operation. They noted that autoplastic cortical transplants protected adrenalectomized rats against the typhoid toxin in amounts otherwise lethal. Subsequently the protective action of cortisone against the shocking action of typhoid toxin in adrenalectomized rats was clearly demonstrated by Lewis and Page.

Clinical investigators interested in chemotherapy of acute infectious diseases have not been fully satisfied with the therapy of typhoid fever. Despite the obvious benefits of chloramphenicol therapy in typhoid, there are several problems which remain to be solved: 1—the present chloramphenicol regimes do not alleviate the toxemia of the disease for at least 36–48 hours and fail to eliminate the fever until

* This paper presented to the General Session of the American College of Physicians, St. Louis, April 12, 1950.
† Received for publication July 3, 1951. The contribution of numerous individuals to this study was acknowledged in previous publications (1, 2).
the fourth day; 2—relapses of typhoid fever occur in a certain portion of treated cases; 3—\textit{S. typhosa} continue to be shed in the feces for a variable though usually short period of time after therapy is begun; and 4—the typhoid carrier state, when it exists, is not permanently benefited by chloramphenicol.

This present report extends the previously published results pertaining to the clinical observations in patients receiving combined therapy with chloramphenicol and cortisone and in other patients in whom cortisone was the sole form of treatment (1, 2). It should be mentioned immediately that the hormone, while producing obvious benefits to the patients, exerted no anti-bacterial effect and did not significantly hasten the disappearance of \textit{S. typhosa} from the blood or feces.

**METHODS OF STUDY**

\textbf{A. Selection of Patients.} Patients with typhoid fever proved by cultivation of \textit{S. typhosa} from the blood or feces were selected for treatment using chloramphenicol in combination with cortisone or cortisone alone.

**TREATMENT**

\textbf{A. Combined chloramphenicol and cortisone.} Chloramphenicol was administered orally at 8–12 hour intervals with a large initial dose of approximately 50 mg./kg. and subsequent daily doses computed on the same basis. After improvement ensued the daily dose of chloramphenicol was halved for a total of approximately 10 days.

Cortisone was administered by two different dosage schedules. The first schedule consisted of 200 mg. the first day and 100 mg. for each of the next 2 days. The second schedule was 300 mg. the first day, 200 mg. the second and 100 mg. the third day. It may be seen, therefore, that cortisone was administered for a relatively short period of time during the course of this illness.

\textbf{B. Cortisone alone.} In the 4 adult patients cortisone was given in doses of 200 mg. the first 24 hours in divided doses of 100 mg. each. During the second 24 hours, 200 mg. were administered and on the third day 100 mg. The children, aged 5, 7, 8 and 11, were given approximately one-half the adult dose. One patient who suffered a relapse received a second course of cortisone.

\textbf{C. Care of patient.} Clinical and laboratory procedures were essentially the same as those employed in earlier studies by our group.

Chloramphenicol blood levels were performed on a sufficient number of cases to indicate that the results were similar to those obtained on essentially identical regimes.

Daily blood cultures were obtained during the pre-treatment observation period and frequently, usually daily, for one week after instituting therapy. Specimens of feces and urine were cultured for \textit{S. typhosa} at frequent intervals throughout the period of observation.

The Widal reaction was determined on several specimens from each patient. The blood was examined by routine hematologic methods but it was not possible under the conditions of the study to determine the absolute eosinophil count or serum electrolyte pattern with any uniformity. Seventeen ketosteroids were not determined.
RESULTS

It is worth recounting that our previous experience with the use of chloramphenicol in the treatment of 44 patients with typhoid fever showed that an average of 4 days was required from the time the first antibiotic was given until fever and toxemia disappeared. It is surmised that this delayed clinical response depended upon liberation of toxin from destroyed bacteria and also upon the liberation of toxic products from the basic necrotic lesion in the intestine. Nevertheless, the 4 day interval of toxemia and fever appear to be a fairly constant finding in typhoid patients who receive only chloramphenicol.

A. Effect of Combined Chloramphenicol and Cortisone Treatment. A summary of the observations on the duration of fever after beginning treatment of typhoid in: 1—44 patients with chloramphenicol; 2—16 with chloramphenicol and cortisone; and 3—7 with cortisone is given in Table I. The table shows that in the 44 typhoid patients treated with chloramphenicol alone, the average duration of fever after beginning therapy was 84 hours. This febrile period coincides closely with the findings of subsequent investigators. It will be noted in this table, that of 16 patients receiving com-

<table>
<thead>
<tr>
<th>NO. OF PATIENTS</th>
<th>TREATMENT</th>
<th>DURATION OF FEVER AFTER B (hours)</th>
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</thead>
<tbody>
<tr>
<td>44</td>
<td>Chloramphenicol</td>
<td>84</td>
</tr>
<tr>
<td>16</td>
<td>Chloramphenicol Cortisone</td>
<td>26</td>
</tr>
<tr>
<td>7</td>
<td>Cortisone</td>
<td>40</td>
</tr>
</tbody>
</table>

bined treatment with chloramphenicol and cortisone that the average duration of fever was 26 hours. Moreover, in 7 patients receiving cortisone alone for the primary febrile course, the duration of fever was 40 hours. The results obtained, therefore, show consistent improvement over the findings in patients treated solely with chloramphenicol.

Combined treatment was followed in all instances by objective and subjective improvement within approximately 18 hours after instituting therapy. At this time all patients displayed interest in their surroundings and temperatures began to fall. Within 15 hours the findings in those patients receiving larger doses of cortisone were striking. All were afebrile and showed alertness and increased appetite.

Complications of Combined Therapy. The usual incidence of intestinal hemorrhage, intestinal perforation and relapse in typhoid fever is 3 per cent, 7 per cent and 9 per cent respectively. In the group of 16 patients who received chloramphenicol and cortisone, there were no perforations although one developed a moderately severe gastro-intestinal hemorrhage. The occurrence of six relapses (38 per cent) in a group of 16 patients therefore represents a higher rate than normally expected in this disease. The relapse of these patients responded satisfactorily when chloramphenicol was again administered. It has been previously noted that a high relapse rate results
when chloramphenicol was administered for 8 days or less, in the neighborhood of 50 per cent, whereas few were encountered when therapy was continued for 2 weeks.

ILLUSTRATIVE CASE REPORTS

1. Treatment with Chloramphenicol Alone. Figure 1 graphically represents the course of typhoid fever in a patient who received chloramphenicol alone. The patient, seriously ill, received chloramphenicol on the seventh day of disease. It will be noted that the temperature reached normal levels in approximately 4 days and in this patient there was little improvement of the toxic state until the third day of therapy. Convalescence progressed quite satisfactorily and it will be noted that repeated blood, stool and urine specimens were negative for *S. typhosa* after therapy was instituted. There was no relapse encountered in this patient.

2. Combined Treatment with Chloramphenicol and Cortisone.

Figure 2 graphically represents the course of typhoid in a 13 year old girl who was admitted to the hospital on the tenth day of an illness characterized by chills, fever of 106 F and abdominal pain. Typhoid bacilli were cultured from specimens of blood obtained prior to initiation of treatment on the twelfth day of disease. Within 18 hours after beginning treatment when she had received a total of 300 mg. of cortisone and 7 gm. of chloramphenicol, the patient was noticeably improved and alert. The temperature reached normal limits within 24 hours and remained normal thereafter. The illness was not complicated during convalescence and the course was one of progressive improvement. Further attempts to culture *S. typhosa* from specimens of blood and feces were negative.

3. Combined Treatment with Chloramphenicol and Cortisone
The course of typhoid in a 27 year old patient is graphically represented in Figure 3. The patient, who was seriously ill and had a bacteremia, showed gross intestinal bleeding prior to the initiation of specific therapy. The rapid return of the temperature to normal on combined treatment with cortisone and chloramphenicol may be observed. Indeed, the patient's bedside appearance was noticeably improved before the temperature reached normal. It will be observed furthermore that gross intestinal
bleeding occurred for 9 days during the course of disease. This is not unusual during typhoid but the point nevertheless must be considered as to whether cortisone may have been a factor in continuation of bleeding by delaying healing.

B. Effect of Treatment with Cortisone Alone.

The effect on the febrile course constitutes striking evidence that cortisone therapy influences the course of typhoid. Examination of Table II reveals that in 7 of 8 patients cortisone therapy alone was followed by a fall of temperature to normal levels within 16–73 hours, the average being 40 hours. Furthermore, objective and subjective improvement was uniformly observed within the first 24 hours of treatment. There was abatement of headache, weakness and mental dullness within this period. Four patients were in a semi-stuporous state with profound toxemia which characterizes typhoid fever. These patients were all markedly improved within 24–36 hours. In one patient there was no demonstrable effect upon the febrile course although his clinical appearance was strikingly improved after 24 hours of cortisone therapy. Chloramphenicol given a week later produced defervescence.

TABLE II
Results of cortisone therapy in 8 patients with typhoid fever

<table>
<thead>
<tr>
<th>No. of Patients</th>
<th>CORTISONE</th>
<th>DURATION OF FEVER AFTER R</th>
<th>RELAPSE</th>
<th>DURATION OF BACTEREMIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Mg</td>
<td>(Hours)</td>
<td></td>
<td>(Days)</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>18</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>600</td>
<td>73</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>700</td>
<td>No effect</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Effect on the Bacteremia. In 7 patients S. typhosa was isolated from the blood immediately prior to institution of cortisone therapy. In the remaining patient, bacteremia was not demonstrated until the relapse. In 2 patients blood cultures found positive before treatment were consistently negative thereafter. In 5 remaining cases, S. typhosa was isolated on the second, fourth and fifth days after beginning cortisone, in spite of the fact that the patients during the bacteremic phase were clinically improved.

Effect on the Stool Culture. Stool specimens were found positive for S. typhosa in 6 patients in one or more instances during convalescence. The longest period that stools demonstrated typhoid bacilli was the sixtieth day of disease. No patient was discharged without three consecutive stool cultures. Cortisone produced no apparent effect on the occurrence of typhoid bacilli in the feces.

Complication of Cortisone Therapy. Only one of the 8 patients given the hormone alone developed a relapse. Three patients in this group received chloramphenicol during convalescence because of persistent typhoid bacilli in the feces. This probably prevented relapses in their cases. An additional case showed moderate intestinal hemorrhage on the fifty-fifth day and pericarditis on the sixtieth day of disease.

ILLUSTRATIVE CASE REPORTS

1. Treatment with Cortisone Alone. Figure 4 presents the results obtained with cortisone in a 27 year old colored female who was moderately ill with typhoid fever. Therapy was initiated on the ninth day of disease and for 5 subsequent days the blood
continued to show typhoid bacilli on culture. Nevertheless, during this time, the patient was afebrile and sitting up in bed. Indeed, it was difficult to keep her from walking about the ward. Convalescence was uneventful and there was no relapse.

2. Treatment with Cortisone Alone. The patient whose record is summarized in Figure 5 was a 7 year old colored child who was rather severely ill with typhoid fever. Within 36 hours after starting cortisone the temperature had returned to normal. Even before this time, however, this child who was toxic before therapy was instituted stood up in the crib, showed interest in his surroundings and ate heartedly. On the twentieth day when the patient was asymptomatic, chloramphenicol was administered because of the finding of a positive stool culture for typhoid bacilli.

3. Cortisone Therapy with Relapse. Figure 6 presents the results of treatment of a moderately ill patient with typhoid fever who relapsed after cortisone. The temperature which was 102 F before institution of therapy, became normal within 16 hours after 200 mg. of cortisone. Bacteremia was not demonstrated prior to therapy. After 10 days during which the patient was entirely free of symptoms, there was a return of temperature and typhoid bacilli were isolated from the blood. Re-administration
of 300 mg. of cortisone for 2 days resulted in a complete remission of symptoms and the course thereafter was uneventful.

Fig. 6. Effect of cortisone therapy in typhoid. Note relapse with bacteremia on 26th day of disease.

**DISCUSSION AND SUMMARY**

The combination of cortisone with chloramphenicol apparently arrests the acute manifestations of typhoid fever more effectively than does the antibiotic alone. Sixteen patients acutely ill with typhoid fever were markedly improved within 24 hours after beginning combined therapy. The average duration of fever in this group was 26 hours. This represents a shortening of the febrile period in comparison with that obtained with the usual chloramphenicol therapy.

Cortisone administered as the sole form of treatment in 8 typhoid fever patients appeared to exert a favorable influence and resulted in amelioration of symptoms.

Cortisone lacks any direct effect upon the toxin of *S. typhosa*. Furthermore, this hormone possesses no direct effect on the typhoid organism since: 1—there is no evidence of bacteriostatic or bacteriocidal effect in in vitro tests of cortisone and *S. typhosa*; 2—bacteremia and the occurrence of *S. typhosa* in the feces are not appreciably altered in those patients treated with cortisone alone. It appears likely therefore that the beneficial effect of cortisone in the typhoid patient is the result of action on the human host rather than directly on the typhoid bacillus or its products.

In the present group of 24 patients, there were 7 who suffered typhoidal relapses. Six of these 7 relapses occurred in the group of 16 patients who received combined treatment with cortisone and chloramphenicol. The incidence of relapses in this particular group is unusually high. Previous experience had shown that very few patients suffer relapse if chloramphenicol is used over a period of 2 weeks. Such a schedule was employed here. One must raise the question regarding the possible role of cortisone in increasing the relapse rate of patients receiving combined therapy. This question can only be answered when the results of additional observations become available. However, a number of theoretic considerations are worth mentioning at this time.

An extensive literature is already beginning to accumulate on the detrimental effect of cortisone and ACTH on experimental bacterial infections of animals, notably those caused by tubercle bacilli (3) and streptococci (4). Certain of these studies, particularly those of Michael and his associates, in tuberculous infections
have been interpreted as showing a suppression of the immunologic response of the host. There is no doubt about the fact that the cortisone-treated animals of Michael were more susceptible than the appropriate controls. However, the data might be explained on the basis of suppression of cellular response of the infected animal rather than on the basis of suppression of immunologic response. In any case, it is noteworthy that the untoward effects obtained with cortisone in experimentally infected animals are noted only after relatively large doses are employed for a relatively long time. In the present group of cases, the serologic response (O and H agglutinins) of our typhoid patients who received combined therapy or cortisone alone was not materially different from that previously observed in patients with untreated typhoid or those who received chloramphenicol.

Another of the physiologic effects of the adrenal hormones which might produce an untoward effect in typhoid patients is concerned with the suppression of fibroblastic activity (5). It is apparent that an appreciable suppression of this type might adversely affect the outcome of the necrotic lesions of the intestine. Here again, this hormonal effect is manifest after relatively prolonged administration. In this series of 24 patients, intestinal hemorrhage occurred in 2 instances (8 per cent) which compares roughly with the 7 per cent of gross hemorrhage occurring in McCrae's accumulated series of 23,271 cases. Nevertheless the hazard of delayed healing and its possible increase in the tendency toward spontaneous rupture of the intestinal lesion cannot be minimized.

CONCLUSION

It is our opinion that cortisone in typhoid fever assists the patient in suppressing the toxic manifestations of the disease. The beneficial effects of cortisone are obtained quickly when adequate doses are administered. Therefore, prolonged therapy with the hormone is not indicated; indeed, 1 or 2 days of treatment is probably adequate to elicit the maximal benefit as regards this detoxifying effect. Since cortisone possesses no direct activity against the typhoid organism, the bacteriostatic antibiotic chloramphenicol must be used in the rational treatment of typhoid fever. Combined therapy with chloramphenicol and cortisone is probably indicated only in those patients who display marked signs of toxicity.

Dept. of Medicine, University of Maryland School of Medicine, 29 S. Greene St., Baltimore 1, Md.

BIBLIOGRAPHY

A VIABLE PEDICLE GRAFT FOR REPAIRING INTRATHORACIC STRUCTURES*†

A PRELIMINARY REPORT ON TRACHEAL DEFECTS

R. SIM PENTON, M.D. AND OTTO C. BRANTIGAN, M.D.

The intimate anatomic relationships of essential structures within the thorax and the extension of disease often limits the effectiveness of surgery in this region. It has become necessary to perfect methods for repairing structures, portions of which must be excised, in order to perform adequate surgery on advanced disease. A viable pedicle graft is here described which, it is believed, will be useful for repairing a variety of tracheal, vascular, and esophageal lesions inside the chest. In the following study, experiences with the use of this graft for repairing experimentally produced tracheal defects are reported.

The possibility of reconstructing the badly damaged trachea has become more feasible because of experimental evidence which has accumulated during the past decade. The remarkable ability of the trachea to bridge defects with fibrous tissue and respiratory epithelium has made it possible to use a wide variety of materials as a framework upon which this reparative process may take place.

Successful repair of the cervical trachea has been reported as early as 1911 (1). However, it has been only in recent years, as more intrathoracic diseases are becoming amenable to surgical therapy, that methods of repairing the thoracic trachea have received widespread interest. Taffel (2) in 1940 used free fascial grafts to close small tracheal defects as reported in a group of experiments on dogs. Defects were produced in both the cervical and thoracic trachea. The transplants did not appear to remain viable but were rapidly replaced by fibrous tissue lined with respiratory epithelium. Nash (3) in 1943, while discussing the treatment of injuries to the larynx and trachea, agrees that fascia may be useful in bridging defects of this etiology.

While investigating various uses for polyethylene, Grindly and Mann (4) anastomosed the trachea over molded tubes of this material and later removed the tubes at bronchoscopy. In 1948 Hanlon (5) used gelatin sponge successfully for bridging small defects in the trachea and bronchi. Daniel (6) has reported complete regeneration of the trachea about glass tubing. Flattened epithelium completely covered the entire luminal wall, and the presence of distinct rings of cartilage approximated the appearance of the original trachea. Gebauer (7) has found dermal grafts supported with stainless steel wire to be useful for plastic reconstruction of tuberculous bronchostenosis. Gibbon (8) reported a case in which he used a section of costal cartilage wrapped in a flap of parietal pleura.

After reviewing the previous experimental work on this problem, it becomes evident that the results obtained have not depended to any great extent upon the material used as a graft. These materials serve simply as a framework upon which the tracheal wall may regenerate in the form of fibrous tissue and respiratory epithelium.

* From the Department of Surgery, School of Medicine, University of Maryland.
† Received for publication September 10, 1951.
The present experiments differ completely. A rectangular pedicle flap consisting of intercostal muscles, periosteum, neurovascular bundles, and parietal pleura is mobilized from the chest wall. It is thick, tenacious, and retains an excellent blood and nerve supply from the intercostal vessels and nerves which enter its attached portion posteriorly. It continues to remain viable and does not at any time depend upon fibrous tissue proliferation from the trachea for support. It seems reasonable to expect that such a graft should be much less likely to slough or to form strictures.

**PROCEDURE**

All operations are performed under aseptic conditions. Intravenous sodium pentobarbital-positive pressure anesthesia is used.

With the dog in a supine position an incision is made along the entire course of the right 5th rib down to the thoracic cage. The entire 4th rib is now dissected from its periosteal bed and retracted out of the operative field until it is used again at the time of closure. The superior margin of the 5th rib and the inferior margin of the 3rd rib are now freed from their periosteum. Incisions are made along the periosteal beds of the 3rd and 5th ribs. This strip of chest wall is now divided anteriorly at the costochondral junction (Fig. 1 upper right), freeing a long flap composed of intercostal muscles, periosteum, neurovascular bundles, and parietal pleura. This graft has an excellent blood supply, and bleeding is always noted at its free end.

Support for the graft is provided by a “U” shaped section of stainless steel wire inserted between the external and internal intercostals. The wire is completely covered by muscle externally, and by muscle and parietal pleura on its luminal side. This support is anchored in place by interrupted silk sutures. The operator is then able to mold this wire support into the desired form as the graft is sutured to the defect (Fig. 1 lower left).

By rotating the trachea on the endotracheal tube, all surfaces are made accessible. This makes it possible to cover a defect extending about the entire circumference. As the graft is sutured in place with interrupted silk sutures, it becomes a muscular tube replacing the section of trachea which has been excised (Fig. 1 lower right). It is important not to include intercostal vessels in a suture as they enter that portion of the pedicle which has been used for the reconstruction of the trachea. This could happen as the tube is being completed and the distal end of the graft is being sutured to the pedicle at its junction with the trachea. After the defect has been closed, the endotracheal tube is withdrawn to a point superior to the graft in order to test for leaks.

The fourth rib now is replaced in its normal position by suturing its costal cartilage in place anteriorly. No attempt is made to close the defect caused by the removal of the intercostals and parietal pleura. The muscles superficial to the ribs are approximated with interrupted silk sutures and the skin is closed with a continuous silk suture. The endotracheal tube is removed.

**RESULTS**

In this study, the above technique was used to repair full thickness tracheal defects on 10 adult dogs. In 5 animals, complete sections of the trachea 3 centimeters in
length, were removed. The remaining 5 dogs had less extensive defects (2 x 3 cm.) repaired.

There were no deaths. Bronchoscopy was performed on 2 dogs from each group 6 weeks postoperatively. It was difficult to distinguish the luminal side of the graft from the surrounding tracheal wall. Two or 3 silk sutures appearing as black dots along the line of junction with the trachea could be seen in each case. The graft in those cases in which a complete section of the trachea had been removed appeared slightly irregular from within, but there was no evidence of stricture formation.

All dogs were sacrificed 2 months following operation. Examination revealed all
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grafts to be grown into the substance of the trachea. They were thickened, indurated, and composed of muscle surrounded by regenerated bone. The formation of bone about the graft seemed to insure its rigidity. It is impossible to say at this time whether or not this is an advantage. The tracheal lumens were all smooth, without appreciable narrowing in any case. Microscopic examination revealed fibrous tissue proliferation beneath and around the borders of the graft. The epithelium which covered the luminal side was indistinguishable from the surrounding tracheal epithelium.

SUMMARY

A method is described for mobilizing a viable pedicle graft from the chest wall which has proved useful for replacing excised portions of intrathoracic structures. The graft is composed of intercostal muscles, periosteum, neurovascular bundles, and parietal pleura. It remains attached to the chest wall posteriorly and retains an excellent blood and nerve supply from the neurovascular bundles. This is its chief advantage.

While this method was developed on dogs, it has been used successfully to repair a large tracheal defect on a human subject.

Note: On August 22, 1951 an extensive tracheal defect was repaired on a patient at the University Hospital, Baltimore by the method which has been described in this report. This case will be published at a later date.

Experimental use of the graft for the repair of vascular and esophageal defects is now being investigated.

BIBLIOGRAPHY

GLOBIN INSULIN WITH ZINC IN DIABETIC OUTPATIENTS*

SAMUEL T. R. REVELL, JR., M.D.

It is not the purpose of this report to discuss the pharmacologic actions of the various insulin preparations under controlled conditions, but to report our experience in using globin insulin with zinc in the control of ambulant outpatients. The patients studied have been, with two exceptions, from the Diabetic Clinic, University Hospital Outpatient Department. It seems pertinent to state that these patients are either indigent or are in such a low income group that they are unable to afford private medical care. This economic handicap makes strict dietary control very difficult. The mental age of this group of patients is distinctly below that of the average mental age encountered in private practice.

The graphs to be presented are selected as representative of the group of about 60 patients who have been studied during the past 18 months in an attempt to show the results obtained in the various types of diabetic patients requiring insulin. In the graphs the curves for weight, blood sugar, and insulin dose are plotted with time as the abscissas; the curves of glycosuria however are plotted with percentage of the total number of specimens examined in the period as abscissas.

Figure 1. This composite graph represents a 56 year old white male private patient with uncomplicated diabetes mellitus, first seen in October 1949, at which time symptoms of weight loss, polydipsia, polyuria had been present for 6 months. The blood sugars depicted in this graph were taken 2 hours after his noon meal. The graph was selected to show the relative ease of obtaining good control in the uncomplicated diabetic with globin insulin.

Figure 2. This composite graph depicts the course of a 56 year old white female first seen in the diabetic clinic September 9, 1949 because of a palmar abscess of one month's duration that had failed to heal following surgical incision and drainage. In addition to her diabetes mellitus she was found to have hypertensive cardiovascular disease and arteriosclerotic peripheral vascular disease. Her hyperglycemia was well controlled although she continued to show moderate glycosuria. Upon substituting Globin Insulin the control of the glycosuria was markedly improved in spite of moderately elevated fasting blood sugars. It was necessary to discontinue the use of globin insulin because of persistent local reaction about the sites of injection. This case was selected to show that globin insulin occasionally produces reaction about the site of injection. This was the only instance in more than 75 clinic patients and all of the private patients treated with globin insulin that exhibited this phenomenon.

Figure 3. This graph depicts the record of a 56 year old white female whose diabetes was discovered in 1947 when admitted to the hospital for repair of a post-operative hernia. In addition she was found to have latent syphilis, hypertensive cardiovascular disease, and obesity, being 30 pounds overweight. In February 1949 insulin therapy

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was instituted. The 2 middle sections of the graph show the failure to obtain satisfactory control with various combinations of insulin. The last section of the graph depicts the same patient during 7 weeks of hospitalization when her dietary intake was strictly controlled.

Figure 3A. This is a 24 hour blood sugar curve on the patient shown in Figure 3. This patient represents one of the common findings in private practice and outpatients, namely, obesity and failure to follow dietary instructions. This particular patient had in addition, the complicating factors of latent syphilis and hypertensive cardiovascular disease.
**Figure 4.** This graph depicts the course of a 46 year old colored female whose diabetes was first discovered in 1943 at which time she was 25 pounds overweight. For 4 years her diabetes was satisfactorily controlled on small doses of protamine zinc insulin. Following a hysterectomy and appendectomy her insulin requirements steadily rose as did her weight, with poor control of her diabetes. In March 1950 her diet was reduced and her insulin changed to globin. The patient continued to exceed her diet, but the glycosuria markedly improved in spite of the fact that the fasting blood sugar determinations remained elevated.

**Figure 5.** This graph depicts the course of a 47 year old colored female whose diabetes was discovered in January 1944. At that time she was 70 pounds overweight. From January 1944 until August 1949 the patient continued to exceed her diet and steadily gained weight with poor control of her diabetes. In August of 1949 the patient was placed on a 2 to 1 insulin mixture, and during the 8 week period of observation her diabetes was satisfactorily controlled. The same patient on a slightly reduced caloric intake, had globin insulin substituted for the 2 to 1 mixture. As seen in the graph there was no appreciable change in the blood sugar levels but there was continued improvement in the amount of glycosuria. As is obvious from her weight graph, she did not follow her reducing diet. The patients depicted in Figures 4 and 5 represent a common type of individual seen in diabetic outpatient work, namely, the uncomplicated, obese, insulin-resistant diabetic.

**Figure 6.** This graph depicts the course of a 27 year old colored female, a known diabetic of 12 years duration. She was first seen in the Diabetic Clinic in the summer of 1947 at which time she was 60 pounds overweight and 7 months pregnant. The obstetric history revealed 2 previous pregnancies which had terminated in stillbirths. She had never followed a diet but had taken regular insulin, 15 units three times daily. During the remainder of this pregnancy she was maintained on regular insulin twice daily and was delivered of a live baby by Caesarian section in August 1947. For the 6 months following delivery the patient totally disregarded her diet.
and stopped taking insulin. She returned to the clinic in March 1948 at which time she was started on protamine zinc insulin. In July of 1948 she again became pregnant and again did not follow her diet. Her insulin doses were progressively increased without good control, but in spite of this she was delivered by elective section of a live baby in February 1949. The last section of the graph shows the same patient on globin zinc insulin and a 25 calorie-deficit diet which she failed to follow. After 6 weeks of globin zinc insulin alone, protamine zinc insulin was added because of the persistently high fasting blood sugar and moderate glycosuria. This case was selected to show the combined problems of the insulin resistant, obese diabetic, the effect of diabetes on pregnancy, and lastly, the possibility of supplementing globin insulin with protamine zinc insulin.

Figure 7. This graph depicts the course of a 67 year old white male who was first seen in the Diabetic Clinic in December 1940 at which time he was 100 pounds over-

![Graph](image)

Fig. 6

Fig. 7

weight. At that time he had diabetic peripheral neuritis manifested by a wrist drop and a foot drop. For 5 years diet was adequate to control his glycosuria and hyperglycemia. In 1945 he began to experience hyperglycemia and glycosuria with some weight loss. At that time he was started on protamine zinc insulin. In February 1950 he was placed on a 750 calorie-deficit diet and the insulin was changed to globin. This failed to control his glycosuria. During the last 3 weeks of observation the globin insulin was given in divided doses with resulting satisfactory control of the hyperglycemia and absence of the glycosuria. This case was selected as an instance of an insulin resistant, obese diabetic that was complicated by a diabetic peripheral neuritis.

Figure 8. This graph depicts the course of a 52 year old white female first seen in the Diabetic Clinic in 1949 at which time she was 90 pounds overweight. She had been a known diabetic for 10 years having been initially discovered in 1939 when admitted to another hospital in coma. During the subsequent 10 years she was admitted, on 8 occasions, to several Baltimore hospitals in coma. During this interval
bilateral lumbar sympathectomies had been performed because of peripheral vascular disease. In March 1949 she suffered a cerebral vascular accident. When first seen in the Diabetic Clinic she was placed on a salt-free reducing diet and started on globin insulin. She failed to follow her diet and in spite of steadily increasing her dose of insulin she was poorly controlled. In April 1950 she was admitted to the University Hospital for control of her diabetes and ligation of bilateral varicose veins. The last section of the graph shows her hospital course under controlled dietary conditions.

*Figure 8.* This depicts a 24 hour blood sugar curve on the same patient shown in Figure 8. This case was selected to demonstrate the excellent control of severe diabetes when all factors can be controlled. It shows in addition, the safety factor of globin insulin in a severe diabetic outpatient who refused to follow instructions even though satisfactory control is not maintained.

*Figure 9.* This graph depicts the course of a 38 year old colored male first seen in the Diabetic Clinic in 1946 in mild acidosis. He was given diet instructions and taught the self-administration of insulin and returned to his family physician. The patient
was returned to the Diabetic Clinic in August 1948 out of control and suffering from a generalized pydodermia. His insulin requirements rapidly rose and control remained very unsatisfactory with hyperglycemia and marked glycosuria. In September 1949 this patient was placed on globin insulin and protamine zinc insulin. His control remained completely unsatisfactory because of numerous hypoglycemic reactions. At the end of this period of observation he developed lobar pneumonia and entered the hospital in severe acidosis. In the last section of the graph insulin was administered in divided doses of globin. During this period his control was completely satisfactory with absence of insulin reactions, satisfactory blood sugars, and minimum glycosuria. This case and the one to follow were selected to depict one of the most difficult problems in the management of diabetic patients, namely, the juvenile or "brittle" diabetic. The degree of control accomplished by 2 doses of globin insulin in these patients was far greater than that obtained by any other method.

Figure 10. This graph depicts the course of a 36 year old white male private patient
who was first seen in February 1950 in mild acidosis as the result of an upper respiratory infection. The patient had been a known diabetic for 19 years. He had been well controlled by diet and small doses of protamine zinc insulin until 1948 when he was admitted to another hospital in coma. He was readmitted to the same hospital 6 months later in moderately severe acidosis resulting from a streptococcal throat infection. During the subsequent 2 years he had been maintained on a diet and was taking protamine zinc insulin 32 units, and crystalline zinc insulin 10 units. On this regime he had experienced hypoglycemic reactions averaging at least 3 each week. Because of his past history an attempt was made to control this patient on globin insulin in a single dose, but he continued to exhibit hypoglycemic reactions although not so frequently as previously. The second portion of this graph shows the same patient on globin insulin in divided doses with additional improvement but still some hypoglycemic reactions. On May 26, 1950 a diurnal blood sugar curve was performed. This is plotted in the upper right hand section of the graph. Following demonstration of the hypoglycemia at 5 P.M. the patient was given a cup of milk and crackers in the mid-afternoon with complete elimination of insulin reactions.

Subsequent to these observations this patient developed severe diabetic retinopathy and nephropathy, probably of the intracapillary glomerulosclerosis type.

SUMMARY

An attempt has been made to present the results obtained in ambulant diabetic patients of varying type and severity using globin insulin. The cases selected are believed to be representative.

CONCLUSIONS

1. Globin insulin has been found to be an effective form of substitution therapy in the diabetic patient requiring a relatively small dose of insulin for satisfactory control.
2. Globin insulin has been found to exhibit a moderately wide range of safety in diabetic patients whose failure to follow instructions had led to repeated instances of diabetic coma.
3. Globin insulin in divided doses has been found to be an extremely efficient tool in the successful management of "brittle" diabetics.

Burroughs Wellcome and Company (U. S. A.) Inc. generously supplied the globin insulin with zinc for this study.
CONCERNING VALUES IN MEDICINE*†

JACOB E. FINESINGER, M.A., M.D.

This evening marks a special event to you, members of the class of 1950, to your families, to your friends, and to your teachers as well. It marks the completion of a phase of years of preparation and study. To many it is the culmination of years of saving and denial. Your efforts and those of your families have been successful and have resulted in your being welcomed into the fellowship of physicians. You, and your families as well, are to be congratulated on this achievement. Your teachers have now truly become your colleagues. They, too, I am sure can justly feel the satisfaction of having played a part in guiding you to the status of physician with all the privileges and responsibilities that go with this status. I am merely spokesman for many who hold high hopes for you in pursuit of your chosen career.

You are taking your part among a group of men and women who have given support and relief to their fellow man. These men and women represent links in an age-old chain going back into antiquity. Theirs is a tradition of effort and achievement dedicated to the welfare of man. This desire to lessen suffering has been the consistent aim in the lives of physicians, leading all the long way from medicine man with his magic rites to the modern doctor with his methods of diagnosis, therapy and prevention. In our days the profession of medicine represents a unique opportunity for work and satisfaction. Above all other professions, perhaps, it makes use of scientific method in the service of human and personal goals—the practice of the healing arts. Through his daily work the doctor brings the results of his knowledge, skill, and investigations to the needs and the sufferings of his patient. His is not a life of pure scholarship in quiet halls of contemplation. He works with life itself. At no point can he get away from the need to consider and to help his patients—and yet he must do this with imperfect tools and incomplete information. He must draw from the best that is available and direct it to serve his goals. He must be objective and sound, and at the same time resourceful and patient. He must have the rare qualities of adapting scientific generalizations to the service of the individual patient. His task is a trying one. It requires an unusual combination of human traits.

For this evening’s talk I have selected the topic of values in medicine. By values we mean certain preferences which are important to us as doctors and as civilized human beings. Some of these preferences we state openly. Others are implicit in our behavior. As a modern civilized human being, I may prefer peace to war, and a general increase of human welfare and happiness to the guarding of special privileges. These preferences will be shown in much of my behavior, in various ways. I may merely talk about them. I may have a pleasurable feeling when I think about them, or they may influence many of my actions. I may prefer the free expansion of knowledge to the limitations imposed by authoritarian decree. I may prefer freedom of thought and speech to suppression. In choosing the profession of medicine, you and I

* From the Department of Psychiatry, University of Maryland School of Medicine, Baltimore.
† Read at the Pre-Commencement Exercises, University of Maryland, School of Medicine, June 8, 1950.
both show evidence of a preference for sustaining human life, for health, for growth toward full maturity—otherwise, it would be difficult to understand why we have chosen to be physicians.

In the course of our busy lives as students, teachers and doctors, we find little time for the consideration of our values. They seem so obvious. As we rightfully become concerned with our job—with the cure of patients—we tend to pay little attention to the values and the motivation which make it important for us to cure and to help patients. Traditionally, the doctor’s values have included broad concepts, such as the preservation of life at a high level of health and the spread of medical care. These broad general values are familiar to and accepted by every physician, and for that matter by every civilized man. Yet we feel that it is pertinent to ask, how helpful are these general values in our lives as doctors working with patients? Values are not too useful if they remain merely as thoughts or ideas which give us good feelings as we state them or hear about them. We would suggest they are meaningful to us in our work only insofar as they are translated into specific attitudes and concrete actions geared to help us in the situations which we meet in the practice of medicine. This implies in essence breaking down these broad concepts in terms of our every day behavior. In doing so we begin to deal with more specific actions directed more closely to our work. We should like to check and evaluate these actions as to their effectiveness. Do these values tell us what to do? or what to say? Do they direct our behavior, and if so, is this behavior worth while? The idea of alleviating human suffering is little more than a slogan until we find and apply techniques to relieve pain in the individual patient. In other words we should question the usefulness of the general principle as such. We would feel that values are important as they lead us to operational definitions and procedures.

Most of the decisions which you young physicians are about to make will be based on the relative importance which you attach to certain values. These decisions are not simple. In the first place each of us wants to be a good doctor. This itself involves a very crucial judgment value—namely, what is a good doctor? In order to answer this question it is necessary to define the word “good” in respect to specific situations. What does the good doctor do in respect to his relation to his patients or to his work? How does the good doctor act in respect to the body of medical knowledge and its growth, or to his colleagues and students and to his community? In each of these instances which deals with the doctors’ behavior, it would also be necessary to work out ways of describing and assessing the behavior. Each of these questions involves judgment of objective values, by which we mean values that can be measured in terms of behavior. At this stage of your careers you are concerned with training. What constitutes good training? Later on you may be faced with decisions involved in the practice of medicine. You may be concerned with your position in the community, your financial status, your hospital connections, your relationships with your patients. Decisions in all of these matters involve the relative hierarchy of certain values—that is stressing the importance of certain values above others.

Many of us are aware of some of the values behind our motives, which in turn affect our behavior. To others this awareness seems not so necessary. You may be wondering this very minute—how important can all this be to me, who have already
made some major decisions in life. Is it really necessary for me to be concerned with these never-ending problems? I want to be an internist and after several years of training, I can reasonably look forward to a successful and useful career as a doctor. I need not concern myself too much with these matters. They can be left to hair-splitting metaphysicians whom we have left far behind, mummified in college courses. Usually the values underlying our decisions are not apparent. They are implicit. However, the day does not go by in the life of the physician when he is not called upon to behave in certain ways:—should he tell the patient the truth about his cancer? Should he refuse to give the demanding patient sedatives at the risk of losing him to another doctor who may not be so scrupulous? Should he make promises to the patient which he knows he cannot carry out? In such problems the doctor cannot avoid considering his values. In situations of this kind, when he does not quite know what to do, the doctor is forced to act, whether or not he is aware of the values involved. If he is naive, or unaware of the values involved, and if his behavior appears consistent, he is likely to be acting in accordance with values derived from one of two possible sources. He is either applying so-called common sense to the situation, or he is taking over ready-made values offered to him, usually emanating from some other institution or discipline. In either case his performance under these circumstances may not be in line with the most effective medical practice.

Common sense as a sound basis for behavior can be delusory. This may sound surprising, perhaps even paradoxical. Common sense would tell us, as it told our ancestors, that the sun moves across the sky. It is obvious—you can see it. Yet this is not the case, as we know from well-established facts. Common sense reasoning would dictate that cancer patients should preferably be spared the dread knowledge of their diagnosis. Yet recent study indicates that most cancer patients make a more satisfactory adjustment and utilize their capacities better when their diagnosis has been discussed in detail with them by their doctor. Common sense would tell us that we could control our behavior if we only wanted to. Yet recent work in my own specialty has shown that symptoms and much of the behavior of patients—and doctors too, I suppose—may be determined by unconscious factors—factors that we are not aware of. Inferences from common sense can be frequently misleading. As doctors we want to be on our guard against their indiscriminate use.

We must also be careful in completely accepting the judgment values which come from other institutions. These values may be based on outmoded information. They may derive from rigid groups or institutions established by society for purposes which in many ways differ from and are at variance with those of the scientifically oriented doctor.

We believe that the doctor’s behavior is based in a great measure on judgment values—whether or not he is aware of these values. It would seem that the doctor who is aware of the values underlying his behavior, is in a position to operate more effectively and realistically in working with his patients. Awareness itself may alter the behavior of the doctor. It is possible that he will then understand more completely and as a result become better equipped to deal satisfactorily with his patients as individuals—and with their physical, mental, and social adjustments. Certainly our decisions will be more meaningful if we can be aware of the particular value or series
of values involved in these decisions, whether they be ethical, aesthetic, personal, or social.

There are obviously a host of value judgments which come to the fore whenever any matter of preference is considered. Some of the doctor's values are no longer controversial—though they were fiercely fought over in the past. Today, for example, we all accept the use of asepsis, vaccination, and some of the contributions of epidemiology. Once scientifically established, these have now become an integral part of the doctor's system of values, and he behaves accordingly. As more and more scientific facts are discovered, the doctor's values change, keeping pace with this expanding knowledge. There still remain burning issues which have not been settled because knowledge is incomplete or inaccurate. Further, there remains the problem of what should be the doctor's attitude toward questions that involve insufficient knowledge, controversial questions, in medical practice, medical service, or other matters involving human and social problems.

I do not propose to give answers to the many questions I have already raised. I should merely like to suggest that these issues are important and have a practical bearing upon our work. More recently they have been the focus of discussion by many scientists and philosophers. There is a growing body of opinion that the problem of values cannot be treated haphazardly. It needs the joint efforts of people working in many disciplines.

It is true that many of the traditional problems with which metaphysicians have been concerned are off in an orbit far removed from the hurly-burly and pressures of the doctor's world. Within our generation there has, however, risen a school of philosophers deriving from British Empiricism and from American Pragmatism, who have taken to heart the problems of the doctor and the scientist in his need for clarity. The work of these empiricists or positivists—Ernst Mach, Rudolph Carnap, Philipp Frank—has been of inestimable value to many scientists. They have pointed out that the traditionally idealistic philosophers starting from Plato and Aristotle have put their statements in such a way that they cannot be checked, and are not subject to verification by direct observation and by other tools of the scientist. The metaphysicians have been helpful in developing systems of logic and clear thinking. They have been satisfied, however, to apply logic toward the solution of problems which can never be solved by recourse to objective fact. Furthermore, they have made broad use of arguments from analogy, which can be misleading. This is in marked contrast to the orientation of the positivist who insists that we set up problems in a form which can be proved or disproved by observation and measurement. One of the striking values of this approach is that it allows us to predict and ultimately to utilize and control the phenomena in the world about us—whether these phenomena are in the realm of the physicist, the chemist, the physician or even the sociologist and economist.

I, myself, am obviously no professional philosopher, yet I have been impressed as a physician with the need of a clearer understanding of these involved matters, especially as they bear upon our decisions and practical work. It would seem worth while in our busy lives to take stock of our own personal preferences or values and those of the members of our own profession. Such stock taking and fundamental
questioning need not be reserved for rare academic occasions such as this. The doctor’s job also involves the constant questioning of his behavior in terms of its effectiveness in the light of our increasing knowledge. This questioning attitude, the refusal to take anything for granted, is basic in the workaday life of the scientist.

This brings us to the question of how can we find out what values determine the doctor’s behavior? Is there any operational approach which we can use to get a meaningful answer? Can we pick up any leads by watching the doctor’s behavior? If one wants to determine values in medicine there are at least two obviously available approaches. The first is to ask the practitioners of medicine for statements regarding their motivation or for statements regarding their ethical values. Why do you want to cure patients? Why are you against or in favor of socialized medicine? These replies could be studied, but here we would be dealing with expressions of conscious ideas. We might guess that the collection of such material would show considerable variation and marked difference of opinion. Material of this kind would tell us the verbalization of doctors, but might give no clue as to whether such values were actually carried out in practice. Who knows, we might even find a considerable discrepancy between these verbalized statements and the actual operational behavior. Further, such replies would not consider the unconscious factors operating in the choice of values.

Another and probably more meaningful way would be to observe the behavior of doctors and from their behavior to draw the appropriate inferences. As one observes doctors in action, their attempts at saving and maintaining life, their efforts at relieving pain and suffering, their attempts at careful observation and the use of scientific methodology—one is forced to infer that physicians have reasonably consistent values in reference to their work. These values might be briefly summarized in two categories: The first dealing with purposes and goals—the saving of human life, the amelioration and prevention of pain and suffering, and the broadest dissemination of medical treatment to the population at large. The second category is concerned with the method of achieving these goals—namely, the use of an approach and of methods which involve the description of the phenomena, the establishment of categories, the development of hypotheses and their validation through observation and experiment. These values have much in common with those of the scientist. By virtue of the complex nature of the doctor’s work—of the various roles he has in the life as well as in the treatment of his patients—he, of necessity, becomes more aware of the human and social values.

It is difficult to take issue with such an impressive and high sounding list of values. Why then, can we not consider the selection of values in medicine a closed matter and turn our attention with relief to specific workaday problems, as doctors and medical specialists?

That these are not closed matters can be seen from a more careful scrutiny of the doctor’s behavior. At the same time that we are concerned with alleviating suffering, we are also concerned with earning a living, which to most doctors means practice and an office, and overhead, and the manipulations necessary in developing and holding on to a practice. Physicians in academic life have their own mundane problems too, connected with competition, advancement and the creation of oppor-
tunities for work. Often it is difficult to apportion one’s time between study and more practice. There will be decisions to be made involving certain therapeutic procedures which may be lucrative but of uncertain therapeutic validity. The doctor who is concerned also with investigation will have to make decisions involving procedures which may advance our knowledge at the expense of some inconvenience or even discomfort to patients. The dissemination of medical care to the population at large—which is a broad general value readily verbalized—may in practice bring up certain difficulties. A system that will bring comprehensive medical care to the masses of people who need it may mean that many individual doctors will earn less money. Such a system might also involve the danger of a leveling off from high standards of individualized treatment of patients. This, too, is undesirable and runs counter to our general values. We might digress to point out that in this current highly controversial matter, it is crucial to state the issues in operational terms. We must state the question—how can we arrive at a workable solution? What would we have to do to make a particular system work? It is difficult to be cool and objective in setting up the appropriate studies and to evaluate them objectively. Yet we all agree that some change is necessary. Maybe the first operational step is to examine existing systems from a constructive point of view, to eliminate the bad features, and to preserve and amplify those that are useful. It is so easy—yet so unproductive—to state and restate high sounding slogans—which represent extreme non-operational points of view.

As doctors we do not live in a social vacuum. We are human beings who are responding to economic and social pressures as well as to the tenets of Hippocrates. In other words we are dealing with competing values. Conflicts ensue, and the decisions become perplexing and difficult. The honored and high sounding broad general values, to which we all do service, resolve themselves into myriads of decisions which require thought, and which above all must weather the test of experience.

In dealing with conflicting values, it may be wise to take stock and decide as to the hierarchy—which things come first. It may be necessary to qualify our values, and restate them more precisely taking into consideration how they actually work out. We can distinguish and separate out the effective elements—those which influence our actions from the verbal elements—those which do not influence our actions. If I may repeat, in instances involving conflicting values, the operational approach would be to reconsider the value or values involved to separate and retain the part which as meaningful discourse leads to action—from the part which as empty talk leads to further abstraction and as such can be dispensed with. To quote a statement of Charles Saunders Pierce dealing with belief as cited by Frank—"The essence of belief is the establishment of habit; and different beliefs are distinguished by the different modes of action to which they give rise. If beliefs do not differ in this respect, then no mere differences in the manner of consciousness of them can make them different beliefs".

The values of the doctor are not static. This can be seen from a perusal of the history of medical practice. Values are constantly changing. We can see how the results of scientific knowledge are incorporated into our system of values. The important discoveries in medicine during the past century offer cogent illustrations. It is hardly
possible for the modern surgeon to witness violations of the principle of asepsis without reacting violently. The principle of asepsis, which was the result of scientific discovery, has so crept into our values, that any breach of technique brings about an emotional reaction in the well-trained doctor. It is contrary to our values as doctors to tolerate anything which results in the spread of communicable disease. We are gradually reaching the state of development which will not tolerate the spread of outmoded ideas about personality and human behavior.

As doctors we are accustomed to operating in a world of changing values, and it is, I believe, realistic to recognize this fact. This does not imply that our values are actually whimsical or that they respond by a change in direction for each new experiment. To be sure there are instances which accepted values seem to swing about in a circle responding to still incomplete information or incorrect inference. An example of this from pediatrics is the shift in attitudes towards feeding schedules. Of importance to us as doctors is an understanding of the factors that bring about this change in our accepted values. These factors may come from various sources. I would consider that those changes which come as pressures from political institutions, or other non-scientific organizations or cults, seldom stand up to the rigorous test of experience. The other and far more lasting changes in our medical values seem to come from the convergence of evidence derived from new findings added to well-established knowledge. The fact that values change need not disturb us. A reasonable attitude is to consider our medical values as satisfactory guides to action so long as they represent inferences from the best available knowledge and experience. We must, however, allow ourselves sufficient flexibility to consider never values on the merits of newer evidence and broader experience. Perhaps this is a workable rule when applied not only to the values of the doctor, but to those many other values as well that affect our behavior in general.

As to the origin of these ethical or social values, it may be that they have come from a variety of sources, each interacting with the other. Some would contend that our values for the good life are ultimate and inflexible imperatives that come to us from religious leaders and philosophers. On the other hand one can observe that not all the values stated by religious and ethical leaders have remained. There seems to be a process of selection going on which discards certain values and supports others. Hence, there is another point of view, which happens to be closer to my way of thinking. This point of view considers that our ethical values have gone through an evolution in which trial and error has played a significant part. Our current values would then be the resultant of a process closely related to our social experiences. As civilization advances—even though the advance is slow and disheartening at times and by no means uniform all over the world—many experiences converge to make people discard outmoded values and accept new ones. The values associated with the statements: “An eye for an eye. A tooth for a tooth.”, prove less useful to society and are supplanted by other values, which operate so as to favor the growth of the individual towards full maturity in a democratic society.

I find it hard to leave the questions of the values of the doctor without some concern as to his values as a citizen. The doctor is not only a trained professional worker in the community. He is a citizen as well and as such has a certain status and role
with the inherent privileges and responsibilities. It is not too important to consider whether he is a doctor first or a citizen first. What is important is the recognition that a certain harmony of both roles is needed for effective living. There are many who believe that the problems of the choice of values is not the concern of the doctor. His job is merely to cure people, to relieve their suffering. Once this is accomplished, his job is completed. The same idea is often held in appraising the role of the scientist. It is alleged that the scientists’ job is merely to determine how things work whereas the quest for values is beyond his legitimate sphere. This implies that the doctor and scientist must obtain their values ready-made for them by others. To my way of thinking, this is a debatable issue. I consider the selection of values too closely tied up with our goals and even our procedures, as doctors. Values might come to us ready-made—their origin and source is not too important, but we must be free to assess, to qualify, and to modify them in light of our own individual or collective experience.

I believe that our job as physicians and citizens does not end with the cure of the patient. We cannot avoid being concerned with: Cure for what? In other words what kind of a world are we going to send our patients back to? On two counts we can consider this a legitimate concern. In the first place it may well be that many of the factors that cause exacerbation and persistence of illness find their home in the social situation. In the second place we may be reluctant to invest our time and efforts in work which is likely to be undone by others at the mere stroke of a pen. It would seem highly inefficient, to say the least, to cure people and have their lives snuffed out by the atom bomb or by the other horrors of modern warfare. We cannot expect to achieve our values as doctors, if we remain indifferent to the factors operating in social and economic spheres. Here, too, we would hope that the application of operational criteria will be productive in the gradual solution of these human and social problems.

The job of the doctor has much in common with that of the scientist. The orientation is the same; the methods are the same, and the values are the same. They both recognize that we live in a changing world—our methods, our information and even our values change. By virtue of the special therapeutic relation between the doctor and the patient, the doctor obviously must place more emphasis on a greater understanding of human values. The awareness of these factors in our behavior as doctors makes us more realistic in our work, more considerate in the selection of our goals, and more rational in our ideals. We do not consider any issue a closed issue and refuse to take anything for granted. We wish to make our incomplete knowledge more complete. This point of view leads to the idea and hope of unlimited progress in thought and life. The very fact that we this evening are discussing matters which involve new plans and new work indicates to me that there is a future for us, with many places to go.

As young physicians, ready for the next step in your careers, yours is the opportunity of working together along these lines. We cannot see how this point of view and its correlates can fail to increase the welfare of our patients.
TENDON FORMS FOR USE IN THE TREATMENT OF SEVERED TENDONS*

ERWIN R. JENNINGS, M.D., GEORGE H. YEAGER, M.D., AND OTTO C. BRANTIGAN, M.D.

Methods for repair of severed tendons have long been of interest to the surgeon. Because results in tendon repair are frequently unsatisfactory, a practical method of correlating and tabulating techniques with end function is being attempted. It is believed that analytical comparison of techniques will ultimately lead to the development and acceptance of a method productive of more satisfactory results.

In order to tabulate techniques employed with end results of tendon repair, a standard form or patient’s record is being used at the University Hospital. For purposes of further development and comparison, several techniques and routines have been established.

The tendon form, as well as the basic principles observed, are herewith presented.

TENDON FORM

This form is designed for the purpose of easily demonstrating the extent of the lesion and the method of repair. The diagrams purposely avoid lengthy descriptions, the intent being to precisely indicate the tendon or tendons involved. By correlating the anterior-posterior with the cross-sectional views, the superficial wound can be drawn in and the tendons involved can be designated by circling the related area. Concomitant injury of nerve and bone can be listed in the designated space and thus insure a more thorough correlation with the ultimate outcome.

Suggestions for follow-up data have been placed on the back of the standard tendon form. This assures complete information from the time of injury to discharge.

Posted routines at this clinic are as follows:

(a) ACCIDENT ROOM

After determining the extent of the lesion, the wound is flushed with 1000 cc. of sterile saline, and a sterile dressing applied. Tetanus toxoid or antitoxin is given as indicated.

(b) OPERATING ROOM

1. All tendons are sutured in the operating room under aseptic conditions by a surgeon specifically assigned to this problem.

2. In general, tendons are not sutured if the wound is grossly contaminated. This statement is flexible and is left to the discretion of the operator. Free ends of nerves and tendons may be identified with non-absorbable sutures, providing extensive dissection is not required.

3. In the operating room, the wound is washed gently with sterile green soap and sterile water. Wound edges are cleansed with ether, alcohol and tincture of merthiolate.

* From the Department of Surgery, University of Maryland School of Medicine and the University Hospital, Baltimore, Maryland.
† Received for publication May 20, 1951.

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TENDON FORM

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Suture Material
Method of Suture
Length of Time of Immobilization

Report to Residents Clinic

Signed
4. Fine steel wire is used as suture material.
5. Suture technique is the responsibility of the surgeon and is recorded by diagram.
6. Hemostasis is aided by the use of a tourniquet.
7. If both the Flexor Digitorium Sublimis and Profundus are severed within the flexor tendon sheath, only the Flexor Digitorium Profundus is sutured. The Flexor Digitorium Sublimis may be removed for a distance of one centimeter proximally and distally.
8. Antibiotics or chemotherapeutic agents, according to the preference of the surgeon, are used for a minimum of four days.
9. All affected tendons are immobilized for three weeks. Immobilization in positions of extreme flexion or extension are avoided.
10. A tendon form must be completed for every patient.

**FOLLOW-UP SHEET**

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Limitation (%) and Deformity at discharge

**SUMMARY**

1. As a result of the unsatisfactory results in the treatment of severed tendons, a need is seen for the accurate tabulation of techniques. It is believed that by accurate analysis of records and follow-up data, more satisfactory procedures will eventually emerge.
2. A tendon form is presented which is designed to facilitate the precise recording of methods employed. This form also serves as a means of tabulating follow-up data.
ISLET CELL TUMOR OF THE PANCREAS—REPORT OF A CASE ORIGINALLY DIAGNOSED AS POST-PARTUM PSYCHOSIS*†

S. EDWIN MULLER, M.D. AND JOHN A. SPITTELL, JR., M.D.

Patients with hypoglycemia may present symptoms referable to disturbances of the central nervous system, autonomic nervous system, the gastrointestinal tract, or the cardiovascular system (1). Many authors in the past have noted symptoms of mental or nervous disturbances in hypoglycemia. Incorrect diagnoses such as epilepsy (2), brain tumor (3), chronic alcoholism (4), encephalitis, neuro-circulatory asthenia, cardiac neuroses, angina pectoris, peptic ulcer, and mental disturbance requiring commitment to institutions in the past have been made on patients in hypoglycemia caused by islet cell tumors of the pancreas (5). Whipple and Frantz state that the most common erroneous diagnoses are epilepsy and alcoholism (6).

The occurrence of post-partum hypoglycemiac attack is noted by Campbell et al. (7). Also, the relationship of hypoglycemic attacks, as a result of islet cell tumors, to the menstrual cycle has been mentioned by White and Gildea (8), and Campbell (7), and the possible effect of estrogens on glucose metabolism has been discussed.

CASE REPORT

A 32 year old white female was admitted to Mercy Hospital on August 6, 1950, with a chief complaint of weak spells during the past seven months.

On January 2, 1950, she gave birth to a full term, living child weighing 7 pounds 12 ounces. The patient’s pregnancy was remarkable only insofar as she had “heartburn” from the fifth to the ninth month. Labor was essentially uncomplicated, and her post-partum course was normal. She was discharged from the hospital with her baby on January 7, 1950. The patient stated that her post-partum course at home was marked by extreme weakness, causing difficulty on arising in the morning. During her first week at home, her husband called her attention to several peculiar things she was doing. On January 16, 1950, 14 days post-partum, she awoke in the morning, “wringing wet with perspiration”, and feeling extremely weak. The same occurred on the following morning, but gradually wore off as the day proceeded. On January 18, 1950, she arose despite her feeling of extreme weakness. She ate no breakfast and about 11 A.M., she fell to the floor from sheer weakness. There were no other symptoms except that she was so confused she could not dial the telephone to summon aid. On the following day she had a similar experience. On January 20th, 1950, again she ate no breakfast; and about 11 A.M., in her mother’s presence, became confused, fainted, and suffered a convulsion. The patient was then referred to the Mercy Hospital Emergency Room where she was found incoherent, uncooperative, and had to be restrained. A diagnosis of post-partum psychosis was made, and she was committed to a mental hospital.

Upon arrival at the mental hospital “the patient was in a semi-comatose state and had froth at the angles of her mouth.” A physical and neurologic examination revealed nothing abnormal, and the patient awoke spontaneously 3 hours after admission. An electroencephalogram was interpreted as normal, as was all routine laboratory work except for a fasting blood sugar of 53 mgm. per cent. Interviews showed the patient’s sensorium to be perfect, and her mental status was normal. The impression was: “The equilibrium which this obsessive and dependent woman has so far maintained is upset by the birth of a child; in consequence, she develops hysterical symptoms.”

* From the Department of Medicine, Mercy Hospital, University of Maryland School of Medicine.
† Received for Publication December 26, 1950.
During her 25 days of confinement, the patient was symptom-free, but her fasting blood sugar was constantly low. A three hour glucose tolerance on February 9, 1950, showed a fasting sugar of 63 milligrams per cent, 100 mgm. per cent at one hour, 80 mgm. per cent at 2 hours, and 65 mgm per cent at 3 hours. The patient was discharged from the mental hospital on February 14, 1950, for further investigation of the hypoglycemia. During the next 3 months, she showed constantly low fasting blood sugars and was treated by a high protein diet and frequent feedings. Six hour glucose tolerance curves on March 17, 1950, and July 7, 1950, showed very low fasting and final blood sugars (See Figure 1). She remained symptom-free until July 4, 1950, when she became extremely confused but was immediately relieved by a cola drink. Because of her continued weakness and apparent lack of response to a high protein diet, the patient was hospitalized.

A family history showed that the patient’s mother had died of carcinoma of the breast. Her past history was negative except for a cervical biopsy in 1947 for intermenstrual bleeding. The review of systems was essentially negative with no evidence of previous hypoglycemic attacks. A physical examination on admission to the hospital showed a well developed and nourished white female in no distress. Her blood pressure was 120 mm. mercury systolic and 76 mm. mercury diastolic. The remainder of the physical examination was within normal limits.

Laboratory studies showed normal hematologic aspects. An abnormal solute eosinophile count was 222 per cubic millimeter. The urinalysis was normal; blood urea was 23 mgm. per cent; cholesterol 210 per cent; Kahn test for syphilis was negative; sedimentation rate was 12 mm. per minute, corrected; stool examination was negative for blood ova or parasites. Fasting sugars were 65 mgm. per cent on August 7, 1950, and 76 mgm. per cent on August 8, 1950. A 6 hour glucose tolerance test on August 7, 1950, is shown in Figure 1. Skull and chest roentgenographs were negative. Basal metabolic rate was within normal limits.

The patient’s clinical course, the repeatedly abnormal glucose tolerance tests with fasting blood sugars below 50 mgm. per cent, the absence of evidence of liver, thyroid, pituitary, or other diseases causing hypoglycemia; and her failure to respond to conservative management with high protein,
low carbohydrate diet; were considered indication for surgical exploration for an islet cell tumor of the pancreas.

On August 13, 1950, under spinal anesthesia, an operation was performed by Dr. H. H. Burns. A small tumor, about 1 centimeter in diameter, was removed from the lower border of the pancreas at the junction of the head and body. During the operation, she was given 5 per cent glucose in normal saline, intravenously, at a continuous rate. Blood sugar studies during the operation seemed to indicate an insulin content of the tumor (see Figure 2). Her post-operative course was essentially uncomplicated, and blood sugar studies showed fasting levels from 94-144 mgm. per cent. On August 22, 1950, a 6 hour glucose tolerance curve was normal (Figure 3).

The pathologic report by Dr. W. C. Merkel was as follows: Gross: A round tumor 1 cm. in diameter. Microscopic: The section presents an area composed of polyhedral cells made up of a mixture of basophilic and fasciculated cells. The cells are quite uniform in morphology and have a tendency to group around vascular sinusoids, and this alignment is so close to the endothelium that it is difficult to separate the sinusoids from the alveoli. There is a marked increase in the vascularity and variation in the sinusoids, some of which are extremely large and distended with well preserved red cells. The nuclei and cells are uniform in shape. There is no encapsulation, but very careful displacement of adjacent pancreatic parenchyma can be demonstrated. The surrounding parenchyma
presents normal pancreatic tissue, including well preserved islands of Langerhans. There is no inflammatory reaction. **Diagnosis:** Islet cell adenoma of the pancreas.

![Blood Sugar Graph](image)

**Fig. 3.** Six hour glucose tolerance nine days after operation

Recently, Crain and Thorn (9) tabulated all of the reported cases of islet cell tumors of the pancreas. The following signs and symptoms were found in patients with islet cell tumors and tabulated as follows (9).

1. Loss of consciousness ........................................... 58%
2. Confusional state .................................................. 54%
3. Weakness and fatigue ........................................... 41%
4. Deep coma ......................................................... 40%
5. Sweating .......................................................... 36%
6. Drowsiness and stupor ......................................... 35%
7. Light headedness ................................................ 30%
8. Visual disturbance .............................................. 30%
9. Amnesia ............................................................ 28%
10. Clonic convulsions .............................................. 24%
11. Noisy behavior ................................................... 20%
12. Headaches ........................................................ 20%
13. Tremor ............................................................ 18%
14. Hunger ............................................................. 14%
15. Positive Babinski ............................................... 13%
16. Paresthesias ...................................................... 13%
17. Irritability ........................................................ 11%
18. Transient hemiplegia ......................................... 10%
19. Abdominal pain .................................................. 8%
20. Palpitation ......................................................... 3%

The tabulation of the distribution of insulomas by Crain and Thorn (9) is also of importance (Chart I). Differences of opinion have existed as to the distribution of the tumor. One case (13) of total pancreatotomy has been reported in which the tumor could not be found at operation. A very small tumor was found in the head of the
Fig. 4. Photomicrograph of tumor

a. Low power photomicrograph of tumor growth, (Top) showing thin capsule surrounding the adjacent compressed pancreatic tissue.

b. High power photomicrograph, (Bottom) showing details of tumor cells.

removed gland. Chart I shows the chances of serious error in total pancreatectomy for an islet cell tumor that cannot be found at operation.
The causes of spontaneous hypoglycemia are many. The following excellent etiologic classification has been listed by Conn (10).

I. Organic—recognizable anatomic lesion
   A. Hyperinsulinism
      1. Pancreatic island cell adenoma
         (a) Single
         (b) Multiple
         (c) Aberrant
      2. Pancreatic island cell carcinoma
         (a) Localized
         (b) With metastases
      3. Generalized hypertrophy and hyperplasia of the islands of Langerhans
   B. Hepatic disease
      1. Ascending infectious cholangioliitis
      2. Toxic hepatitis
      3. Diffuse carcinomatosis
      4. Fatty degeneration of “fatty metamorphosis”
      5. Glycogenosis (von Gierke's disease)
   C. Pituitary hypofunction (anterior lobe)
      1. Destructive lesions (chromophobe tumors, cysts)
      2. Atrophy and degeneration (Simmons' disease)
      3. Thyroid hypofunction (?) secondary to pituitary hypofunction
   D. Adrenal hypofunction (cortex)
      1. Idiopathic cortical atrophy
      2. Destructive infectious granulomas
      3. Destructive neoplasms
   E. Central nervous system lesions (hypothalamus of brain stem; interference with nervous control of blood sugar)

II. Functional—no recognized anatomic lesion but explainable on basis of unusual somatic function
   A. Hyperinsulinism (imbalance of the autonomic nervous system): hypoglycemic fatigue; nervous hypoglycemia; functional hypoglycemia; reactive hypoglycemia
   B. Alimentary hyperinsulinism (rapid intestinal absorption)
      1. After gastroenterostomy
      2. After gastric resection (partial or total)
C. Renal glycosuria (severe degrees of low renal threshold for dextrose)
D. Lactation
E. Severe continuous muscular work

III. Miscellaneous
A. Factitious (surreptitious insulin administration)
B. Postoperative hypoglycemia
C. Severe inanition
D. Unknown

Conn (10) states that more than 80 per cent of the cases of hypoglycemia are caused by one of the following: 1) Functional hyperinsulinism, 2) Organic hyperinsulinism, 3) Hepatogenic hypoglycemia. Hepatogenic hypoglycemia is usually not difficult to differentiate clinically. The differentiation of functional and organic hyperinsulinism may be more difficult. Figure 5 from Conn (10) gives the usual glucose tolerance curves found in these conditions. The outstanding differences are apparent. Organic hyperinsulinism shows a fasting sugar below 50 mgm per cent. The curve usually is low, returning to hypoglycemia levels in 5 to 6 hours and remaining low. This is not always true as shown by this case and others. The functional hypoglycemia curve typically begins with a normal fasting sugar but falls to hypoglycemic levels in 2 to 3 hours. The hepatogenic type typically shows a low fasting sugar followed by a curve of the diabetic type. The tolerance tests are not always reliable, and all three types of curves have been reported in the presence of islet cell tumors (11). Many factors influence the glucose tolerance curve (2), limiting the value of this test in differential diagnosis. Furthermore, Duff (12) reported that only 64 of 90 islet cell tumors were functioning clinically.

It is generally agreed, however, that in the absence of other organic disease causing hypoglycemia, a blood sugar, after a prolonged fast of less than 50 mgm per cent,
is the best criterion for the diagnosis of an islet cell tumor and differentiation of functional hypoglycemia.

SUMMARY
A case of an islet cell tumor of the pancreas, originally diagnosed as post-partum psychosis, is presented. Surgical removal of the tumor effected a complete cure. The continuous administration of glucose during the operation in this case seemed important in that the blood sugar fell to hypoglycemic levels when the tumor was manipulated in spite of continuous administration of glucose.

BIBLIOGRAPHY
EDITORIAL

LIMITING FACTORS IN THE USE OF ANTIBIOTICS

The writer of the book of Ecclesiastes very cogently wrote: "The thing that hath been, it is that which shall be; and that which is done is that which shall be done; and there is no new thing under the sun." Although we have used the antibiotic drugs for only a decade, the basic concept of their use is centuries old. The ancient Greeks used warm soil to promote healing. The Servian peasants for centuries employed molds in the treatment of wounds. In 1760 in The Old English Herbals it was noted that molded bread was useful in facilitating the healing process in wounds. But during the last decade the use of the antibiotic drugs has made a momentus impact upon the medical practice.

The extent to which the antibiotic drugs are used is reflected in the volume of their industrial production, which now outranks that of all other medicinals. It has been estimated that in 1948 penicillin and streptomycin alone accounted for more than one-half of the total of manufacturer's income from the sale of synthetic drugs. This figure is especially impressive when it is realized that penicillin first became available commercially in 1943 and that streptomycin was not offered for sale until two or three years later. Sufficient time has elapsed for us to review with significant retrospection the deleterious results which have been encountered in the administration of the antibiotics.

Nearly all substances which are employed as drugs produce some type of undesirable side reaction. The nature and severity of these untoward effects must always be weighed against the value of the drug as a therapeutic agent in any disease condition. Indeed the antibiotics as a class are comparatively free from permanent damaging side effects when considered in the light of their therapeutic efficacy. Undesirable side effects do occur and in general they may be evaluated under the following headings:

1. DEVELOPMENT OF RESISTANCE BY BACTERIA

The appearance of resistant strains of microorganisms is a definite epidemiologic problem posed by the use of penicillin. For example, bacterial strains of staphylococci collected from random patients in 1943 showed a greater sensitivity to penicillin than those collected from random patients in 1949. The treatment of tuberculosis with streptomycin has always presented the problem of the emergence of resistant strains. Indeed it appears that the use of antibiotic drugs in conditions which can be adequately and successfully treated by other chemotherapeutic agents tends to promulgate the emergence of resistant strains of various organisms to the currently used antibiotic agents.

2. SUPERINFECTIONS

A frequent complication in antibiotic therapy is the appearance of a second infection in patients under treatment for a primary infection. These superinfections are more likely to occur when very young, very old, or debilitated patients are
being treated. For example, staphylococcic glossitis and pharyngitis may occur during streptomycin therapy. When Aureomycin, Chloramphenicol or Terramycin are being given, monilial infections of the mouth, tongue and vagina may occur. The black-tongue which may occur during penicillin therapy is probably caused by a secondary invader. Pneumonias caused by gram-positive rods sometimes make their appearance while penicillin is being administered. It is possible that proteus may displace other organisms in urinary tract infections which are being treated with Aureomycin, Terramycin and occasionally Chloramphenicol.

3. DIRECT TOXIC EFFECTS

In the main the toxic effects of the antibiotic drugs are few. It is well established that vertigo and deafness may result from the injury of the eighth cranial nerve during streptomycin therapy. Chloramphenicol is reported to have produced leukopenia, granulopenia and anemia in a few patients. Instances, however, are extraordinarily rare. Penicillin, but notably Aureomycin, Terramycin, and to a lesser extent Chloramphenicol, produce gastrointestinal symptoms when administered by mouth. In many patients these symptoms are disconcerting and extend over considerable periods of time. Polymyxin, Neomycin and Bacitracin have been known to produce definite kidney damage.

4. HERXHEIMER REACTION

Occasionally when patients have been treated with penicillin for syphilis, primary reactions have resulted. Some fatalities have been reported in patients with cardiovascular syphilis treated with penicillin. It is deemed most prudent to use bismuth first in those cases of syphilis with aneurisms or extensive aortitis.

Thus it becomes quite clear that although the antibiotic drugs have scored a shining mark of success in the conquest of the infectious diseases, their promiscuous use and unwarranted administration to patients are not without repercussions both from the point of view of the epidemiology of disease and the patient’s general comfort.

John C. Krantz, Jr., Ph.D.
CLINICO-PATHOLOGIC CONFERENCE
From the Case Histories, University Hospital, Baltimore

CLINICAL HISTORY

In June of 1950 a 21 year old white female who had lost 35 pounds first noticed the onset of anorexia, fatigability, shortness of breath and a non-productive harassing cough. It was considered that a vacation might help her, so she and her husband took a lengthy motor trip. Since her symptoms showed a steady progression, and because of the cough, she consulted her family physician. Following a roentgenograph of her chest, reported as "suspicious", she went to a state tuberculosis detection center. There, the chest films were repeated and extensive studies were performed on her sputa. However, mycobacteria were not demonstrated. She was then referred to the University Hospital for further study and treatment. At the time of admission, she had lost approximately 35 pounds in weight.

Her health had been good until the present illness. She had had no serious illnesses, operations or injuries. She had shortness of breath with upper respiratory infections and swelling of feet and legs after prolonged standing. She offered no history indicative of rheumatic fever.

On admission to the hospital her temperature was 97.8 F.; pulse rate, 84 per minute; respiratory rate, 20 per minute; and systolic and diastolic pressures, 118 and 70 millimeters of mercury. The patient was described as a well developed, well nourished 21 year old white female lying quietly in bed. Her color was good. She had a frequent dry, hacking cough. In spite of the 35 pound weight loss, she was described as rather large. There were striae present over the hips. No abnormalities of the head, eyes, nose, mouth or throat were noted. There was a firm, discrete, freely movable nontender node in the right posterior cervical chain which was the size of a lima bean. There was a similar node in the right femoral region. Aside from small, shotty inquinal lymph nodes there was no other significant lymphadenopathy. The thyroid was not palpable. The trachea was in the midline. Both lungs expanded well and were resonant to percussion. The breath sounds were bronchovesicular. There were rales at both lung bases. The heart was normal. An examination of the abdomen revealed a greatly enlarged spleen, extending 5 cm. below the costal margin and a firm non-tender liver which extended about 2 cm. below the right costal margin. The remainder of the examination was negative. Roentgenographs were made of the chest (Fig. 1) and hands.

The urine was straw colored, acid and devoid of albumin, sugar, casts and blood cells. An examination of stool specimens was negative. There were no skin responses to tuberculin, purified protein derivative, brucellergin, coccidiodin, or histoplasmin. The blood hemoglobin concentration was 14.5 grams or 100 per cent. An hemogram included an erythrocyte count of 5.95 million; a blood volume of 44; an erythrocyte sedimentation rate of 18 millimeters per minute; and a leucocyte count of 6000 cells per cubic millimeter. Sixty-nine per cent of the white blood cells were neutrophilic polymorphonuclear granulocytes; 25 per cent, lymphocytes; 1 per cent, monocytes;
and 5 per cent, eosinophilic granulocytes. The blood mean corpuscular volume, hemoglobin, and hemoglobin concentration were 74, 24, and 33, respectively. The bleeding time was 2 minutes and 30 seconds. The clotting time was 6 minutes and 3 seconds. The blood contained 16 milligrams of urea nitrogen in each one hundred cubic centimeters and 82 milligrams of glucose. Total serum proteins were determined to be in concentration of 9.74 and 9.90 grams per hundred cubic centimeters. The serum globulin was definitely elevated in each determination. Each 100 cubic centimeters of blood contained 223 milligrams of cholesterol; .3 milligrams of direct bilirubin, .1 milligrams of indirect bilirubin, 9.7 milligrams of calcium, and 3.9 milligrams of phosphorus. The alkaline phosphatase was reported in concentration of 1.26 units per 100 cubic centimeters of serum. Thymol turbidity was reported as 12.9 units. There was no retention of bromsulphaline. The basal metabolic rate was accelerated 40 per cent. The serologic test for syphilis was negative. Agglutinins for Brucella, Pasteurella, Eberthella, Salmonella and Rickettsia were negative. There were no Mycobacteria in the gastric washings.

The patient was completely afebrile during her entire stay. On the 15th of November a sternal puncture was done and marrow was obtained for guinea pig inoculation and culture on Sabaroud’s medium for fungi. On the 15th of November a liver biopsy was obtained by aspiration. On November 22 a node in the right femoral region was removed for microscopic study. She gained 3 pounds during her hospital stay and was discharged improved on the 27th hospital day.
CLINICAL DISCUSSION

Dr. Alex Murphy: I notice that there is a fairly meticulous geographic study of her holiday, but I feel that this really is not relevant because it was after she developed her symptoms that this trip was taken.

I find the basal metabolic rate very difficult to reconcile with the clinical aspects. Forty per cent is quite an increase, and yet this woman had a pulse of 84, was lying quietly in bed, had no evidence of cardiac failure and had no thyrotoxicosis. Therefore, I challenge the accuracy of this figure.

I would divide this problem into two phases. First, this young woman with no significant story in her past, who was obviously too fat and overweight, complained of fatigability, some weight loss, shortness of breath and a non-productive harassing cough. Quite naturally, tuberculosis was suspected and roentgenologic studies were made, which resulted in the discovery of abnormal shadows in the lungs. These shadows confirmed, to some extent, the suspicion of the physician and extensive studies of the sputum were made. These failed to reveal the presence of M. tuberculosis. At that time there was a search made for fungi, and none of the ordinary fungi were discovered. The patient apparently continued to lose weight and came into the hospital on October 30, some 5 months after the onset of her illness. At that time, she showed some signs in her lungs—post-ptussic rales, rales at both bases, a palpable node in the neck and in the groin, a very large spleen and a considerable hepatic enlargement. She was still described as "fat." There was a tendency to erythrocytosis. I would rather attribute that to some physical difficulty because of interference with gaseous exchange in the lungs. This is not adequately explained by tuberculosis. It is unusual to find signs at both bases in patients with early tuberculosis. While her spleen might have been enlarged in a miliary form of tuberculosis, she does not present the clinical aspects of miliary tuberculosis. Even after 5 months her cough was non-productive. A tuberculin test was negative. I have seen negative tuberculin tests in people who are overwhelmed with a miliary tuberculosis, but again the impression that one gets from this case is not that of a desperately ill patient. She was afebrile and her pulse rate was not increased. With the condition presented on her admission to the hospital, I would seek the agent which could be responsible for lung lesions, lymphadenopathy, liver and splenic enlargement and with changes in her plasma proteins. One of the first things that enters one’s mind, of course, is the lymphomas. Hodgkin’s disease might deserve consideration. However, the signs and symptoms in this patient are not characteristic of Hodgkin’s disease. I cannot believe that the results of her blood tests would have been as they were, nor would she have a complacent countenance had she been alarmingly ill. I believe a relatively benign process caused all those signs and symptoms. Furthermore, we note that the patient gained a little weight during her hospital stay. The plasma protein was negative. We do get an increase in globulin in tuberculosis, but the only persons in whom I have observed that were those with a long-standing disease, so I really believe tuberculosis might be eliminated. Also, plasmacytosis or multiple myeloma cause an increase in the plasma protein, but once again I think that the blood count would be against this.

I notice that a sternal marrow puncture was performed and suspect that plasma cells were not found. I haven’t seen them in brucellosis. Kala-azar can be dismissed.
There is one condition which to me seems capable of providing an adequate explanation of the whole condition, and that is sarcoid. Sarcoid is responsible for enlargement of lymph nodes and very frequently it causes lung changes which might be interpreted as tuberculosis. It will also lead to enlargement of the spleen and liver. The plasma protein is usually elevated in sarcoid, and, not infrequently, the calcium. The fact that the calcium is not elevated does not deter me in suggesting that sarcoid appears the most likely explanation to me. I notice that in spite of a liver biopsy, a node was removed some days later. It was suggested that the information coming from the liver biopsy was not satisfactory to the pathologist. I am rather disturbed by the sternal puncture and cultures which made me wonder if brucellosis can produce this syndrome. However, the agglutinations were negative. Therefore, tuberculosis is disproved; brucellosis does not appear to be the diagnosis; and Hodgkin's disease is dismissed because the patient does not appear ill enough. I am more or less left with sarcoidosis as my diagnosis.

Dr. Walter Kilby: We have two sets of roentgen films. One set was made on admission and the other about two weeks later.

Dr. Murphy: If I were seeing the films without knowing anything about the case, the three things that would be suggested would be carcinomatosis, miliary tuberculosis, or sarcoid. I have had no experience whatsoever with histoplasmosis. I cannot see the glandular enlargement that I would expect in sarcoidosis. I still "stick" to my diagnosis of sarcoidosis.

Dr. Kilby: We were quite amazed when we saw these roentgenograms, and also quite bewildered. The very numerous lesions extend throughout both lungs. The fine patches of infiltration are almost equal in size. Although we attempted to relate the film characteristics with many diseases, we were unable to draw any conclusions. We were quite bewildered until we heard a report of the biopsy.

PATHOLOGIC DISCUSSION

Dr. Hugh R. Spencer: The diagnosis in this case was made on the basis of biopsy material. The first specimen was obtained by aspiration from the liver. In the sections made from this tissue there were several small closely approximated, though discrete, lesions composed of large vacuolated cells of the epithelioid type. There was relatively little reaction in the surrounding liver tissue. Appropriate stains failed to reveal acid-fast organisms. The lesion was reported as granulomatous in character, probably sarcoidosis.

The second specimen was a lymph node removed from the right femoral region. In this node the structure was considerably distorted and much of the lymphoid tissue was replaced by small, well-circumscribed masses of epithelioid cells. The cells appeared somewhat vacuolated and in the centers of some of the lesions giant cells of the Langhans' type were noted. A few of the giant cells contained asteroid bodies. None of the lesions showed central caseation. These sections presented aspects typical of sarcoidosis.

Sarcoidosis is a generalized systemic condition characterized by tubercle-like lesions. The organs most commonly affected are the lymph nodes, lungs, spleen, skin, short bones of fingers and toes, uveal tract and the salivary glands.

Boeck in 1899 published simultaneously in Norway and in the United States a
The spleen.

The skin lesions of Boeck are only one of many regional manifestations of the disease. Much confusion of terminology has resulted from the fact that a number of syndromes based upon the particular organs involved were described. Lupus-pernio of Besnier, osteitis tuberculosa multiplex cystica of Jungling, and uveo-parotid fever of Heerfordt which were originally described as singular syndromes are now known as sarcoidosis.

Sarcoidosis, once considered a rare curiosity of interest chiefly to the dermatologist, is now known to be relatively common. Well over 1000 cases have been reported. The disease is encountered in all parts of the world, with apparent prevalence in the cooler countries, especially in Scandinavia. It is difficult to make even an approximation of the actual incidence. With recruits in the Swiss Army the incidence is given as 0.13 per thousand. Figures in Denmark are about the same.

Sarcoidosis has been reported in the extremes of age, but probably more than half of the patients present evidence of the disease before the age of thirty and two-thirds before the age of forty.

In this country an unusually high incidence has been noted among Negroes. In a group studied in Philadelphia, eighty per cent of the patients were Negroes and in an Army Hospital Group the incidence for Negroes was fifty per cent. All of these figures are higher than the proportion of Negroes in the general population.

In sarcoidosis the lesions in all tissues are the same. They consist of small cellular tubercles, composed of large pale epithelioid cells with or without giant cells. The lesions are discrete, they show the same stage of development, there is little or no caseation necrosis and little or no surrounding collar of lymphocytes. The giant cells may be either typical Langhan's or of the large foreign body type. Some of the giant cells may contain asteroid, radial, or laminated inclusion bodies. These, however, are not pathognomonic since they have been described in the giant cells of leprosy, torulosis, beryllium lesions and in foreign body granulomas.

Little is known about the development of the lesions. They are thought to begin in perivascular tissues with a deposition of lymphocytes, to be replaced later by epithelioid cells. They may persist in characteristic form for indefinite periods. Resolution or scarring appear to be their ultimate fates.

The lesions have been found at one time or another in practically all organs of the body. The lymph nodes are involved in fifty to seventy-five per cent of cases. The intrathoracic nodes are those most consistently affected. The lymph nodes remain discrete. The enlargement is rarely associated with pressure and obstructive phenomena. The tonsils are commonly involved in this disease. The spleen appears to be frequently involved. In one series of 29 cases collected from the literature, splenic lesions were noted in 21. The weight of the spleen in this disease may occasionally exceed 1000 grams. Hypersplenism has been described in cases with splenic involvement. Lesions in the liver occur only slightly less often than in the spleen. Hepatomegaly may be marked. In a number of cases (as in this case) the
diagnosis has been suggested as result of study of aspiration biopsy from the liver. Involvement of the pulmonary parenchyma is often a prominent feature of this disease. There may be extensive involvement in the complete absence of symptoms. The lesions as seen with the aid of roentgen rays may be miliary in type or they may show a linear distribution. Active pulmonary tuberculosis is said to supervene in about 10 per cent of the cases. In the recorded autopsies the heart and kidneys are involved in about 20 per cent of the cases. Hypercalcemia and renal calculi are occasionally encountered. Bone is involved in 15 to 25 per cent of the cases. The lesions are cystic or cystoid areas of medullary rarefaction which are more commonly encountered at the short bones of the hands and feet, but similar lesions have been demonstrated in the long bones and in the vertebrae. Lesions in the skin and mucous membranes occur in about one-half of the cases. The skin lesions may be miliary, nodular or diffuse plaque-like. Healing may leave no residue or may result in a pitted scar. Eye involvement occurs in 25 to 50 per cent of the cases producing iritis and irido-cyclitis. Uveitis may be associated with enlargement of the salivary glands, especially the parotid. The tuberculin reaction is negative in from 60 to 70 per cent of the cases. The Kveim test which has been found to be positive in a fair percentage of patients with active sarcoidosis, is a recent development. In this test the intradermal injections of extracts of sarcoid material produce characteristic skin lesions in patients with active sarcoidosis. The reaction appears to be rather specific, but the antigen is much less so. Extracts of normal human spleens, of lymph nodes in lymphoid leukemia, tubercle bacilli and other substances may produce characteristic lesions in active sarcoid cases.

The cause of the disease is not known. The tubercle bacillus and an unknown agent, perhaps a virus, remain the most favored possibilities.

DISCUSSION

_Dr. Murphy:_ Might I ask the explanation of the 40 per cent basal metabolic rate?

_Dr. T. Nelson Carey:_ I felt that the high metabolic rate was caused by respiratory insufficiency. Her respiratory rate was much more active than one would expect considering her apparent good health. The clinical problem was mainly to exclude miliary tuberculosis.

_Dr. M. C. Pincoffs:_ There are just one or two comments I would like to make. Before convening here, Dr. Murphy asked me if we have used ACTH in sarcoidosis. We have done so in one case of uveo-parotid fever showing very serious eye involvement. The majority of cases with uveo-parotid fever regress after a long course, but not only was this woman losing her eyesight, her general condition was alarming and furthermore was deteriorating rapidly. I have seen her once since ACTH was given. In my opinion, there were no beneficial effects, even though there was slight regression in the ocular lesions. While this case, under discussion, had obvious dyspnea, it is astounding how many cases of sarcoid occur without impairment of respiratory function. A physician from Washington was admitted here because of opacities in a roentgenogram of his chest. He had extensive bilateral, doom-portending bands of infiltration throughout the lung parenchyma. Nevertheless, he had lost comparatively little weight, and there was no breathlessness.

One other point I would like to comment on is in connection with granulomata of
the liver. Dr. Klatskin, whom I heard at Yale speak on granulomata of the liver, was particularly interested in sarcoid and generally interested in other granulomatous conditions that may be diagnosed by liver biopsy. He took the entire core from the needle which he had used for his aspiration and serially cut the entire specimen. That, of course, is a very laborious process. He had punctured a great many cases of tuberculosis that did not have apparent liver involvement and found in them a high percentage of minute granulomatous lesions. Some of the lesions showed caseation. In only one, could he find Mycobacteria. He offered 600 cases in which liver biopsies had been done and in only four were granulomata found. He found liver granulomas in a high percentage of sarcoid, a fair percentage in tuberculosis and lymphoma, and very rarely in conditions in which there was no indication for making a liver examination. But when he came to comparing the histology of the granulomata, he found he could not make any distinction. He could not tell sarcoid from tuberculosis except when tuberculosis had reached an advanced stage, and had its typical mantle of surrounding cells and caseation in the center.
OBSTETRICAL CASE REPORT

From the Department of Obstetrics, University of Maryland School of Medicine

M. E., a 23 year old para 0-0-0-0 was first seen September 18, 1950, in consultation. Her past and family histories were non-contributory and the pregnancy had reached the 36th week without difficulty. She had just been admitted to the contagious ward after an illness at home of 3 days duration. The medical diagnosis was bulbar spinal poliomyelitis. Her temperature was 102 F, the spinal fluid white blood cells numbered 750 per cubic millimeter with 60 per cent polymorphonuclear neutrophils. The respiratory ventilation meter registered a vital capacity of only 500 cc. (normal 2500 to 3000). It was the opinion of the internist that this patient should in the very immediate future have a tracheotomy performed and be placed in a respirator. It was his opinion that cyanosis, respiratory distress and death would ensue if this were not done.

Question: What should the obstetrical treatment be under these circumstances?

Discussion: Until quite recently it was believed, taught and felt that any interference with the pregnancy in cases of anterior poliomyelitis was absolutely contra-indicated and would result in infinitely more harm than good. This is probably true in the majority of the cases, the exceptions being the occasional patient as pictured above: viz; pregnancy near term in a patient suffering from poliomyelitis with bulbar involvement. In this small group the additional respiratory embarrassment incident to the enlarged uterus may be enough to tip the balance of the scales against the individual. It is in this group, and in this group alone, that there is any justification for promptly emptying the uterus. Time is of the essence here and the abdominal route should be chosen. This may sound like rank heresy to many, and a few years ago it would have been heresy; but with the liberal use of the antibiotics, many of the dangers of the operation have been eliminated and the actual results have improved. If the patient can be delivered before cyanosis and respiratory distress have developed and before tracheotomy has been done, the operation is simpler and the results better. On the other hand, in those who have already been placed in a resuscitor and tracheotomized and who continue to show increasing distress, the improvement following section is often most dramatic. The anesthetic of choice appears to be cyclopropane in a closed system with positive pressure.

Actual treatment and result: A laparotrichelotomy was done without difficulty. The baby, weighing 2375 grams required a moderate amount of resuscitation. Following operation, a tracheotomy was done and the patient was placed in a respirator. She remained in the apparatus for several months and gradually recovered. The baby did well.

The Reader is referred to an excellent and comprehensive article by Paula Horn in the February 1951 issue of The Annals of Western Medicine and Surgery.
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MEDICAL SCHOOL SECTION

MEDICAL EDUCATION FUND PROGRESSES

In the May 19, 1951 number of the Journal of the American Medical Association the leading editorial was devoted to an analysis of the aims, the organization and the accomplishments of the National Fund for Medical Education and the American Medical Education Foundation.

Since that editorial, the School of Medicine has received its share of the first distribution of the more than $1,000,000 already available. These funds have been presented to the medical schools in the United States through the American Medical Education Foundation to be used as the school sees fit and without strings attached.

The object of the Fund is to raise from voluntary sources, substantial sums for the support of the nation’s medical schools. $5,000,000 has been set as the annual goal. Funds are to be solicited not only from physicians but from other sources such as organized groups and corporations. The soliciting agency for the physician is the American Medical Education Foundation, organized by the American Medical Association, to which physicians' contributions should be sent.

The National Fund for Medical Education includes contributions from the American Medical Education Foundation. It is a non-profit organization created in 1949 with executive offices at 535 Fifth Avenue, New York 17 New York. The Board of Trustees and the Advisory Council contain names not only prominent but diversified throughout the educational and business fields. Thus, lay and professional organizations joined in a common endeavor in behalf of the Nation's medical schools.

The financial status of most of the schools of medicine in this Nation today demands additional financial support, if the quality of research and educational opportunity is to continue. There can be no financial return from the raising of student fees. There can be but two sources of this supplementary income. To a great measure, each physician can determine the origin of this financial support, for if the National Fund for Medical Education (and for the physician, the American Medical Education Foundation) is not adequately supported, the only recourse for funds, from necessity, shall be from governmental sources.

The management of the National Fund for Medical Education in conjunction with funds from the American Medical Education Foundation, is linked with many well-known foundations such as the Carnegie Foundation, the Commonwealth Fund, the Josiah Macy, Jr. Foundation, the Lilly Endowment and the Rockefeller Foundation. Funds from those foundations have thus far carried the entire administrative costs of the National Fund, thus making it possible for every dollar collected to flow to the medical schools.

The National Fund for Medical Education has now been publicly announced. It is therefore incumbent upon every physician, student and friend of medical education to encourage repeated, continuous contributions to the effect that the aims and purposes of these foundations shall be currently and continuously achieved.

Physicians should contribute annually to the American Medical Education Founda-
tion, 535 North Dearborn Street, Chicago 10. Physicians may continue to designate the school to which they wish their contributions to go.

The furtherance of medical education is an obligation of every physician. The Alumni and friends of the University of Maryland have thus far been most generous and realistic in assuming this obligation. The effort should continue unabated.

ADDITIONAL CURRICULUM CHANGES UNDER CONSIDERATION

Committee Nominated to Study Possible Changes

In 1949 the Faculty of the School of Medicine completely revised the curriculum for the 4th year. After 2 years of successful operation, Dr. H. Boyd Wylie, Dean, on June 11, 1951, issued a memorandum to the Faculty nominating a Committee to study in detail the current curriculum of the first 3 years to make recommendations to the Faculty Board for the improvement of the curricula based on the findings from a study of the curricula of other recognized medical schools.

The Committee, of which Dr. Theodore E. Woodward is Chairman, has begun the arduous task of compiling information and recommendations. The details of the progress and the conclusions of this most important task will be carried in future editions of the Bulletin.

PROGRESS NOTE IV

View of construction of new Psychiatric Building as of August 5, 1951

The American Medical Association Education Foundation needs your support.
DEPARTMENT OF PEDIATRICS

Dr. James Minor, Resident in Pediatrics at the University Hospital from 1950–51 has entered the practice of Pediatrics in Norwalk, Connecticut. He is residing at 5 Norman Avenue in Norwalk.

Dr. Blackburn Joslin, Resident in Pediatrics at the University Hospital from 1949–50 is currently stationed in Heidelberg, Germany as Chief of Pediatrics. His address is 130 Station Hospital, A.P.O. 403, c/o Postmaster, New York, New York.

Dr. Edward Field, Assistant in Pediatrics, successfully passed the examination given by the American Board of Pediatrics.

Dr. William Morgan, who helps in the instruction of residents on affiliation at the Peninsula General Hospital, Salisbury, Maryland, also passed the examination given by the American Board of Pediatrics.

The Seizure and Developmental Clinics were formally opened on June 22, 1951. The opening was attended by various members of the State and City Health Departments, various social agencies, staff members and interested people in the field. The Seizure Clinic is headed by Dr. Ruth Baldwin.

Recent publications from the Department of Pediatrics included:
DEPARTMENT OF RADIOLOGY

DR. JOHN M. DENNIS APPOINTED INSTRUCTOR IN RADIOLOGY

Dr. John M. Dennis has recently been appointed to the Faculty of the School of Medicine as instructor in radiology and assistant roentgenologist in the University Hospital.

Dr. Dennis is a graduate of the University of Maryland in the class of 1945 and has spent 9 months as an intern in the University Hospital. He then served 2 years in the U. S. Army as a roentgenologist and 2 years in the Department of Roentgenology of the University Hospital as a resident. He has recently returned after an additional year of study in his chosen field under Dr. Eugene E. Pendergrass at the University of Pennsylvania Hospital. In June of 1951, Dr. Dennis was certified by the American Board of Radiology.

MEDICAL LIBRARY NOTES

The following donors presented books and periodicals to the Medical Library between May 1 and August 1, 1951:

Dr. Frank J. Figge    Dr. Lyndon A. Peer
Dr. H. K. Fleck       Dr. Maurice C. Pincoffs
Dr. Frank W. Hachtel  Mrs. L. I. Whiteford
Mr. W. T. Meyers      Dr. H. Boyd Wylie

Miss Elizabeth L. Clark and her sisters presented the library with a gift of great interest in connection with the history of the School of Medicine. The gift consists of a photograph of Dr. Corbin Amos, one of the earliest graduates of the School of Medicine, and his certificate of membership in the Medical Society of Baltimore, dated 1812. Both the picture and the certificate have been hung on the east wall of the Medical Library.

TWO IMPORTANT POSTS TO BE FILLED BY DR. LOUIS H. DOUGLASS

Dr. Louis H. Douglass, Professor of Obstetrics, was recently elected Chairman of the Sect’ on on Obstetrics and Gynecology of the American Medical Association and also Vice-President of a newly formed American Academy of Obstetrics and Gynecology.

DEPARTMENT OF NEUROSURGERY

Dr. Richard G. Coblentz of the Department of Neurosurgery recently spoke at a meeting of the Delaware Medical Society on the subject of “Head Injuries”.

MURRAY-BAUMGARTNER SURGICAL INSTRUMENT COMPANY INC.

Equipment and Supplies for:

Doctors    Hospitals    Laboratories    Industrial Clinics

5 West Chase Street   Baltimore-1, Md.
NEW FACULTY APPOINTMENTS AND PROMOTIONS ANNOUNCED FOR THE ACADEMIC YEAR
SEPTEMBER 20, 1951 TO JUNE 7, 1952

VISITING PROFESSORSHIPS:
Lloyd D. Felton, A.B., D.Sc., M.D., Visiting Research Professor of Bacteriology.
(Effective June 1, 1951)
John R. Reid, Ph.D., Visiting Professor of Psychiatry.
(Effective September 1, 1950)

PROFESSORSHIPS BY PROMOTION ARE AS FOLLOWS:
C. Jellef Carr, Ph.D., From Associate Professor of Pharmacology to Professor of Pharmacology.
I. Ridgeway Trimble, M.D., From Associate Professor of Surgery to Professor of Clinical Surgery.

ASSOCIATE PROFESSORSHIPS BY PROMOTION:
Frederick P. Ferguson, Ph.D., From Assistant Professor of Physiology to Associate Professor of Physiology.
D. Frank Kaltreider, A.B., M.D., From Assistant Professor of Obstetrics to Associate Professor of Obstetrics.
Ida M. Robinson, A.B. B.S.L.S., From Librarian to Associate Professor of Library Science.
J. McCullough Turner, Ph.D., From Assistant Professor of Physiology to Associate Professor of Physiology.

ASSISTANT PROFESSORSHIPS BY PROMOTION ARE AS FOLLOWS:
Karl F. Mech, B.S., M.D., From Associate in Anatomy to Assistant Professor of Anatomy.
Robert A. Reiter, M.D., From Associate in Medicine to Assistant Professor of Medicine.
Arthur G. Siwinski, A.B., M.D., From Associate in Surgery to Assistant Professor of Surgery.

ASSOCIATES BY PROMOTION:
Robert Z. Berry, A.B., M.D., From Instructor in Otolaryngology to Associate in Otolaryngology.
Louis V. Blum M.D., From Assistant Pediatrician to Associate in Medicine.
William R. Bundick, M.D., From Instructor in Dermatology to Associate in Dermatology.
Jonas Cohen, M.D., From Instructor in Medicine to Associate in Medicine.
John S. Haines, M.D., From Instructor in Urology to Associate in Urology.
Walter Karfgin, M.D., From Instructor in Medicine to Associate in Medicine.
Louis B. Kroll, A.B., M.D., From Instructor in Medicine to Associate in Medicine.
H. Patterson Mack, M.D., From Instructor in Anatomy to Associate in Anatomy.
Patrick C. Phelan, Jr., A.B., M.D., From Instructor in Anatomy and Surgery to Associate in Anatomy.
Raymond K. Thompson, B.S., M.D., From Instructor in Neuro-Surgery to Associate in Neuro-Surgery.
Edward H. Stewart, Jr., M.D., From Instructor in Surgery to Associate in Surgery.
Arthur Ward, M.D., From Assistant in Otolaryngology to Associate in Otolaryngology.
Daniel Wilfson, Jr., A.B., M.D., From Instructor in Medicine to Associate in Medicine.

INSTRUCTORS BY PROMOTION ARE AWARDED AS FOLLOWS:

Joseph G. Bird, A.B., M.D., From Assistant in Pharmacology and Medicine to Instructor in Medicine.
John W. Chambers, M.D., From Assistant in Neuro-Surgery to Instructor in Neuro-Surgery.
Maurice Feldman, Jr., A.B., M.D., From Assistant in Medicine to Instructor in Medicine.
Maurice Fine, M.D., From Assistant in Medicine to Instructor in Medicine.
Joseph E. Furnari, M.D., From Assistant in Medicine to Instructor in Medicine.
Perry O. Futterman, A.B., M.D., From Assistant in Medicine to Instructor in Medicine.
Irvin B. Kemick, B.S., Phar. G., M.D., From Assistant in Medicine to Instructor in Medicine.
James J. Nolan, B.S., M.D., From Assistant in Medicine to Instructor in Medicine.
Frank J. Otenasek, M.D., From Assistant in Neuro-Surgery to Instructor in Neuro-Surgery.
Charles E. Shaw, M.D., From Assistant in Medicine to Instructor in Medicine.
Jerome Sherman, M.D., From Assistant in Medicine to Instructor in Medicine.
Elizabeth D. Sherrill, M.D., From Assistant in Medicine to Instructor in Medicine.
Stuart D. Sunday, M.D., From Assistant in Medicine to Instructor in Medicine.
Stephen J. VanLill, III, A.B., M.D., From Assistant in Medicine to Instructor in Medicine.

(To Be Concluded)

See President’s Letter to Alumni for important Educational News.
CANCER SEMINAR PROGRAM—1951-1952
(The third Wednesday in every month from 4 until 5 p.m.)

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<tr>
<th>Date</th>
<th>Speaker</th>
<th>Topic</th>
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<tr>
<td>October 17, 1951</td>
<td>Dr. Hugh J. Jewett</td>
<td>&quot;Carcinoma of the Bladder&quot;</td>
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<td>Johns Hopkins Hospital</td>
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<td>November 14, 1951</td>
<td>Dr. Joseph H. Burchenal</td>
<td>&quot;The Treatment of the Malignant</td>
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<td>The Sloan-Kettering Institute for Cancer</td>
<td>Lymphomas&quot;</td>
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<td>New York, New York</td>
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<td>February 20, 1952</td>
<td>Dr. W. U. Gardner (tentative)</td>
<td>&quot;Experimental Ovarian and</td>
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<td>Yale University</td>
<td>Lymphoid Tumorigenesis&quot;</td>
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<td>New Haven, Connecticut</td>
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<td>March 19, 1952</td>
<td>Dr. Alfred Blalock</td>
<td>&quot;Mediastinal Tumors&quot;</td>
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<td>Johns Hopkins Hospital</td>
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All lectures will be given in the Gordon Wilson Hall, University Hospital unless posted.

ACADEMIC CALENDAR

The Bulletin publishes herewith the Academic Calendar for the current year. This is an important item for reference purposes.

Academic Year—November 20, 1951 to June 7, 1952

1951

November 20 Tuesday Instruction suspended at 5:00 P.M.
Thanksgiving Holiday

November 25 Monday Instruction resumed, 8:30 A.M.
December 21 Friday Instruction suspended at 5:00 P.M.
Christmas Holiday

1952

January 3 Thursday Instruction resumed, 8:30 A.M.
January 21 Monday Midyear examinations (Senior classes continue throughout this week)
January 26 Saturday First semester completed, 2:00 P.M.

Second Semester—January 28, 1952 to June 7, 1952

April 10 Thursday Instruction suspended at 5:00 P.M.
Easter Holiday

April 15 Tuesday Instruction resumed 8:30 A.M.

April 22 Tuesday Juniors and Seniors excused to attend annual meetings of the Medical
April 23 Wednesday and Chirurgical Faculty

May 19 Monday Junior examinations begin
May 24 Saturday Senior classes cease at 5:00 P.M.
May 26 Monday Junior examinations continue
Sophomore and Freshman examinations begin

May 30 Friday Holiday—Memorial Day
May 31 Saturday Announcement of graduates
June 7 Saturday Commencement
Second semester completed at 12:30 P.M.
POST GRADUATE COMMITTEE SECTION
POST GRADUATE COMMITTEE, SCHOOL OF MEDICINE

Howard M. Bubert, M.D., Chairman and Director
Elizabeth Carroll,
Executive Secretary
Post Graduate Office: Room 600
29 South Greene Street
Baltimore 1, Maryland

Some years ago, The Faculty Board, assigned to the Post Graduate Committee the task of studying and endeavoring to arrive at a solution to the problem of staffing hospitals throughout the state of Maryland. It is the collective opinion of the Post Graduate Committee that this problem represents one of the most pressing needs of the medical facilities of the community, a need that must be satisfied at the earliest practicable date. A subcommittee consisting of Doctors J. Edmund Bradley, Chairman; J. Morris Reese, Weatherbee Fort and D. C. Smith was appointed by the Chairman and Director of the Post Graduate Committee at the direction of the full Committee, and for many months this problem was considered and a plan made.

This plan was incorporated in a report to the Post Graduate Committee and approved in principle. The Post Graduate Committee realizes that this is simply a point of departure for further study and consideration and that a great deal of time and effort must be expended before an acceptable solution is found. It was the Committee's opinion that publication of this plan would serve to arouse interest in the problem, and possibly, worthwhile discussion.

Report of the Subcommittee on Hospital Survey

Questionnaires were sent to 14 of the 16 hospitals in Baltimore City. The University and Johns Hopkins hospitals were excluded as the data on these were considered to be readily available. All questionnaires were returned. The surveyed hospitals had a total bed capacity of 5,095 with a daily census of 3,770 patients. There were 165,167 patients treated in their out-patient departments and 20,225 births occurred in the same hospitals. There were 202 residents on duty and approval for 156 interns had been given these hospitals, but only 97 positions have been filled. The diagnostic facilities provided by the city hospitals were considered to be generally adequate; however, only 9 of the surveyed hospitals have facilities for therapeutic roentgenology. The teaching program for the residents and interns was considered to be good in approximately one-half of the surveyed hospitals. It is to be noted, however, that the teaching programs made liberal use of the facilities of the University of Maryland and Johns Hopkins Hospitals and their respective medical schools.

Questionnaires were also sent to 18 of the rural hospitals of Maryland, 14 of which have been returned to date. This represents a total of 1255 beds with a total daily cen-
POST GRADUATE COMMITTEE SECTION

sus of 751 patients. There were 6,320 births and a total of 37,079 out-patients treated. There were 6 rotating residents on duty in the rural hospitals, 4 of the 6 being rotating residents from the University of Maryland and University of Pennsylvania. Approval had been given, however, for a total of 10 interns, but there were no interns on duty in any of the rural hospitals. The diagnostic facilities in the rural hospitals showed a wide variation. Only 9 were equipped to do biochemical studies and only 6 to do bacteriologic studies. Only 2 of the rural hospitals had a library housed in a separate room, and there was a combined total of 68 journals subscribed to as compared to 506 in the city hospitals. One hospital subscribed to none and 1 to only 1 journal. Only 5 of the rural hospitals had a medical record library and only 9 had a medical record librarian. Two of the rural hospitals had facilities for therapeutic roentgenology and 3 did not even have a radiologist serving in the hospital. Teaching programs, with the exception of 2 of the reporting rural hospitals, were practically nonexistent.

From this survey, it is evident that medical training at the graduate or hospital level lacks uniformity. It is also suggested that the patient care rendered by the various hospitals in our city and state show a wide variation, a variation that clearly does not lend itself to the provision of equally good medical care for all.

The medical schools of this country prepare men and women for the practice of medicine through reasonably standard curricula of content and duration. However, graduate training at the hospital level has been left almost entirely to the individual hospitals. This policy has resulted in unevenness in the training of graduates, despite strenuous efforts which have been made throughout the last 50 years by various agencies to improve the type of medical training received in these hospitals. It seems to the Committee that the medical school is the logical agency to plan and to direct the program for a uniform type of graduate training designed to prepare a man, upon completion of such training, for the general practice of medicine. A program under aegis of the medical schools should approach the problem with the understanding that all hospitals are potential teaching units and with the realization that development of this potential will result in approved training for physicians which in turn will result in improved medical care for the community. This subcommittee, therefore, recommends that all hospitals be considered as graduate teaching units and that steps be undertaken by the Director of the Post Graduate Committee of the University of Maryland School of Medicine to bring together the deans of the medical schools of the state of Maryland to utilize this teaching potential as a measure to prepare physicians for the practice of medicine uniformly, thereby enhancing the postgraduate opportunities for practicing physicians and resulting in improved medical care for the people of Maryland.

In the State of Maryland, a program under the direction of the two medical schools could be set up utilizing all the hospitals of the state and city, through provision of an internship of two years’ duration. The reason for recommending a two years’ internship is that, in the opinion of this Committee, an internship of this duration is necessary to prepare a physician adequately for the practice of medicine. Further, it means that there would then be available interns for all of the hospitals throughout the city and state. The content of the training program should closely follow the recommendations of various bodies that have concerned themselves with the training required to
prepare a physician for the practice of medicine. It is suggested that the first year of
the training program of the intern be spent in the teaching hospitals. The term "teaching
hospitals" is used here to include those hospitals which would be designated as
such by the medical school and is not restricted to the hospitals at present associated
with the medical schools. This does not infer that the man would spend his first year
completely and entirely in one hospital, but that he would rotate to various hospitals
in the city and state to obtain training where it is best possible to give that training.
For example, pediatric training might be secured in one of four institutions in the
city that provide adequate facilities for pediatric training. The second year of the
program would be spent in rotation as resident in general medicine in some of
our smaller hospitals. Plans for affiliating resident training, that is, training for
physicians at a more advanced level, is not included in this recommendation.

The value of this type of training to the individual, to the hospital, and to the
patient need not be elaborated upon. It becomes immediately obvious that embarking
upon such a program would of necessity mean that all of the hospitals must be raised
to a standard that, in the opinion of the medical schools, is conducive to good medical
training. These standards should be arrived at through consultation of the deans of
the medical schools and representatives of the hospitals as well as concerned educa-
tors. It is to be unequivocally recognized that training of this type is designed to pre-
pare men and women for the practice of medicine and does not mean that they are to
be exploited by the various hospitals for the performance of duties that in the past, and
even the present, are considered to be menial duties that could be performed by
trained technicians and other trained personnel.

The subcommittee thereby recommends the inauguration of a two-year rotating
intern program, covering the main branches of medicine, surgery, obstetrics, gyn-
ecology, and pediatrics with standards of teaching acceptable to the deans of the
medical schools of the State of Maryland and their consultants.

The financing of a program of this type, in the opinion of the Committee, should
be done through appropriations from the Maryland State Legislature. It would be
unfair to place the financial responsibility for such a program upon the individual
hospitals, for by doing so it would be their natural tendency to pass on the cost of this
educational program to the patient, whereas, it is the feeling of the Committee that a
program of this type is of value to all members of the state and should not be a penalty
for illness or for those who utilize the facilities of a local hospital. It has been esti-
mdated roughly that a sum of $600,000 would be adequate to finance the program
through providing the following services, estimating that two residents could be
assigned to 22 rural hospitals and each received a stipend of $150 a month plus $350
yearly maintenance for the individual would total a sum of about $95,000. Supervisory
services for these hospitals at $100 per month per service and estimating that
two services need to be covered, would amount to $32,800. The total of these two
figures for rural hospital coverage would amount to $147,800. It is estimated that in
the city hospitals a total of 430 residents should receive $50 monthly each which
would total $258,000, while maintenance for these men at the same basis of $350
yearly would total $150,500. Servicing of a supervisory nature, estimating that there
would be four major services to be supervised in 16 hospitals at a cost of $50 per serv-
ice per month, would total $38,400. Thereby the total amount represented for city coverage would then be $446,900. The financing of a program through this means would relieve the hospital of the responsibility of supplying salaries and maintenance for house officers engaging in training and should mean that additional money would be available in the hospitals for improvement of educational facilities.

This subcommittee thereby recommends that the financing of training medical graduates through a decentralized program be submitted to the Maryland State Legislature.

A point of interest that needs to be considered in connection with the educational program as above outlined is the present policy of the Maryland State Board of Medical Examiners. At present, it is possible for a physician to practice medicine in the State of Maryland upon completion of a State Board examination without any hospital training. This, in the opinion of the subcommittee, would or might seriously impair the validity of any wide educational program. It seems that it would be necessary and desirable that the Maryland State Board of Examiners change their license requirements to make compulsory at least one year of hospital training before a physician can practice medicine in the state of Maryland.

This subcommittee therefore recommends that the Maryland State Board of Medical Examiners be made aware of the thinking of this Committee and that steps be taken to make compulsory at least one year of hospital training before a physician can practice medicine in the State of Maryland.
ALUMNI ASSOCIATION SECTION

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(ex-officio)
Lewis P. Gundry, M.D.

PRESIDENT'S LETTER

Enrollments in the 72 approved medical schools of the United States have expanded greatly. At the end of 1950, physicians in the continental United States totaled 202,040, the largest number on record. The combined freshman class for 1950-51 reached an all time high of more than 7,000. Never before have there been so many students preparing to enter the field of medicine. It has been estimated that in 1960 there will be an increase of 30 per cent more physicians graduating than in 1950. Failure to maintain our present high standards in medical education would be disastrous to the future of medical care.

The medical schools are facing major financial problems today with higher operational costs, inflation and lower income from endowments. Individual large benefactions are few. We must have additional financial support if we are to continue to serve the American people with a greater supply of well-trained physicians. The financing of medical education should be a major concern to all.

This needed support must not come from the federal government for that would only mean a relaxation of our efforts in our constant fight against the socialization of medicine. It is the belief of the American Medical Association that support should come from private sources which are far from exhausted. Once the need is brought to the attention of the medical profession and laymen, especially those who recognize the value of the medical schools' contribution to society, we can continue to secure the needed funds from voluntary sources. However, the primary responsibility in securing these funds falls on each one of us.
The National Fund for Medical Education was established on May 16, 1951. It is sponsored by outstanding leaders from the fields of public affairs, business, industry, agriculture, labor, higher education, the American Medical Association and the Association of American Medical Colleges. Former president Herbert Hoover is the honorary chairman of its board of 66 trustees. The purpose of this organization of laymen is to raise funds by private subscription to forestall any attempt of the federal government to assume support of medical schools.

The American Medical Education Foundation has been chartered as a not-for-profit corporation under the laws of the State of Illinois to provide an instrument whereby physicians and state and county medical societies can make their contributions to the National Fund. One hundred per cent is contributed with nothing deducted for expenses.

In addition to making their own contributions physicians can render invaluable service by encouraging officers of companies and corporations of their acquaintance to contribute to the fund. If the medical profession will lead the way, others will follow. Individuals and corporation officials who object to government subsidy of medical education surely share the responsibility of producing other income.

The American Medical Association estimates that if every member of the medical profession were to make an average yearly contribution of $100, nearly $18,000,000 in new income would be provided.

I am urging each member of the alumni to send his contribution to the American Medical Education Foundation, 535 N. Dearborn St., Chicago-10, Illinois. Provision has been made in arrangements between the Foundation and the Fund for handling any special requests so that contributions may be allocated to any particular school designated by the contributor.

The funds collected will be distributed to all approved medical schools for unrestricted use, each institution being entirely free to determine how best to utilize its share in medical training.

Daniel J. Pessagno, M.D., President

ALUMNI DAY, 1951

Registration at the annual Alumni Day activities again represented an unusual degree of enthusiasm as noted among the many out-of-town Alumni returning for this occasion. Approximately 200 were present at the clinical session and annual luncheon with over 400 attending the banquet given in honor of the class of 1951.
The Scientific session included two clinical pathologic conferences and a clinical demonstration of "The Surgical Relief of Hemiballismus" by Drs. George Smith and Richard Coblentz. Following the customary luncheon, the annual business meeting of the Medical Alumni Association was held. After the usual reports of the Officers and Committees, Dr. William H. Triplett read the Necrology. The Treasurer reported a net balance, after expenditures, of $6,375.70.

Dr. Christopher C. Shaw then spoke of a recent trip to Japan and suggested that the Alumni Association sponsor an exchange fellowship.

Dr. Joseph J. Bowen suggested that some fitting memorial be erected to the Alumni who lost their lives in World War II. The subject of these two items will be discussed at the next meeting of the Board of Directors and will be published in a forthcoming issue of the Bulletin.

Dr. George E. Bennett, Professor Emeritus of Orthopedics at the Johns Hopkins School of Medicine and a member of the class of 1909, was then introduced as the principal speaker. Dr. Bennett spoke on "Reminiscences of the Class and Faculty of 1909." Following his address, Dr. Bennett was presented with the annual Alumni Honor Award, a scroll and a gold key, by Dr. Louis A. M. Krause, President of the Alumni Association. As the ceremonies closed, the President read a most interesting telegram addressed to Dr. Bennett from Dr. John S. Norman of King's Mountain,
North Carolina, a classmate. “To him who triumphs may the laurel victory be your crown and the coming years you shall climb upward to greater heights on the ladder of fame viewed by men who honor your efforts and hope for you an Eden of peace and joy forever, God willing. My love to all the boys.”

ALUMNUS CONTRIBUTES FIRST CHECK TO AMERICAN MEDICAL EDUCATION FOUNDATION

Dr. Robert H. Dreher, class of 1934, who practices in Wind Gap, Pennsylvania, was the first American physician to contribute to the American Medical Education Foundation. As an alumnus of the School of Medicine, his action typifies the interest, leadership and loyalty for which due recognition and acknowledgement should certainly follow.

Other alumni of the School of Medicine have already contributed to the Foundation for the year 1951. Acknowledgement of these contributions will be published as soon as the completed list is available.

If you have not as yet contributed, your check should be mailed without delay to the American Medical Education Foundation, 535 North Dearborn Street, Chicago 10. You may request that your contribution be turned over in its entirety to the School of Medicine. Remember, your entire dollar goes for medical education unfettered. The American Medical Association and the endowments of the National Fund for Medical Education, the dispensing agency, assume the administrative costs.

Contributions are deductible for income tax purposes.

The University of Maryland is first—keep it there. See School News.
REGISTRANTS ON ALUMNI DAY

1886
R. Sumter Griffith

1895
Thomas W. Keown

1897
Lucius N. Glenn

1898
Nicholas G. Wilson

1901
J. A. Baer
Benjamin H. Dorsey
Norman S. Dudley
Charles T. Fisher
Campbell Flautt
Frank A. Glantz

1904
Charles Bagley, Jr.

1906
Virgil G. Williams

1909
George E. Bennett
Harry M. Robinson, Sr.

1911
Louis H. Douglass
William T. Gocke
J. J. Greengrass
John F. Hogan
Frank L. Jennings
F. H. Hutchinson
Robert E. S. Kelly

1912
Albert E. Goldstein

1913
Philip J. Bean

1914
James W. Katzenberger

1917
Louise A. M. Kraus

1920
Louis C. Dobihal
F. A. Holden

1901
James McClung
John B. McMurray
William T. Messmore
R. Gibson Perry, Sr.
William R. Rogers
Arthur Vanderbeek

1904
Charles Bagley, Jr.

1906
Arnold D. Tuttle

1911
Joseph B. Kilbourn
B. L. Symkowski
J. E. Springer
William H. Triplett
Ralph J. Vreeland
Louis V. Williams
Caldwell Woodruff

1912
H. Boyd Wylie

1913
Charles Reid Edwards

1914
John F. Lutz

1917
Lawrence H. Wheeler

1920
George C. Medairy
William J. B. Orr
J. Morris Reese
ALUMNI ASSOCIATION SECTION

1921
Bruce Barnes
C. F. Fisher
Daniel Keegan
Francis A. Reynolds
E. Martinez-Rivera
J. S. Schilling
Felix Shubert
H. E. Wangler

1922
Joseph Stovin

1923
George A. Knipp
Karl J. Myers

1925
M. Paul Byerly
Leo T. Brown

1926
Harry Anker
John Askin
Margaret Ballard
Irvin Bronsten
Elias Diamond
Abel Gordon
David Helfond
Louis Lavy
Joseph Levin
H. Edmund Levin
Frank Lusby
Emanuel Manginelli
Albert Moriconi
William C. Polsue
Albert Rosenberg
Abraham Rothberg
David Sashin
Jacob Schmuckler
Elizabeth Sherman
E. V. Teagarden
Maurice Teitelbaum
Samuel Weinstein
Louis Weseley

1927
Nelson Carey
Byruth Lenson-Lambros
A. H. Finkelstein
Frank K. Morris
Herbert E. Reifsneider

1929
George H. Yeager

1930
Kenneth L. Benfer
Emil Hildenbrand

1931
M. Ray Hannum
K. M. Hornbrook
Page Jett
Walter J. Keefe
H. V. Langeluttig
D. G. Mankovich
Waldo Movers
Christopher C. Shaw
Arthur G. Siwinski
Michael Skovron
Alexander Slavcoff
Robert B. Taylor

1932
John C. Dumler
Harry C. Hull
Samuel E. Proctor
John E. Savage
1934
Thurston R. Adams
Milton S. Sacks

1935
Ernest I. Cornbrooks, Jr.
Howard B. Mays
Karl F. Mech

1936
William Greifinger
Eugene R. McNich
C. Henry Jones
M. J. Nicholson
Walter E. Karfgin
S. D. Pentecoste
Gibson J. Wells

1937
Everett S. Diggs
Joseph E. Muse, Jr.
D. Frank Kaltreider
Samuel T. Revell, Jr.
Ephraim T. Lisansky
C. Parke Scarborough

J. King B. E. Seegar

1938
Louis C. Gareis
John A. Wagner
Robert C. Sheppard
Theodore E. Woodward

1939
Raymond M. Cunningham
Dexter Reimann

1940
Edmund G. Beacham
W. H. Townshend, Jr.

1941
J. A. Arnett
Felix R. Morris
Charles P. Barnett
Frank S. Renna
Joseph J. Bowen
Benedict Skitarelic
J. Culpepper Brooks
H. R. Spinnler
William L. Bundick
Edwin F. Wilson
Pierson M. Checket
Kazuo Yanagisawa

1942
Van B. Bennett
Joseph Furnari
Joseph G. Bird
Theodore Karlash
E. Roderick Shipley

1943
Robert M. N. Crosby
DeVoe K. Meade
David B. Gray
Alfred T. Nelson
John S. Haught
Edwin H. Stewart, Jr.

Stephen Van Lill

1944
J. Carlton Godlove
Charles E. Shaw, Jr.
Henry J. Holljes
F. X. Paul Tinker
ALUMNI ASSOCIATION SECTION

Thomas G. Barnes
Sarah Cook

James R. McNich
S. Malone Parham
John J. Tansey

Jerome E. Cohn
Paul E. Frye
John Gamble, Jr.
Harry W. Gray
Charles W. Hawkins

Jerome D. Nataro
Pomeroy Nichols, Jr.
E. Milton Smith
Edward P. Smith, Jr.
Joseph B. Workman

Arlie R. Mansberger, Jr.

Wallace H. Mitchell

John R. Hankins
Frederick J. Heldrich, Jr.

H. Patterson Mack
William S. Womack

Charles T. Henderson

John F. Strahan

Charles Bagley, III
Mary V. Barstow

Francis J. Borges
S. W. Henson, Jr.

SCHOOL AND HOSPITAL PLATES

Plates of the School of Medicine, University of Maryland, the New Hospital, and the Old Hospital are available. These white plates are 10 inches in diameter with black print. The price is $2.50 each, plus 25 cents insurance and postage. Send order, stating the plates desired, with check to Mrs. Bessie M. Arnurius, Box 123, University Hospital, Baltimore, Maryland. Make check payable to Nurses Alumnae Association of the University of Maryland.
Dr. William Rogers and Dr. Arnold D. Tuttle chat at luncheon. (Top)
(Dr. Tuttle died Oct. 6, 1951—Ed.)
Dr. A. H. Finkelstein and Dr. Abel Gordon talk it over. (Center)
Dr. Earl Springer of Akron, Ohio. (Bottom L.)
Dr. Thomas W. Keown, class of 1895, B.M.C. (Bottom R.)
Dr. Louis A. M. Krause addresses the annual meeting. (Top)
A threesome. Drs. William J. B. Orr, Lucius Glenn, and Page Edmunds. (Center)
Registration desk.
1 to r—Dr. H. Edmund Levin, and Dr. Page Edmunds. (Bottom)
Class of 1921 (Top)

Class of 1946 (Center)

Class of 1941 (Bottom)
Baltimore Schools—University of Maryland

1. Original Medical Building
2. Laboratory Building, Medicine
3. Bresler Building, Medicine
4. Gray Laboratory, Student's Lounge, Medicine
5. Administration Building, College of Education, Baltimore Division
6. Medical Library
7. University Hospital
8. Nurses' Home, Medicine
9. School of Pharmacy
10. School of Dentistry
11. Dental Clinic
12. Out-Patient Clinics, Medicine
13. School of Law
Announcements for

The One Hundred Forty-Sixth Academic Session
1951–1952

Catalogue of
The One Hundred Forty-Fifth Academic Session
1950–1951
HOSPITAL BUILDINGS. The tall building at the left is the present University Hospital. An addition now under construction, is shown at the right.
<table>
<thead>
<tr>
<th>CALENDAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1951</strong></td>
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<tr>
<td><strong>JULY</strong></td>
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<td><strong>AUGUST</strong></td>
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<td>19</td>
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<td>26</td>
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<tr>
<td><strong>SEPTEMBER</strong></td>
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<td><strong>SM</strong></td>
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<tr>
<td>1</td>
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<td>5</td>
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<td>21</td>
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<td>28</td>
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<tr>
<td><strong>NOVEMBER</strong></td>
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<tr>
<td><strong>SM</strong></td>
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<td>1</td>
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<td>4</td>
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<td>18</td>
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<td>25</td>
</tr>
<tr>
<td><strong>DECEMBER</strong></td>
</tr>
<tr>
<td><strong>SM</strong></td>
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<tr>
<td>1</td>
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<td>8</td>
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<tr>
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<tr>
<td>22</td>
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<tr>
<td>29</td>
</tr>
</tbody>
</table>

4
CALENDAR

ACADEMIC YEAR—SEPTEMBER 20, 1951 TO JUNE 7, 1952

1951

September 10, 11, 12 Re-examinations for advancement

FIRST SEMESTER—September 20, 1951 to January 26, 1952

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 18</td>
<td>Tuesday</td>
<td>Registration, payment of fees, freshmen &amp; sophomores</td>
</tr>
<tr>
<td>September 19</td>
<td>Wednesday</td>
<td>Registration, payment of fees, all other students</td>
</tr>
<tr>
<td>September 20</td>
<td>Thursday</td>
<td>Instruction begins at 8:30 a.m.</td>
</tr>
<tr>
<td>November 20</td>
<td>Tuesday</td>
<td>Instruction suspended at 5:00 p.m.</td>
</tr>
<tr>
<td>November 26</td>
<td>Monday</td>
<td>Instruction resumed</td>
</tr>
<tr>
<td>December 21</td>
<td>Friday</td>
<td>Instruction suspended at 5:00 p.m.</td>
</tr>
</tbody>
</table>

1952

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 3</td>
<td>Thursday</td>
<td>Instruction resumed</td>
</tr>
<tr>
<td>January 21</td>
<td>Monday</td>
<td>Midyear examinations</td>
</tr>
<tr>
<td>January 26</td>
<td>Saturday</td>
<td>First semester completed, 2:00 p.m.</td>
</tr>
</tbody>
</table>

SECOND SEMESTER—January 28 to June 7, 1952

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>January 28</td>
<td>Monday</td>
<td>Instruction begins at 8:30 a.m.</td>
</tr>
<tr>
<td>February 21</td>
<td>Thursday</td>
<td>Instruction suspended at 5:00 p.m.</td>
</tr>
<tr>
<td>February 22</td>
<td>Friday</td>
<td>Holiday—Washington’s Birthday</td>
</tr>
<tr>
<td>February 23</td>
<td>Saturday</td>
<td>Instruction resumed</td>
</tr>
<tr>
<td>April 10</td>
<td>Thursday</td>
<td>Instruction suspended at 5:00 p.m.</td>
</tr>
<tr>
<td>April 15</td>
<td>Tuesday</td>
<td>Instruction resumed</td>
</tr>
<tr>
<td>April 22</td>
<td>Tuesday</td>
<td>Juniors and Seniors excused to attend annual meetings</td>
</tr>
<tr>
<td>April 23</td>
<td>Wednesday</td>
<td>of the Medical &amp; Chirurgical Faculty</td>
</tr>
<tr>
<td>May 19</td>
<td>Monday</td>
<td>Junior examinations begin</td>
</tr>
<tr>
<td>May 24</td>
<td>Saturday</td>
<td>Senior classes cease at 5:00 p.m.</td>
</tr>
<tr>
<td>May 26</td>
<td>Monday</td>
<td>Junior examinations continue</td>
</tr>
<tr>
<td>May 30</td>
<td>Friday</td>
<td>Holiday—Memorial Day</td>
</tr>
<tr>
<td>May 31</td>
<td>Saturday</td>
<td>Announcement of graduates</td>
</tr>
<tr>
<td>June 7</td>
<td>Saturday</td>
<td>Commencement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Second Semester completed at 12:30 p.m.</td>
</tr>
</tbody>
</table>

PARTIAL CALENDAR FOR 1952-1953

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 8</td>
<td>Tuesday</td>
<td>Re-examinations for advancement</td>
</tr>
<tr>
<td>September 16</td>
<td>Tuesday</td>
<td>Registration, payment of fees, freshmen &amp; sophomores</td>
</tr>
<tr>
<td>September 17</td>
<td>Wednesday</td>
<td>Registration, payment of fees, all other students</td>
</tr>
<tr>
<td>September 18</td>
<td>Thursday</td>
<td>Instruction begins at 8:30 a.m.</td>
</tr>
</tbody>
</table>

* A student who fails to register prior to or within the day or days specified will be called upon to pay a late registration fee of five dollars ($5.00). The last day of registration with fee added to regular charges is Saturday of the week in which registration begins.

The offices of the registrar and comptroller are open daily from 9:00 A.M. to 4:00 P.M., and Saturday from 9:00 A.M. to 12:00 noon.
ORGANIZATION
THE UNIVERSITY OF MARYLAND

HARRY CLIFTON BYRD, B.S., LL.D., D.Sc., President and Executive Officer

BOARD OF REAGENTS

Term Expires

<table>
<thead>
<tr>
<th>Name</th>
<th>Term Expires</th>
</tr>
</thead>
<tbody>
<tr>
<td>William P. Cole, Jr., Chairman</td>
<td>1958</td>
</tr>
<tr>
<td>Stanford Z. Rothschild, Secretary</td>
<td>1952</td>
</tr>
<tr>
<td>J. Milton Patterson, Treasurer</td>
<td>1953</td>
</tr>
<tr>
<td>B. Herbert Brown, Jr.</td>
<td>1960</td>
</tr>
<tr>
<td>Edward F. Holter</td>
<td>1959</td>
</tr>
<tr>
<td>E. Paul Knotts</td>
<td>1954</td>
</tr>
<tr>
<td>Arthur O. Lovejoy</td>
<td>1960</td>
</tr>
<tr>
<td>Charles P. McCormick</td>
<td>1957</td>
</tr>
<tr>
<td>Harry H. Nuttle</td>
<td>1957</td>
</tr>
<tr>
<td>Philip C. Turner</td>
<td>1959</td>
</tr>
<tr>
<td>Mrs. John L. Whitehurst</td>
<td>1956</td>
</tr>
</tbody>
</table>

Members of the Board are appointed by the Governor of the State for terms of nine years each, beginning the first Monday in June.

The President of the University of Maryland is, by law, Executive Officer of the Board.

A regular meeting of the Board is held the third Friday in each month, except during the months of July and August.

Each school has its own Advisory Board, Council, or Committee composed of the Dean and members of its faculty, which controls the internal affairs of the group it represents.

The University has the following educational organizations:

At Baltimore
- The School of Dentistry
- The School of Law
- The School of Medicine
- The School of Nursing
- The School of Pharmacy
- The College of Education
  (Baltimore Division)

The College of Business and Public Administration
- The College of Education
- The Glenn L. Martin College of Engineering and Aeronautical Sciences
- The College of Home Economics
- The Graduate School
- The College of Military Science
- The College of Physical Education, Recreation and Health
- The College of Special and Continuation Studies
- The Summer School

At College Park
- The College of Agriculture
- The College of Arts and Sciences

ADMINISTRATIVE OFFICERS

SCHOOL OF MEDICINE

H. C. Byrd, B.S., LL.D., D.Sc.                              President of the University
H. Boyd Wylie, M.D.                                             Dean
Alma H. Preinkert, M.A.                                         Registrar
Edgar F. Long, Ph.D.                     Director of Admissions
SCHOOL of MEDICINE

FACULTY OF MEDICINE

EMERITI

J. M. H. Rowland, M.D., D.Sc., LL.D.
Professor of Obstetrics, Emeritus; Dean, Emeritus

Henry J. Walton, M.D. . Professor of Roentgenology, Emeritus
Page Edmunds, M.D. . Professor of Traumatic Surgery, Emeritus
Ruth Lee Briscoe . Librarian, Emeritus
Albertus Cotton, M.A., M.D. . Professor of Orthopaedic Surgery, and Roentgenology, Emeritus

Harvey G. Beck, M.D., D.Sc. . Professor of Clinical Medicine, Emeritus
Irving J. Spear, M.D. . Professor of Neurology, Emeritus
Carl L. Davis, M.D. . Professor of Anatomy, Emeritus
Arthur M. Shipley, M.D., D.Sc. . Professor of Surgery, Emeritus
Clyde A. Clapp, M.D. . Professor of Ophthalmology, Emeritus
Andrew C. Gillis, M.A., M.D., LL.D. . Professor of Neurology, Emeritus
Edgar B. Friedenwald, M.D. . Professor of Clinical Pediatrics, Emeritus

ADVISORY BOARD OF THE FACULTY

Dean H. Boyd Wylie, Chairman
O. G. Harne, Secretary
George H. Buck, Ex Officio Member

Walter A. Baetjer . Jacob E. Finesinger . Louis A. M. Krause
Charles Bagley, Jr. . A. H. Finkelstein . Kenneth D. Legge
Howard M. Bubert . Edward J. Herbst . John F. Lutz
C. Jellett Carr . Harry C. Hull . Zachariah Morgan
Thomas R. Chambers . J. Mason Hundley, Jr. . Theodore H. Morrison
Carl Dame Clarke . Elliott H. Hutchins . Alfred T. Nelson
Beverley C. Compton . F. L. Jennings . Thomas R. O'Rourke
Charles N. Davidson . Frank D. Kaltreider . C. W. Peake
Louis H. Douglass . Walter L. Kilby . H. R. Peters
Monte Edwards . F. Edwin Knowles . J. Morris Reese

* Died May 3, 1951.

8
SCHOOL OF MEDICINE

Charles A. Reifschneider
Dexter L. Reimann
Harry M. Robinson, Sr.
Harry L. Rogers
Milton S. Sacks
Emil G. Schmidt
Andrew G. Smith
Dietrich C. Smith
Frederick B. Smith

W. H. Smith
Hugh R. Spencer
Thomas P. Sprunt
Edward Steers
J. McCullough Turner
Eduard Uhlenhuth
Henry F. Ullrich
Raymond E. Vanderlinde
Allen F. Voshell

John A. Wagner
Grant E. Ward
C. Gardner Warner
Huntington Williams
Walter D. Wise
Theodore E. Woodward
Thomas C. Wolff
Robert B. Wright
George H. Yeager
Waitman F. Zinn

ADVISORY COMMITTEE OF THE FACULTY

William R. Amberson
J. Edmund Bradley
Louis H. Douglass
C. Reid Edwards
Jacob E. Finesinger
Frank W. Hachtel

O. G. Harne, Assistant to the Dean, Secretary
J. Mason Hundley
Walter L. Kilby
F. Edwin Knowles, Jr.
John C. Krantz, Jr.

Alfred T. Nelson
Maurice C. Pincoffs
Emil G. Schmidt
Hugh R. Spencer
Eduard Uhlenhuth
H. Boyd Wylie, Dean

Chairman

FACULTY OF MEDICINE

PROFESSORS

Myron S. Aisenberg, D.D.S., Professor of Pathology, School of Dentistry.
William R. Amberson, Ph.D., Professor of Physiology, and Head of the Department.
Charles Bagley, Jr., M.A., M.D., Professor of Neurological Surgery.
Joseph C. Biddix, Jr., D.D.S., Professor of Oral Diagnosis, School of Dentistry.
J. Edmund Bradley, M.D., Professor of Pediatrics, and Head of the Department.
Otto C. Brantigan, B.S., M.D., Professor of Surgical Anatomy, Clinical and Thoracic Surgery.
T. Nelson Carey, M.D., Professor of Clinical Medicine.
C. Jelleff Carr, Ph.D., Professor of Pharmacology.2
Richard G. Coblentz, M.A., M.D., Professor of Clinical Neurological Surgery.
Edward C. Dobbs, D.D.S., Professor of Pharmacology, School of Dentistry.
Brice M. Dorsey, D.D.S., Professor of Oral Surgery, School of Dentistry.
Louis H. Douglass, M.D., Professor of Obstetrics, and Head of the Department.

It is to be noted that for convenience of reference the names of the members of the Faculty are listed in the forepart of this catalogue in alphabetical order. The names are listed in order of seniority under each preclinical and clinical department of the school on subsequent pages.

On the lists of the Faculty of Medicine and Fellows and the Hospital and Dispensary staffs are given the names and positions assigned during the period July 1, 1951 to June 30, 1952 unless otherwise indicated. Changes are noted as follows:

1 Appointments effective July 1, 1951.
2 Promotions effective July 1, 1951.
3 Resignations.
4 Retirements.
5 Deaths.
6 Leave of absence.
Charles Reid Edwards, M.D., Professor of Surgery, and Acting Head of the Department.

Monte Edwards, M.D., Clinical Professor of Surgery and Professor of Proctology.

Ray Ehrenberger, Ph.D., Professor of Speech, College of Arts and Sciences.

Lloyd D. Felton, A.B., D.Sc., M.D., Visiting Research Professor of Bacteriology.¹

Frank H. J. Figge, Ph.D., Professor of Anatomy.

Jacob E. Finesinger, M.D., Professor of Psychiatry, and Head of the Department.

Grason W. Gaver, D.D.S., Professor of Dental Prosthetics, School of Dentistry.

Frank W. Hachtel, M.D., Professor of Bacteriology, and Head of the Department.

Harry C. Hull, M.D., Professor of Clinical Surgery.

J. Mason Hundley, Jr., M.A., M.D., Professor of Gynecology, and Head of the Department.

Elliott H. Hutchins, M.A., M.D., Professor of Surgery.

F. L. Jennings, M.D., Professor of Clinical Surgery.

C. Loring Joslin, M.D., Professor of Pediatrics.

Walter L. Kilby, M.D., Professor of Roentgenology, and Head of the Department.

Edward A. Kitowski, A.B., M.D., Clinical Professor of Plastic Surgery.

John C. Krantz, Jr., Ph.D., D.Sc., Professor of Pharmacology, and Head of the Department.

Louis A. M. Krause, M.D., Professor of Clinical Medicine.

Kenneth D. Legge, M.D., Professor of Clinical Urology.

Edward A. Looper, M.D., D.Oph., Professor of Otolaryngology, and Head of the Department.

Theodore H. Morrison, M.D., Clinical Professor of Gastro-Enterology.

Alfred T. Nelson, M.D., Professor of Anaesthesiology, and Head of the Department.

Ernest B. Nuttall, D.D.S., Professor of Crown and Bridge, School of Dentistry.

Thomas R. O'Rourke, M.D., Professor of Otolaryngology.

D. J. Pessagno, A.B., M.D., Professor of Clinical Surgery.

H. Raymond Peters, A.B., M.D., Professor of Clinical Medicine.

Maurice C. Pincoffs, B.S., M.D., Professor of Medicine, and Head of the Department.

Kyrl W. Preis, D.D.S., Professor of Orthodontics, School of Dentistry.¹

Kenneth V. Randolph, D.D.S., Professor of Operative Dentistry, School of Dentistry.

Charles A. Reifschneider, M.D., Clinical Professor of Traumatic Surgery.

John R. Reid, Ph.D., Visiting Professor of Psychiatry.¹²

Harry L. Rogers, M.D., Clinical Professor of Orthopaedic Surgery.

Harry M. Robinson, Sr., M.D., Professor of Dermatology.

Emil G. Schmidt, Ph.D., LL.B., Professor of Biological Chemistry, and Head of the Department.

Dietrich Conrad Smith, Ph.D., Professor of Physiology.

Hugh R. Spencer, M.D., Professor of Pathology, and Head of the Department.

Thomas P. Sprunt, A.B., M.D., Professor of Clinical Medicine.

W. Houston Toulson, M.Sc., M.D., Professor of Urology.

I. Ridgeway Trimble, M.D., Professor of Clinical Surgery.²

Eduard Uhlenhuth, Ph.D., Professor of Anatomy, and Head of the Department.

Allen Fiske Voshell, A.B., M.D., Professor of Orthopaedic Surgery.

Huntington Williams, M.D., Dr. P.H., Professor of Hygiene and Public Health.

Walter D. Wise, M.D., Professor of Surgery.

George H. Yeager, B.S., M.D., Professor of Clinical Surgery, and Director of Clinical Research.

Waitman F. Zinn, M.D., Professor of Otolaryngology.

¹ Appointment effective Sept. 1, 1950
ASSOCIATE PROFESSORS

Franklin R. Anderson, M.D., Associate Professor of Otolaryngology.8
Merle Ansberry, Ph.D., Associate Professor of Speech, College of Arts and Sciences.
James G. Arnold, Jr., M.D., Associate Professor of Neurological Surgery.
H. M. Bubert, M.D., Associate Professor of Medicine.
Thomas R. Chambers, A.B., M.D., Associate Professor of Surgery.
Carl Dame Clarke, Associate Professor of Art as Applied to Medicine.
Charles N. Davidson, M.D., Associate Professor of Roentgenology.
Ross Davies, M.D., Associate Professor of Hygiene and Public Health.
J. S. Eastland, M.D., Associate Professor of Medicine.
A. H. Finkelstein, M.D., Associate Professor of Pediatrics.
Russel S. Fisher, M.D., Associate Professor of Legal Medicine.1
Leon Freedom, M.D., Associate Professor of Neurology.
Frederick P. Furguson, Ph.D., Associate Professor of Physiology.2
William L. Garlick, A.B., M.D., Associate Professor of Thoracic Surgery and Associate in Surgery.2
Moses Gellman, B.S., M.D., Associate Professor of Orthopaedic Surgery.
Gordon E. Gibbs, M.D., Associate Professor of Clinical Research.1
Lewis P. Gundry, M.D., Associate Professor of Medicine.
O. G. Harne, Associate Professor of Anatomy, and Asst. to the Dean.
Hugh H. Hicks, D.D.S., Associate Professor of Periodontology, School of Dentistry.
Cyrus F. Horine, M.D., Associate Professor of Surgery.
Albert Jaffe, M.D., Associate Clinical Professor of Pediatrics.
Edward S. Johnson, M.D., Associate Professor of Surgery.
Wedon Johnson, A.B., M.D., Associate Professor of Anesthesiology.4
D. Frank Kaltreider, A.B., M.D., Associate Professor of Obstetrics.5
Fayne A. Kayser, M.D., Associate Professor of Otolaryngology.
Vernon E. Krah, B.S., M.S., Ph.D., Associate Professor of Anatomy.
Frederick T. Kyper, M.D., D.Sc., Associate Professor of Otolaryngology.
R. W. Locher, M.D., Associate Professor of Clinical Surgery.
William S. Love, Jr., A.B., M.D., Associate Professor of Medicine.
Charles W. Maxson, M.D., Associate Professor of Surgery.
Walter C. Merkel, A.B., M.D., Associate Professor of Pathology.
Samuel Morrison, A.B., M.D., Associate Professor of Medicine, Associate Professor of Gastro-enterology.
James W. Nelson, M.D., Associate Professor of Surgery.
H. Whitman Newell, M.D., Associate Professor of Psychiatry.
C. W. Peake, M.D., Associate Professor of Surgery.
J. Morris Reese, M.D., Associate Professor of Obstetrics.
Dexter L. Reimann, B.S., M.D., Associate Professor of Pathology.
Benjamine S. Rich, A.B., M.D., Associate Professor of Otolaryngology.
Ida M. Robinson, A.B., B.S.L.S., Associate Professor of Library Science.
Milton S. Sacks, M.D., Associate Professor of Medicine and Head of Clinical Pathology, Associate in Pathology.
Frederick B. Smith, M.D., Associate Professor of Pediatrics.
William H. Smith, M.D., Associate Professor of Clinical Medicine.
Edward Steers, Ph.D., Associate Professor of Bacteriology.
Lewis C. Toomey, D.D.S., Associate Professor of Oral Surgery, School of Dentistry.

8 Died Jan. 23, 1951.
ASSISTANT PROFESSORS

Thurston R. Adams, M.D., Assistant Professor of Surgery and Proctology.
Donald J. Barnett, M.D., Assistant Professor of Roentgenology.
H. F. Bongardt, M.D., Assistant Professor of Surgery.
Leo Brady, A.B., M.D., Assistant Professor of Gynecology.
Simon H. Brager, M.D., Assistant Professor of Surgery and Proctology.
Raymond M. Burgison, Ph.D., Assistant Professor of Pharmacology.1a
Beverley C. Compton, A.B., M.D., Assistant Professor of Gynecology.
Ernest I. Cornbrooks, Jr., A.B., M.D., Assistant Professor of Gynecology.
Edward F. Cotter, M.D., Assistant Professor of Medicine, Associate in Neurology.
J. G. N. Cushing, M.D., Assistant Professor of Psychiatry.
John DeCarlo, A.B., M.D., Assistant Professor of Roentgenology.
William K. Diehl, M.D., Assistant Professor of Gynecology.
Everett S. Diggs, B.S., M.D., Assistant Professor of Gynecology.
John S. Dumler, B.S., M.D., Assistant Professor of Gynecology.
William W. Elgin, M.D., Assistant Professor of Psychiatry.
Francis A. Ellis, A.B., M.D., Assistant Professor of Dermatology.
Maurice Feldman, M.D., Assistant Professor of Gastro-Enterology.
Jerome Fineman, M.D., Assistant Professor of Pediatrics.
Wetherbee Fort, M.D., Assistant Professor of Medicine.
Frank J. Geraghty, A.B., M.D., Assistant Professor of Medicine.
Francis W. Gillis, M.D., Assistant Professor of Urology.
Samuel S. Glick, M.D., Assistant Professor of Pediatrics.
Albert E. Goldstein, M.D., Assistant Professor of Pathology.
George Govatos, A.B., M.D., Assistant Professor of Surgery.
Robert G. Grenell, B.A., M.Sc., Ph.D., Assistant Professor Psychiatric Research.2
Edward J. Herbst, Ph.D., Assistant Professor of Biological Chemistry.
John F. Hogan, M.D., Assistant Professor of Urology.
F. Edwin Knowles, Jr., M.D., Assistant Professor of Ophthalmology and Chairman of the Department.
H. Vernon Langeluttig, M.D., Assistant Professor of Medicine.
C. Edward Leach, M.D., Assistant Professor of Medicine.
Philip L. Lerner, M.D., Assistant Professor of Neurology.
Ephriam T. Lisansky, M.D., Assistant Professor of Medicine and Associate in Psychiatry.4
Hans W. Loewald, M.D., Assistant Professor of Psychiatry.

1a Appointment effective Sept., 1, 1950.
John F. Lutz, A.B., M.D., Assistant Professor of Anatomy.
Henry J. L. Marriott, A.M., B.M., Assistant Professor of Medicine.
Howard B. Mays, M.D., Assistant Professor of Genito-Urinary Surgery and Instructor in Urology and Pathology.
W. Raymond McKenzie, M.D., Assistant Professor of Otolaryngology.
Karl F. Meck, B.S., M.D., Assistant Professor of Anatomy.¹
Zachariah Morgan, M.D., Assistant Professor of Gastro-Enterology.
Hugh B. McNally, B.S., M.D., Assistant Professor of Obstetrics.
Harry M. Murdock, B.S., M.D., Assistant Professor of Psychiatry.
George McLean, M.D., Assistant Professor of Medicine.
M. Alexander Novey, A.B., M.D., Assistant Professor of Obstetrics.
Samuel T. R. Revell, Jr., M.D., Assistant Professor of Medicine.
I. O. Ridgely, M.S., M.D., Assistant Professor of Surgery.
William F. Rienhoff, M.D., Assistant Professor of Surgery.
Robert A. Reiter, M.D., Assistant Professor of Medicine.²
Harry M. Robinson, Jr., B.S., M.D., Assistant Professor of Dermatology, Associate in Medicine.
Irving Rothchild, Ph.D., Assistant Professor of Physiology.
John E. Savage, B.S., M.D., Assistant Professor of Obstetrics.
Kathryn L. Schultz, M.D., Assistant Professor of Psychiatry.
Theodore A. Schwartz, M.D., Assistant Professor of Otolaryngology.
William M. Seabold, M.D., Assistant Professor of Pediatrics.
William B. Settle, M.D., Assistant Professor of Surgical Anatomy and Associate in Surgery.
Isadore A. Siegel, A.B., M.D., Assistant Professor of Obstetrics.
Arthur G. Siwinski, A.B., M.D., Assistant Professor of Surgery.²
Andrew G. Smith, Ph.D., Assistant Professor of Bacteriology.
Edward P. Smith, M.D., Ph.G., Assistant Professor of Gynecology.
Sol Smith, M.D., Assistant Professor of Medicine.
Isidore William Towlen, M.D., Assistant Professor of Anesthesiology.
Raymond E. Vanderlinde, A.B., Ph.D., Assistant Professor of Biological Chemistry.
Philip S. Wagner, M.D., Assistant Professor of Psychiatry.
Gibson J. Wells, M.D., Assistant Professor of Pediatrics.
Milton J. Wilder, M.D., Assistant Professor of Orthopedic Surgery.

ASSOCIATES

Conrad B. Acton, M.D., Associate in Medicine.
Marie A. Andersch, Ph.D., Associate in Medicine.
Leon Ashman, B.S., M.D., Associate in Medicine.²
J. Tyler Baker, B.S., M.D., Associate in Obstetrics.
Margaret B. Ballard, M.D., Associate in Obstetrics.
Charles P. Barnett, A.B., M.D., Associate in Pathology.
Edmund G. Beacham, M.D., Associate in Medicine.
Eugene S. Bereston, A.B., M.D., Associate in Dermatology.
Robert Z. Berry, A.B., M.D., Associate in Otolaryngology.²
Louis V. Blum, M.D., Associate in Medicine.²
Harry C. Bowie, B.S., M.D., Associate in Surgical Anatomy.
Kenneth B. Boyd, A.B., M.D., Associate in Gynecology.
Frank J. Brady, M.D., Associate in Anaesthesiology.
Henry A. Briele, M.D., Associate in Postgraduate Surgery.¹
V. V. Brunst, Sc.D., Research Associate in Anatomy.
William R. Bundick, M.D., Associate in Dermatology.²
Harold H. Burns, M.D., Associate in Surgery.
M. Paul Byerly, M.D., Associate in Medicine.
Richard A. Carey, M.D., Associate in Medicine.
Osborne D. Christensen, M.D., Associate in Obstetrics.
Jonas Cohen, M.D., Associate in Medicine.²
Edward R. Dana, A.B., M.D., Associate in Roentgenology.
Kathryn Dice, Ed.D., Associate in Clinical Psychology.
Francis G. Dickey, M.D., Associate in Medicine.
D. McClendon Dixon, M.D., Associate in Obstetrics and Instructor in Pathology.
Stanley H. Durlacher, M.D., Associate in Legal Medicine.
J. J. Erwin, M.D., Associate in Gynecology.
L. K. Fargo, M.D., Associate in Urology.
William L. Fearin, M.D., Associate in Neurology.³
Donald E. Fisher, M.D., Associate in Pathology.
William H. Fisher, M.D., Associate in Postgraduate Surgery.¹
Irving Freeman, M.D., Associate in Medicine.
Henry C. Freimuth, Ph.D., Associate in Legal Medicine.
John S. Haines, M.D.,² Associate in Urology.
Alvin J. Hartz, A.B., M.D., Associate in Medicine.
Raymond F. Hellrich, A.B., M.D., Associate in Surgery.
W. Grafton Hersberger, M.D., Associate in Medicine.
John T. Hibbitts, M.D., Associate in Gynecology.
Henry W. D. Holljes, M.D., Associate in Medicine.
Z. Vance Hooper, M.D., Associate in Gastro-Enterology.
Clewell Howell, B.S., M.D., Associate in Pediatrics.
Benjamin H. Isaacs, A.B., M.D., Associate in Otolaryngology.
Meyer W. Jacobson, M.D., Associate in Medicine.
Joseph V. Jerardi, B.S., M.D., Associate in Surgery.
Hugh J. Jewett, M.D., Associate in Urology.
Arthur Karfgin, B.S., M.D., Associate in Medicine.
Walter Karfgin, M.D., Associate in Medicine.
James R. Karns, B.S., M.D., Associate in Medicine, and Physician in Charge of Medical Care of Medical Students.²
Joseph I. Kemler, M.D., Associate in Ophthalmology.
Albert W. Kitts, M.D., Associate in Postgraduate Pediatrics.¹⁰
Louis B. Kroll, A.B., M.D., Associate in Medicine.²
Elizabeth LaForge, M.S.S., Associate in Psychiatric Social Work.
Samuel Legum, M.D., Associate in Medicine.
H. Edmund Levin, M.D., Associate in Bacteriology.
Kurt Levy, M.D., Associate in Medicine.
William B. Long, M.D., Associate in Postgraduate Surgery.¹
H. Patterson Mack, M.D., Associate in Anatomy.²
G. Bowers Mansdorfer, B.S., M.D., Associate in Pediatrics.
I. H. Maseritz, M.D., Associate in Orthopaedic Surgery.
William J. McClafferty, M.D., Associate in Legal Medicine.¹⁵
George G. Merrill, M.D., Associate in Neurology.
Moritz Michaelis, Ph.D., Research Associate in Psychiatry.¹³

Effective appointment dates: Associates
¹⁰ Nov. 1, 1950.
¹⁵ Jan. 25, 1951.
¹³ Jan. 5, 1951.
Lyle J. Millan, M.D., Associate in Urology.
Frank K. Morris, A.B., M.D., Associate in Gynecology.
J. Huff Morrison, B.S., M.D., Associate in Obstetrics.
S. Edwin Muller, M.D., Associate in Medicine.
Patrick C. Phelan, Jr., A.B., M.D., Associate in Anatomy.
Ross Z. Pierpoint, M.D., Associate in Surgical Anatomy, and Assistant in Surgery.
Herbert E. Reifsneider, A.B., M.D., Associate in Surgery and Surgical Anatomy.
R. C. V. Robinson, M.D., Associate in Dermatology.
Sidney Scherlis, M.D., Associate in Medicine.
William M. Seabold, A.B., M.D., Associate in Pediatrics.
Lawrence M. Serra, M.D., Associate in Medicine.
A. Albert Shapiro, B.S., M.D., Associate in Dermatology.
Benedict Skitarelic, A.B., M.D., Associate in Pathology.
Edward H. Stewart, Jr., M.D., Associate in Surgery.
Harry A. Teitlebaum, B.S., M.D., Ph.D., Associate in Neurology.
Raymond K. Thompson, B.S., M.D., Associate in Neurosurgery, and Director of Neurological Research.
Wilfred H. Townshend, Jr., A.B., M.D., Associate in Medicine.
Isadore Tuerk, M.D., Associate in Psychiatry.
William K. Waller, M.D., Associate in Medicine.
Arthur Ward, M.D., Associate in Otolaryngology.
Daniel Wilfson, Jr., A.B., M.D., Associate in Medicine.
Austin H. Wood, M.D., Associate in Urology.
Israel Zeligman, A.B., M.D., Associate in Dermatology.

LECTURERS

Harold E. Himwich, M.D., Lecturer in Physiology and Psychiatry.
Amedeo S. Marrazzi, M.D., Lecturer in Pharmacology.
Joseph M. Miller, M.D., Lecturer in Surgery.
William H. Summerson, Ph.D., Lecturer in Biological Chemistry.

INSTRUCTORS

A. Russell Anderson, M.D., Instructor in Psychiatry.
Robert E. Bauer, A.B., M.D., Instructor in Medicine.
Harry McB. Beck, M.D., Instructor in Gynecology, and Assistant in Obstetrics.
Joseph G. Bird, A.B., M.D., Instructor in Medicine.
Thomas S. Bowyer, A.B., M.D., Instructor in Gynecology and Assistant in Obstetrics.
John T. Bracken, B.S., M.D., Instructor in Roentgenology.
Charles E. Brambel, A.M., Ph.D., Instructor in Medicine.
George H. Brouillet, B.S., M.D., Instructor in Surgery.
Ann Virginia Brown, A.B., Instructor in Biological Chemistry.
J. E. Brumback Jr., B.S., M.D., Instructor in Ophthalmology.
William J. Bryson, A.B., M.D., Instructor in Pathology.
Lucie J. Caldwell, M.D., Instructor in Dermatology.
Enoch Calloway, Jr., A.B., M.D., Instructor in Psychiatry.
John W. Chambers, M.D., Instructor in Neurosurgery, Assistant in Surgery.

Effective appointment date: Lecturers.
1a Nov. 1, 1950.
Effective appointment date: Instructors.
1b Dec. 1, 1950.
Thomas A. Christensen, A.B., M.D., Instructor in Pediatrics.
Morris M. Cohen, M.D., Instructor in Dermatology.
Joseph M. Cordi, M.D., Instructor in Pediatrics.
Richard J. Cross, B.S., M.D., Instructor in Ophthalmology, and Otolaryngology.6
Raymond M. Cunningham, A.B., M.D., Instructor in Anatomy and Proctology, Assistant in Surgery.
George H. Davis, B.S., M.D., Instructor in Obstetrics.5
John R. Davis, M.D., Instructor in Medicine.
W. Allen Deckert, A.B., M.D., Instructor in Gynecology and Assistant in Surgery.
John B. DeHoff, M.D., Instructor in Medicine.
John M. Dennis, B.S., M.D., Instructor in Roentgenology.1
William A. Dodd, M.D., Instructor in Gynecology, and Assistant in Obstetrics.
Charles H. Doeller, Jr., A.B., M.D., Instructor in Gynecology, and Assistant in Obstetrics.
William C. Duffy, A.B., M.D., Instructor in Gynecology.
Ernest S. Edlow, A.B., M.D., Instructor in Gynecology.
Maurice Feldman, Jr., A.B., M.D., Instructor in Medicine.2
Maurice Fine, M.D., Instructor in Medicine.5
Philip D. Flynn, M.D., Instructor in Medicine.
Samuel L. Fox, Ph.G., B.S., M.D., Instructor in Physiology, and Associate in Otolaryngology.
Paul N. Friedman, A.B., M.D., Instructor in Ophthalmology.
Audry M. Funk, A.B., Instructor in Medicine.
Joseph E. Furnari, M.D., Instructor in Medicine.2
Perry O. Futterman, A.B., M.D., Instructor in Medicine.
L. Calvin Gareis, B.S., M.D., Instructor in Pathology, and Obstetrics, Assistant in Gynecology.
Jason H. Gaskel, M.D., Instructor in Orthopaedic Surgery.
H. L. Granoff, A.B., M.D., Instructor in Gynecology.
Isaac Gutman, Instructor in Orthopaedic Surgery.
Samuel J. Hankin, M.D. Instructor in Medicine.
Charles W. Hawkins, M.D., Instructor in Anatomy.4
Mary L. Hayleck, M.D., Instructor in Pediatrics.
Robert F. Healy, M.D., Instructor in Surgery.
Donald B. Hebb, M.D., Instructor in Proctology and Assistant in Surgery.
William G. Helfrich, B.S., M.D., Instructor in Medicine.
L. Ann Hellen, B.S., Instructor in Medicine.
Mark B. Holland, A.B., M.D., Instructor in Dermatology and Syphilology.
Calvin Hyman, M.D., Instructor in Surgery.
Conrad L. Inman, D.D.S., Instructor in Anesthesiology, School of Dentistry.
Edward S. Kallins, B.S., M.D., Instructor in Medicine.
William H. Kammer, Jr., A.B., M.D., Instructor in Medicine.
Harry F. Kane, M.D., Instructor in Gynecology.
Theodore Kardash, B.S., M.D., Instructor in Gynecology and Pathology.
Clyde F. Karns, B.S., M.D., Instructor in Surgery.
Irvin B. Kemick, B.S., Ph.G., M.D., Instructor in Medicine.3
Leon A. Kochman, M.D., Instructor in Medicine.
Schuyler G. Kohl, B.S., M.D., Instructor in Obstetrics.
Edward L. J. Kreig, M.D., Instructor in Pathology.1
A. Kremen, A.B., M.D., Instructor in Ophthalmology.
Arnold F. Lavenstein, Instructor in Pediatrics.
V. Harwood Link, M.D., Instructor in Dermatology.
F. Ford Loker, B.S., M.D., Instructor in Surgery.
Helen I. Maginnis, M.D., Instructor in Gynecology.
Louis O. J. Manganiello, A.B., M.D., Instructor in Anatomy;¹ Research Fellow, Neurosurgery.²
Charles B. Marek, M.D., Instructor in Gynecology.
Marion W. Mathews, A.B., M.S., M.D., Instructor in Psychiatry.
Robert E. McCaffery, B.S., M.S., M.D., Instructor in Anatomy.¹⁰¹
Francis J. McLaughlin, M.D., Instructor in Psychiatry.
D. J. McHenry, B.S., M.D., Instructor in Ophthalmology.⁶
José Medina, D.D.S., Instructor in Oral Surgery, School of Dentistry.
Israel P. Meranski, B.S., M.D., Instructor in Pediatrics.
James P. Miller, M.D., Instructor in Orthopaedic Surgery.¹⁰
J. Duer Moores, B.S., M.D., Instructor in Surgery.
Joseph E. Muse, Jr., B.S., M.D., Instructor in Medicine.
Ruth Musser, M.S., Instructor in Pharmacology.
John A. Myers, M.E.E., M.D., Instructor in Medicine, Assistant in Gastro-Enterology.
James J. Nolan, B.S., M.D., Instructor in Medicine.²
Samuel Novey, M.D., Instructor in Psychiatry.
Frank J. Otenasek, M.D., Instructor in Neuro-Surgery.²
Robert T. Parker, A.B., M.D., Instructor in Medicine.¹
Samuel E. Proctor, A.B., M.D., Instructor in Surgery.
J. Emmett Queen, M.D., Instructor in Medicine.
Martin A. Robbins, M.D., Instructor in Urology.¹
Daniel R. Robinson, M.D., Instructor in Surgery.
Seymour W. Rubin, M.D., Instructor in Pathology.
William J. Rysanek, Jr., M.D., Instructor in Gynecology.
Clarence P. Scarborough, M.D., Instructor in Surgery.
John F. Schaefer, B.S., M.D., Instructor in Surgery.
J. King B. E. Seegar, Jr., A.B., M.D., Instructor in Obstetrics.
Charles E. Shaw, M.D., Instructor in Medicine.³
Joseph C. Sheehan, B.S., M.D., Instructor in Gynecology ⁶
Robert C. Sheppard, M.D., Instructor in Surgery.
Jerome Sherman, M.D., Instructor in Medicine.²
Elizabeth D. Sherrill, M.D., Instructor in Medicine.²
Albert J. Shochat, B.S., M.D., Instructor in Gastro-Enterology.
George W. Smith, B.S., M.D., Instructor in Anatomy, Assistant in Neuro-Surgery.¹
Ruby A. Smith, B.S., M.D., Instructor in Ophthalmology.
Merrill J. Snyder, B.S., Instructor in Bacteriology.
Melchijah Spragins, B.S., M.D., Instructor in Pediatrics.
Stuart D. Sunday, M.D., Instructor in Medicine.²
William T. Supik, M.D., Instructor in Proctology.
Robert B. Tunney, A.B., M.D., Instructor in Gynecology.
Roy B. Turner, B.S., M.D., Instructor in Pathology;¹ and Neuro-Anatomy.¹⁴
William D. VandeGrift, M.D., Instructor in Pathology.

Effective appointment dates: Instructors.
¹⁰¹ Appointment Effective Aug. 1, 1951.
² Resigned April 30, 1951.
¹⁴ Feb. 1, to June 1, 1951.
Stephen J. Van Lill, III, A.B., M.D., Instructor in Medicine.²
Frederick J. Vollmer, B.S., M.D., Instructor in Medicine.
Gladys E. Wadsworth, B.S., M.A., Instructor in Anatomy.¹d
Charles Herman Williams, M.D., Instructor in Medicine.¹
Frederick S. Wolf, M.D., Instructor in Neurology.¹n
John D. Young, Jr., M.D., Instructor in Urology.¹

ASSISTANTS

Robert C. Abrams, M.D., Assistant in Orthopaedic Surgery.¹e
Fred B. Agee, M.D., Assistant in Medicine.¹
José A. Alvarez, M.D., Assistant in Neurological Surgery.
A. Maynard Bacon, Jr., B.S., M.D., Assistant in Pediatrics.⁶
Ruth W. Baldwin, M.D., Assistant in Pediatrics and Director of the Pediatrics Seizure clinic.¹
Thomas G. Barnes, M.D., Assistant in Surgery.¹
Harry McB. Beck, A.B., M.D., Assistant in Obstetrics.
Walter J. Benavent, B.S., M.D., Assistant in Plastic Surgery.
Harold P. Biehl, M.D., Assistant in Surgery.¹
Jane L. Bleakley, Assistant in Art as Applied to Medicine.
Jeniferd S. Boehm, A.B., Assistant in Art as Applied to Medicine.
Melvin M. Borden, M.D., Assistant in Pediatrics.¹
Frances C. Brown, A.B., Assistant in Physiology.
Bernard Burgin, A.B., M.D., Assistant in Medicine.¹
Lester H. Caplan, M.D., Assistant in Pediatrics.
James N. Cianos, M.D., Assistant in Surgery.
Raymond J. Clayton, Jr, Assistant in Art as Applied to Medicine.
Harry Cohen, B.S., M.D., Assistant in Obstetrics and Pathology.¹
Sarah Cook, A.B., M.D., Assistant Director Post Graduate Medicine, and Assistant in Pediatrics.
Donald D. Cooper, M.D., Assistant in Pediatrics.⁵
R. Adams Cowley, M.D., Assistant in Thoracic Surgery and Assistant Director Surgical Research.¹
Samuel H. Culver, M.D., Assistant in Surgery.
Martha Curtis, B.S., R.N., Assistant and Assistant Director, Medical Care Clinic.¹e
E. Hollister Davis, A.B., M.D., Assistant in Anaesthesia.
Patricia Dawson, Assistant in Art as Applied to Medicine.³
Michael L. DeVincentis, B.S., M.D., Assistant in Surgery.
William A. Dodd, B.S., M.D., Assistant in Obstetrics.¹
William C. Dunnigan, A.B., M.D., Assistant in Surgery.

Effective appointment dates: Instructors.
¹ Oct. 1, 1950—June 30, 1951
¹e Sept. 15, 1950.
Effective appointment dates; Assistants.
¹e Oct. 1, 1950.
¹* Jan. 1, 1951.
Shirley K. Fitzgerald, Assistant in Art as Applied to Medicine.\textsuperscript{a}
William N. Fitzpatrick, B.S., M.D., Assistant in Psychiatry.
Marjorie R. Fleitner, M.S.S., Assistant in Psychiatric Social Work.\textsuperscript{e}
Joseph B. Ganey, M.D., Assistant in Surgery.\textsuperscript{1}
Richard M. Garrett, M.D., Assistant in Surgery and Surgical Anatomy.\textsuperscript{1}
Marvin Goldstein, A.B., M.D., Assistant in Medicine.\textsuperscript{1}
Joseph B. Ganey, M.D., Assistant in Surgery.
Marvin Goldstein, A.B., M.D., Assistant in Medicine.\textsuperscript{1}
Caridad E. Gonzalez, M.D., Assistant in Pediatrics.\textsuperscript{3}
Howard Goodman, M.D., Assistant in Pediatrics.\textsuperscript{1}
Donald B. Hebb, A.B., M.D., Assistant in Thoracic Surgery.\textsuperscript{1}
John H. Hirschfeld, M.D., Assistant in Otolaryngology.
Hermione Hunt Hawkins, M.A., Assistant in Clinical Psychology.\textsuperscript{1d}
Sylvia Himmelfarb, A.B., Assistant in Physiology.
John V. Hopkins, M.D., Assistant in Orthopaedic Surgery.
Rollin C. Hudson, M.D., Assistant in Medicine.
Henry K. Jarrett, M.D., Assistant in Urology.\textsuperscript{1}
Everett D. Jones, M.D., Assistant in Orthopaedic Surgery.
Arthur Kandel, M.S., Assistant in Clinical Psychology.\textsuperscript{2e}
Vernon C. Kelley, A.B., M.D., Assistant in Obstetrics.\textsuperscript{1b}
Lauriston L. Keown, M.D., Assistant in Medicine.
Irvin P. Klemkowski, B.S., M.D., Assistant in Obstetrics.
Raymond M. Lauer, M.D., Assistant in Medicine.\textsuperscript{1}
Alfred S. Lederman, Assistant in Gastro-Enterology.
Lee R. Lerman, M.D., Assistant in Dermatology.\textsuperscript{1}
Frank E. Leslie, A.B., M.D., Assistant in Medicine.
Berton V. Lock, M.D., Assistant in Medicine.\textsuperscript{1}
William D. Lynn, A.B., M.D., Assistant in Surgery and Assistant Director Surgical Research.\textsuperscript{3}
W. Kenneth Mansfield, Jr., M.D., Assistant in Obstetrics.
Clarence W. Martin, M.D., Assistant in Obstetrics.
Howard B. McElwain, M.D., Assistant in Surgery.
Donald W. Mintzer, M.D., Assistant in Medicine.\textsuperscript{1}
Carl A. Myers, A.B., M.D., Assistant in Medicine.\textsuperscript{1}
Joseph C. Myers, M.D., Assistant in Medicine.\textsuperscript{1}
Pomeroy Nichols, Jr., M.D., Assistant in Neurological Surgery.
John C. Osborne, M.D., Assistant in Medicine.
John C. Ozazewski, M.D., Assistant in Ophthalmology.\textsuperscript{1}
Ross Z. Pierpont, M.D., Assistant in Surgery.
Susan R. Pincoffs, R.N., Assistant in Medicine.
Hazel Y. Pruitt, Assistant in Bacteriology.\textsuperscript{3}
Jeanne Ann Quinlin, A.B., Assistant in Physiology.\textsuperscript{1h}
James H. Ramsey, M.D., Assistant in Pathology.\textsuperscript{1}

Effective appointment dates; Assistants.
\textsuperscript{a} Feb. 26, 1951.
\textsuperscript{b} Feb. 1, 1951.
\textsuperscript{c} Oct. 1, 1950.
\textsuperscript{d} Nov. 1, 1950.
\textsuperscript{e} Jan. 1, 1951.
\textsuperscript{h} Sept. 16, 1951.
James Russo, M.D., Assistant in Anaesthesiology.
O. Walter Spurrer, M.D., Assistant in Pediatrics.
Vesta May Stevens, M.S.S., Assistant in Psychiatric Social Work.\textsuperscript{11}
Thomas McClelland Stevenson, Assistant in Art as Applied to Medicine.
T. J. Touhey, M.D., Assistant in Surgery.
Jack Wexler, A.B., M.D., Assistant in Medicine.
Marcella Wiseman, M.S.S., Assistant in Psychiatric Social Work.
Geraldine F. Wolfe, B.S., M.S., Assistant in Anatomy.\textsuperscript{12}
Thomas Worsley, M.D., Assistant in Medicine.
Howard L. Zupnik, M.D., Assistant in Surgery.

FELLOWS

Charles P. Barnett, A.B., M.D., Baltimore Rh Typing Laboratory Fellow in Medicine.\textsuperscript{1}
Frederick K. Bell, Ph.D., Fellow in Pharmacology.
George W. Bradford, M.D., Baltimore Rh Laboratory, Fellow in Medicine.
Leonard S. Brahen, B.S., M.S., Eli Lilly Fellow in Pharmacology.\textsuperscript{11}
James S. Browne, M.D., Fellow in Neurosurgery.
Robert S. Cato, A.B., M.D., Fellow in Roentgenology.\textsuperscript{6}
Robert M. N. Crosby, M.D., Fellow in Neurosurgery.\textsuperscript{6}
Ruth Page Edwards, A. B., A. M. Ph.D., Fellow in Psychology.\textsuperscript{11}
Richard F. C. Egan, M.S., John F. B. Weaver Fellow in Physiology.\textsuperscript{1}
Frank A. Faraino, B.S., M.D., Fellow in Thoracic Surgery.
Mary S. Fassel, A.B., Fellow in Pharmacology.
Martin K. Gorten, M.D., Baltimore Rh Typing Laboratory Fellow in Medicine.\textsuperscript{1}
John B. Harmon, B.S., Emerson Fellow in Pharmacology.
Dorothy H. Hubbard, A.B., M.S., Research Corporation Fellow in Biological Chemistry.\textsuperscript{1}
Dewitt T. Hunter, John F. B. Weaver Fellow in Anatomy.
Marvin Jaffee, M.D., Fellow in Psychiatry.\textsuperscript{16}
Theodore Kardash, B.S., M.D., Research Fellow in Gynecological Pathology.\textsuperscript{16}
Frederick Go-Kiatsu, B.S., M.D., Fellow in Pediatrics.
Gerald Kessler, B.S., Nutrition Foundation Fellow in Biological Chemistry.\textsuperscript{1}
Robert G. Leonard, B.S., M.S., Bressler Reserved Fund Fellow in Biological Chemistry.\textsuperscript{11}
Johnson S. L. Ling, A.B., M.S., Eli Lilly Fellow in Pharmacology.\textsuperscript{11}
William E. Loechel, U. S. Public Health Fellow in Medical Art.\textsuperscript{1d}
Go Lu, M.D., Fellow in Pharmacology.\textsuperscript{1k}
Louis O. J. Manganiello, A.B., M.D., Fellow in Neurosurgery.\textsuperscript{3}
Arlie R. Mansberger, Jr., M.D., Research Fellow in Surgery.
Eugene R. McNinch, M.D., Fellow in Roentgenology.\textsuperscript{16}

---

\textsuperscript{1} Sept. 15, 1950.
\textsuperscript{1k} Sept. 1, 1951 to Aug. 31, 1952.
\textsuperscript{11} Sept. 15, 1950.
\textsuperscript{12} Sept. 15, 1950.
\textsuperscript{1l} Aug. 31, 1952.
\textsuperscript{16} Sept. 1, 1951.
\textsuperscript{kd} Nov. 1, 1951.
\textsuperscript{kd} Oct. 1, 1950 to Sept. 30, 1951.
\textsuperscript{kd} Feb. 1, 1951.
\textsuperscript{kd} May 1, to Aug. 31, 1951.
\textsuperscript{kd} Sept. 15, 1950.

Effective appointment date: Assistants.

Effective appointment dates; Fellows.

Effective appointment date: Assistants.

Effective appointment dates; Fellows.
A. Gibson Packard, A.B., John F. B. Weaver Fellow in Anatomy.\textsuperscript{1a}
Sim Penton, M.D., Fellow in Thoracic Surgery.\textsuperscript{1f}
Gerardo B. Polanco, M.D., National Cancer Institute Trainee in Pathology.\textsuperscript{1}
J. Pomeroy Nichols, M.D., Fellow in Neurological Surgery.
James H. Shell, B.S., M.D., Hitchcock Fellow in Gynecology.\textsuperscript{1}
George W. Smith, M.D., Hitchcock Fellow in Neurosurgery.\textsuperscript{1}
Thomas A. Stebbins, A.B., Medical Illustrator in Gynecology.
Virginia Suttonfield, M.D., Fellow in Psychiatry.\textsuperscript{1b}
Edward B. Truitt, B.S., Fellow American Foundation for Pharmaceutical Education.\textsuperscript{1}
Roy B. Turner, M.D., Fellow in Neurosurgery.\textsuperscript{1n}
Robert T. Walker, M.D., Fellow in Medicine.
Annemarie Weber, U.S.P.H., Fellow in Physiology.\textsuperscript{1b}
John I. White, Ph.D., U.S.P.H., Fellow in Physiology.\textsuperscript{1b}
Joseph B. Workman, A. B., M.D., Research Fellow in Medicine.\textsuperscript{1}

CONSULTANTS
Robert W. Swain, B.S., Consultant in Radiologic Physics.\textsuperscript{1n}

RESEARCH ASSISTANTS
Maryanne E. Berger, Research Assistant in Anatomy.\textsuperscript{1}
Richard E. Brown, B.S., Research Assistant in Bacteriology.\textsuperscript{1}
Catherine S. Brunst, A.B., Research Assistant in Anatomy.
Betty J. Fox, Ph.D., Research Assistant in Psychiatry.\textsuperscript{1b}
Eleanor G. B. Ginos, A.B., Research Assistant in Biological Chemistry.\textsuperscript{1d}
William McKendre Headley, B.S. Research Assistant in Neurosurgery.\textsuperscript{1f}
Carolyn F. Hendrickson, B.S., Research Assistant in Physiology.\textsuperscript{1d}
Earnest C. Herrmann, Jr., B.S. Research Assistant in Bacteriology.\textsuperscript{1a}
Robert C. Holcombe, A.B., Research Assistant in Pharmacology.\textsuperscript{1f}
Bernard Kramer, A.B., Research Assistant in Bacteriology.\textsuperscript{1}
Anne McNicholas Laster, A.B., Research Assistant in Pediatrics.\textsuperscript{1e}
Joseph R. Merkel, B.S., Research Assistant in Bacteriology\textsuperscript{1}
Carolyn Mae Miller, A.B., Research Assistant in Psychiatry.\textsuperscript{1}
Irwin H. Moss, A.B., Research Assistant in Medicine.\textsuperscript{1e}
Jean D. Nimmo, A.B., Research Assistant in Biological Chemistry.
John Walker Powell, Ph.D., Research Assistant in Psychiatry.\textsuperscript{1}
Jeanette F. Rayner, Research Assistant in Psychiatry.
Elizabeth R. Steele, A.B., Research Assistant in Anatomy.\textsuperscript{1f}
Carolyn M. Stout, M.S., Research Assistant in Physiology.\textsuperscript{1f}

Effective appointment dates; Fellows.
\textsuperscript{1f} Oct. 1, 1950.
\textsuperscript{1b} April 16, 1951.
Effective appointment dates: Consultants.
\textsuperscript{1a} Oct. 1, 1951.
Effective appointment dates: Research Assistants.
\textsuperscript{1a} Feb. 1, 1951.
\textsuperscript{1b} Jan. 1, 1951.
\textsuperscript{1e} June 7, 1951 to Apr. 30, 1952.
\textsuperscript{1d} April 1, 1951.
\textsuperscript{1f} Jan. 15, 1951.
\textsuperscript{1e} June 1, to July 31; Sept. 1 , to Sept. 15, 1951.
\textsuperscript{1f} Aug. 31, 1951.
\textsuperscript{1i} June 1, to July 31, 1951.
\textsuperscript{1f} Julur 16, 1951.
Barbara Elizabeth Todd, A.B., Research Assistant in Psychiatry.\textsuperscript{11}
Albert L. Tucker, A.B., Research Assistant in Pediatrics.\textsuperscript{1b}
Margaret Lucille Ward, A.B., M.S.S., Research Assistant in Pediatrics.\textsuperscript{1a}
Amy Lee Wells, R.N., Research Assistant in Gynecological Pathology.\textsuperscript{1m}
David Willenson, M.S., Research Assistant in Psychology.\textsuperscript{1e}
Richard A. Young, M.D., Research Assistant in Pediatrics.\textsuperscript{1k}

**EXTRAMURAL ASSISTANT RESIDENTS IN MEDICINE**

John F. Benson, M.D., Assistant Resident in Medicine.
Robert H. Hahn, M.D., Rotating Assistant Resident in Medicine.
Howard E. Hall, M.D., Assistant Resident in Medicine.
John A. Hightower, M.D., Rotating Assistant Resident in Medicine.
William Roemmich, M.D., Assistant Resident in Medicine.
Sidney J. Venable, M.D., Assistant Resident in Medicine.

**UNIVERSITY HOSPITAL**

\textbf{GEORGE H. BUCK, Director}
\textbf{JAMES L. DACK, Asst. Director}
\textbf{KURT H. NORK, Asst. Director}

**EXECUTIVE COMMITTEE OF THE STAFF**

\textbf{EDWARD F. COTTER, Chairman}
\textbf{FRANCIS G. DICKEY, Secretary-Treasurer}

\begin{verbatim}
J. EDMUND BRADLEY
LOUIS H. DOUGLASS
CHARLES REID EDWARDS
JACOB E. FINESINGER
J. MASON HUNDLEY, JR.
\end{verbatim}

\begin{verbatim}
WALTER L. KILBY
F. EDWIN KNOWLES, JR.
ALFRED T. NELSON
MAURICE C. PINEOFFS
MILTON S. SACKS
\end{verbatim}

\textbf{GEORGE H. YEAGER}

\begin{verbatim}
Elected Members Term Expires
A. H. FINKELSTEIN. . . . . . . . . . . . . 1951
EPHRAIM T. LISANSKY. . . . . . . . . . . 1951
JAMES G. ARNOLD, JR. . . . . . . . . . . 1952
ERNST I. CORNBROOKS, JR. . . . . . . . 1952
EVERETT G. DIGGS. . . . . . . . . . . . . 1953
WILLIAM G. HELFRICH. . . . . . . . . . . 1953
GEORGE H. BUCK, Director, University Hospital} Ex officio members
H. BOYD WYLIE, Dean, School of Medicine}
\end{verbatim}

Effective appointment dates: Research Assistants.
\textsuperscript{1a} Sept. 1, 1950.
\textsuperscript{1b} June 15, to Aug. 31, 1951.
\textsuperscript{1k} Aug. 1, to Dec. 1, 1951.
\textsuperscript{1m} July 16, 1951.
\textsuperscript{1e} May 1 to Aug. 31, 1951.
\textsuperscript{1k} Sept. 1, 1951.
UNIVERSITY HOSPITAL STAFF

Physician-in-Chief ........................................ Maurice C. Pincoffs
  Thomas P. Sprung
  T. Nelson Carey
  Louis A. M. Krause
  William S. Love, Jr.
  Howard M. Bubert
  Milton S. Sacks
  Lewis P. Gundry

Physicians ......................................................
  Samuel Morrison
  Theodore E. Woodward
  Frank J. Geraghty
  Edward F. Cotter
  C. Edward Leach
  Ephraim T. Lisansky
  Samuel T. R. Revell, Jr.
  Irving J. Spear
  Leon Freedom

Neurologists ...................................................
  William Fearing
  Edward F. Cotter
  George Merrill

Dermatologist-in-Chief .....................................
  Harry M. Robinson, Sr.
  Francis A. Ellis
  Harry M. Robinson, Jr.

Dermatologists ................................................
  A. Albert Shapiro
  Israel Zeligman
  Eugene S. Bereston

Psychiatrist-in-Chief ......................................
  Jacob E. Finesinger

Psychiatrists ..................................................
  H. Whitman Newell
  Kathryn L. Schultz
  Ephraim T. Lisansky

Pediatrician-in-Chief ......................................
  J. Edmund Bradley
  C. Loring Joslin
  Gordon E. Gibbs

Pediatricians ................................................
  A. H. Finkelstein
  William M. Seabold

Pathologist-in-Chief ........................................
  Hugh R. Spencer

Pathologists ..................................................
  John A. Wagner

Surgeon-in-Chief ............................................
  Charles Reid Edwards
  George H. Yeager
  Otto C. Brantigan
  Charles A. Reifschneider
  Harry C. Hull

Surgeons ........................................................
  Charles Bagley, Jr.

Neurological Surgeon-in-Chief ............................
  Richard G. Coblentz

Neurological Surgeons ......................................
  James G. Arnold, Jr.
UNIVERSITY HOSPITAL STAFF—Cont’d.

Laryngologist-in-Chief............................... Edward A. Looper
Laryngologists............................... Thomas R. O’Rourke
Proctologist-in-Chief............................... Frederick T. Kyper
Proctologist................................... Monte Edwards
Orthopedic Surgeon-in-Chief..................... Thurston R. Adams
Orthopedic Surgeons................................
Urologist-in-Chief................................. Allen F. Voshell
Urologists........................................ Howard B. Mays
Dental Surgeon-in-Chief............................. Myron S. Aisenberg
Dentists............................................ Hugh T. Hicks
Roentgenologist-in-Chief................................ Walter L. Kilby
Roentgenologists.................................. Donald J. Barnett
Bronchoscopist-in-Chief............................ Edward A. Looper
Bronchoscopists.................................. Ross C. Brooks
Otologist-in-Chief................................ Thomas R. O’Rourke
Anesthesiologist-in-Chief........................ Alfred T. Nelson
Anesthesiologist.................................. Louis H. Douglass
Obstetricians-in-Chief.............................. D. Frank Kaltreider
Obstetricians..................................... John E. Savage
Ophthalmologist-in-Chief.......................... F. Edwin Knowles, Jr.
Ophthalmologist................................... Paul N. Friedman
SCHOOL OF MEDICINE

UNIVERSITY HOSPITAL STAFF—Cont’d.

Assistant Ophthalmologists .......................................... J. E. Brumback
Ruby A. Smith

Gynecologist-in-Chief .................................................. J. Mason Hundley, Jr.
Leo Brady
Beverley C. Compton
William K. Diehl
Everett S. Diggs
Ernest I. Cornbrooks, Jr.
John C. Dumler

Gynecologists .............................................................

Oncologist-in-Chief ..................................................... J. Mason Hundley, Jr.

UNIVERSITY HOSPITAL RESIDENT AND INTERN STAFF
July 1, 1951 to June 30, 1952

José A. Alvarez, B.S., M.D., Co-Resident in Neurosurgery, Baltimore City Hospital, July 1, 1951 to January 31, 1952; Resident in Neurological Surgery University Hospital, Feb. 1, 1952 to June 30, 1952.

Charles Bagley, III, B.S., M.D., Assistant Resident in Surgery
Claude F. Bailey, A.B., M.D., Assistant Resident in Gynecology
Thomas G. Barnes, A.B., M.D., Co-Resident in Surgery
James M. Bisanar, M.D., Assistant Resident in Pediatrics
Francis J. Borges, B.S., M.D., Assistant Resident in Medicine
Joseph B. Bronushas, B.S., M.D., Assistant Resident in Medicine
James S. Browne, M.D., Assistant Resident in Neurosurgery
Donald B. Campbell, M.D., Assistant Resident in Obstetrics
Garrett E. Deane, M.D., Resident in Pediatrics
Victor H. Esch, M.D., Assistant Resident in Surgery
John E. Evans, B.S., M.D., Assistant Resident in Surgery
Joseph E. Furman, B.S., M.D., Assistant Resident in Pediatrics
Joseph B. Ganey, A.B., M.D., Co-Resident in Surgery
Richard A. Gilbert, M.D., Resident in Gynecology
Martin K. Gorten, A.B., M.D., Assistant Resident in Pediatrics
Angelina Guido, A.B., M.D., Resident in Ophthalmology
John R. Hankins, B.A., M.D., Assistant Resident in Surgery
Robert M. Hidey, Jr., M.D. Assistant Resident in Pediatrics
John A. Hightower, M.D., Resident in Medicine
Erwin R. Jennings, A.B., M.D., Assistant Resident in Surgery
Douglas O. Kern, M.D., Assistant Resident in Gynecology
August Kiel, Jr., M.D., Assistant Resident in Neurosurgery
Eugene R. McNinch, M.D., Fellow in Roentgenology
James R. McNinch, Jr., A.B., M.D., Assistant Resident in Surgery
Arlie R. Mansberger, Jr., M.D., Assistant Resident in Surgery
Mary E. Matthews, B.S., M.S., M.D., Assistant Resident in Pediatrics
Thomas D. Michael, M.D., Assistant Resident in Otolaryngology
John W. Newman, M.D., Assistant Resident in Obstetrics
S. Malone Parham, A.B., M.D., Resident in Obstetrics
Sim Penton, M.D., Resident in Thoracic Surgery
Carol G. Pryor, A.B., M.D., Assistant Resident in Gynecology
Benson C. Schwartz, M.D., Assistant Resident in Obstetrics, assigned to Gynecology.
George W. Smith, B.S., M.D., Co-Resident in Neurosurgery, University Hospital, July 1, 1951 to January 31, 1952; Resident in Neurological Surgery Mercy Hospital, Feb. 1, 1952 to June 30, 1952.

Edward P. Smith, Jr., B.S., M.D., Assistant Resident in Surgery
José G. Valderas, M.D., Assistant Resident in Gynecology, assigned to Obstetrics
Leslie A. Walker, Jr., M.D., Assistant Resident in Gynecology
John P. White, III, M.D., Assistant Resident in Surgery
Richard A. Young, A.B., M.D., Assistant Resident in Pediatrics
Henry F. Zangara, B.S., M.D., Resident in Roentgenology

Rotating Interns

John W. Bossard, B.A., M.D.  Henry D. Perry, Jr., A.B., M.D.
George M. Dunn, Jr., M.D.  Henry G. Reeves, Jr., B.S., M.D.
Joseph C. Fitzgerald, B.A., M.D.  Eugene B. Rex, M.D.
Henry E. Langenfelder, B.A., M.D.  Aubrey D. Richardson, B.S., M.D.
John S. Metcalf, Jr., M.D.  Roger D. Scott, M.D.
Robert A. Moore, Jr., A.B., M.D.  R. Kennedy Skipton, B.S., M.D.
Robert S. Mosser, B.S., M.D.  Charles P. Watson, Jr., A.B., M.D.

Extern

Arthur Schmale, M.D.  Department of Medicine

University Hospital Outpatient Department Staff

Kurt H. Nork  Director

Chief of Medical Clinic  Maurice C. Pincoffs
Assistant Chief, Medical Clinic  Joseph C. Furnari
Consultants  T. Nelson Carey
L. A. M. Krause
William K. Waller
Walter Karfgin
Louis V. Blum
Kurt Levy
Alvin Hartz
Joseph E. Muse, Jr.
James R. Karns
Morris Fine
Jonas Cohen
John B. DeHoff

Physicians  Robert E. Bauer
Charles H. Williams
Stephen Van Lill, III
Charles E. Shaw
Joseph G. Bird
Marvin Goldstein
Donald Mintzer
Fred Agee
Marvin Davis
Herbert Levicus
Lauriston Keown

1 Until October 31, 1951. Fellow beginning November 1, 1951.
SCHOOL OF MEDICINE

UNIVERSITY HOSPITAL OUTPATIENT DEPARTMENT—cont'd.

Chief of Gastro-Enterology Clinic................. FRANCIS G. Dickey
Assistant Gastro-Enterologist...................... {Z. VANCE HOOPER
                                              {ALBERT J. SHOCHAT
Chief of Neurology Clinic........................... LEON FREEDOM
Assistant Neurologists............................. {WILLIAM L. FEARING
                                              {HARRY A. TEITELBAUM
Chief of Chest Clinic.............................. MEYER W. JACOBSON
Assistant, Diseases of the Lungs............... MANUEL LEVIN
Chief of Diabetic Clinic......................... SAMUEL T. R. REVELL, JR.

Assistants.................................................
{CHARLES E. SHAW
  JOSEPH G. BIRD
  PERRY O. FUTTERMAN
Chief of Cardiovascular Clinic................ C. EDWARD LEACH
Assistant Cardiologists......................... {WILFRED H. TOWNSHEND
                                              {ROLLIN C. HUDSON
                                              {SIDNEY SCHERRIS
                                              {STEPHEN J. VAN LILI, III
                                              {FRED B. AGEE, JR.
                                              {JAMES J. NOLAN

Chief of Allergy Clinic.......................... HOWARD M. BUBERT
Assistant Chiefs of Allergy Clinic............... IRVIN B. KEMICK
                                              JEROME SHERMAN
Assistant Allergists............................... {EDWARD S. KALLINS
                                              {RAYMOND M. LAUER
Allergy Clinic Technician........................ ANNA SUTCH
Chief of Endocrinology Clinic.................. CONRAD B. ACTON
Director of Dermatology and Syphilis Clinic.... HARRY M. ROBINSON, SR.
Chief of Dermatology and Syphilis Clinic....... HARRY M. ROBINSON, JR.

Dermatologists and Syphilologists................
{FRANCIS A. ELLIS
  ISRAEL ZELIGMAN
  A. ALBERT SHAPIRO
  R. C. V. ROBINSON
  EUGENE S. BERESTON
  WILLIAM R. BUNDICK
{BENJAMIN HIGHSTEIN
  LUCILE CALDWELL
  V. HARWOOD LINK
  MORRIS M. COHEN
  MARK B. HOLLANDER
  LEE R. LERMAN

Assistant Dermatologists and Syphilologists.....

Director of Psychiatric Clinic.................. H. WHITMAN NEWELL
UNIVERSITY HOSPITAL OUTPATIENT DEPARTMENT—Cont’d.

Assistant Psychiatrists

Kathryn L. Schultz
Hans W. Loewald
Ephriam Lisansky
Isadore Tuerk
Rudolph Marburg
Sam Novey
G. S. Ingalls
Leon Ferber
Gertrude Gross
Enoch Gallaway, III
William N. Fitzpatrick
Marion Mathews
Marvin Jaffe
Virginia Suttonfield

Chief Roentgenologist

Walter L. Kilby

Roentgenologists

Chief of Pediatric Clinic

A. H. Finkelstein

Assistant Pediatricians

Chief of Pediatric Clinic

Samuel S. Glick

Chief of Plastic Surgery

Edward A. Kitowski

Assistant Psychiatrists

John M. Dennis
Charles N. Davidson
Donald J. Barnett

Assistance Roentgenologist

Walter L. Kilby

Director, Pediatric Clinic

A. H. Finkelstein

Assistant Pediatricians

Samuel S. Glick

Director, Pediatric Cardiac Clinic

Sidney Scherlis

Assistant Director, Pediatric Cardiac Clinic

Gibson J. Wells

Assistant Pediatrician, Cardiac Clinic

Mary Hayleck

Director, Pediatric Seizure Clinic

Ruth B. Baldwin

Chief of Surgical Clinic

Robert C. Sheppard

Assistant Surgeons

Samuel E. Proctor
William B. Settle
Karl F. Mech
James N. Cianos
Richard M. Garrett
William D. Lynn
David R. Will

Chief of Plastic Surgery

Edward A. Kitowski
UNIVERSITY HOSPITAL OUTPATIENT DEPARTMENT—Cont'd.

Chief of Orthopedic Surgery Clinic................. ALLEN FISKE VOSHELL
   MOSES GELLMAN
   HENRY F. ULLRICH
   MILTON J. WILDER
   JAMES P. MILLER
   ROBERT C. ABRAMS
   EVERETT D. JONES
   JOHN J. TANSEY
   JOHN L. WOOTON

Assistant Orthopedic Surgeons.................. W. HOUSTON TOULSON
   JOHN F. HOGAN
   LYLE J. MILLAN
   MORRIS A. FINE
   HOWARD B. MAYS
   JOHN D. YOUNG
   MARTIN A. ROBBINS

Chief of Urology Clinic......................... BENJAMIN S. RICH
   SAMUEL L. FOX
   ALBERT STEINER
   RICHARD J. CROSS
   JOHN M. REHBERGER
   THOMAS D. MICHAEL

Assistant Urologists.......................... MONTE EDWARDS
   THURSTON R. ADAMS
   DONALD B. HEBB
   WILLIAM J. SUPIK
   RAYMOND CUNNINGHAM

Chief of Otolaryngology Clinic.............. J. MASON HUNDLEY, JR.

Otolaryngologists............................ J. MASON HUNDLEY, JR.
   ERNEST I. CORNBROOKS, JR.
   W. ALLEN DECKERT
   HELEN I. MAGINNIS
   CHARLES B. MAREK
   THEODORE KARDASH
   JOHN C. DUMLER

Chief of Proctology Clinic................... LEWIS C. TOOMEY
   BRICE M. DORSEY

Assistant Proctologists....................... LEWIS C. TOOMEY
   BRICE M. DORSEY

Chief of Gynecology Clinic.................. J. MASON HUNDLEY, JR.
   BEVERLEY C. COMPTON

Assistant Chief of Gynecology Clinic.......... J. MASON HUNDLEY, JR.
   BEVERLEY C. COMPTON
   WILLIAM K. DIEHL
   EVERETT S. DIGGS
   ERNEST I. CORNBROOKS, JR.
   W. ALLEN DECKERT

Assistant Gynecologists...................... J. MASON HUNDLEY, JR.
   BEVERLEY C. COMPTON
   WILLIAM K. DIEHL
   EVERETT S. DIGGS
   ERNEST I. CORNBROOKS, JR.
   W. ALLEN DECKERT

Female Cystoscopists....................... J. MASON HUNDLEY, JR.
   BEVERLEY C. COMPTON
   WILLIAM K. DIEHL
   EVERETT S. DIGGS
   ERNEST I. CORNBROOKS, JR.

Chief of Dental Clinic...................... LEWIS C. TOOMEY
   BRICE M. DORSEY

Assistant Chief of Dental Clinic.............. LEWIS C. TOOMEY
OUT-PATIENT REPORT
JANUARY 1, 1950 TO JANUARY 1, 1951

<table>
<thead>
<tr>
<th>Departments</th>
<th>New Cases</th>
<th>Old Cases</th>
<th>Total</th>
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<tbody>
<tr>
<td>Allergy</td>
<td>190</td>
<td>4,973</td>
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<td>Arthritis</td>
<td>55</td>
<td>247</td>
<td>302</td>
</tr>
<tr>
<td>Cardiology</td>
<td>195</td>
<td>1,150</td>
<td>1,345</td>
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<tr>
<td>Departments</td>
<td>New Case</td>
<td>Old Cases</td>
<td>Total</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>----------</td>
<td>-----------</td>
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<tr>
<td>Cystoscopy (Gynecological)</td>
<td>94</td>
<td>546</td>
<td>640</td>
</tr>
<tr>
<td>Cystoscopy (Genito-Urinary)</td>
<td>77</td>
<td>50</td>
<td>127</td>
</tr>
<tr>
<td>Dermatology</td>
<td>5,401</td>
<td>8,744</td>
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**MEDICAL CARE CLINIC**

**UNIVERSITY HOSPITAL**

*Director* ........................................... Henry W. D. Holljes  
*Assistant Director* .................................. Martha Curtis

The Medical Care Clinic of the University of Maryland is the result of a study by the Medical and Chirurgical Faculty of Maryland in cooperation with the State Planning Commission. The present Clinic, located on the third floor of the Dispensary Building, is the first of its kind in this country. Public assistance clients are referred to the Clinic by the Baltimore City Health Department and are scheduled for an initial physical examination by physicians affiliated with the
University of Maryland. A family physician is chosen by the patient from a list available at the Clinic. Copies of the individual's medical history and examinations are sent to the physician selected, who then becomes responsible for the medical care of the patient.

The Medical Care Program is, in this way, an entirely new approach to the problem of the indigent patient. For the first time, he becomes the responsibility of a private physician. This places the practice of medicine to the indigent on a par with the practice of private medicine.

After the initial examination, the Clinic functions as a diagnostic center to serve the needs of the neighborhood practitioner. Consultants working in the Medical Care Clinic are available and at present represent Medicine, Surgery, Gynecology and Otolaryngology. Others will be added as required.

The Clinic functions between 8:30 and 4:30 daily. Registrations and referrals are conducted in the morning. Clinical examinations and consultations are held during the afternoon. Approximately eighty neighborhood physicians have agreed to work with the Medical Care Program. Twenty-five members of the Out-patient Department and University Hospital Staff will conduct examinations in the Clinic.

The Faculty Committee on Post Graduate Education has also undertaken plans to provide instruction to all affiliated physicians.

4,606 public assistance clients have been assigned to this Clinic.

MERCY HOSPITAL
BOARD OF GOVERNORS
WALTER D. WISE, Chairman

MOTHER M. BERNADETTE
SISTER M. VERONICA
SISTER M. CARMEL
SISTER M. ELLEN MARIE
SISTER M. FRANCES LOUISE
SISTER M. DAMIAN
SISTER M. THOMAS
SISTER M. BRENDAN

HENRY F. BONGARDT
H. RAYMOND PETERS
MAURICE C. PINCOFFS
WAITMAN F. ZINN
THOMAS K. GALVIN
EDWARD P. SMITH
ELLIOTT H. HUTCHINS
SIMON BARGER

ADVISORY BOARD OF MERCY HOSPITAL

MOST REVEREND LAWRENCE J. SHEEHAN
HENRY C. EVANS
THOMAS B. BUTLER
H. C. BYRD
CHARLES C. CONLON
CLARENCE E. ELDERKIN
RICHARD A. FROEHLINGER
WILLIAM L. GALVIN

AUGUST B. HANEKE
SAMUEL H. HOFFBERGER
JAMES W. MCELROY
ALLEN W. MORTON
S. PAGE NELSON
THOMAS W. PANGBORN
WILLIAM F. SCHMICK
# Mercy Hospital Staff

## Surgeon-in-Chief
- Walter D. Wise

## Surgeons
- Elliott H. Hutchins
- D. J. Pessagno
- F. L. Jennings
- R. W. Locher
- Thomas R. Chambers
- William F. Rienhoff
- Henry F. Bongardt

## Neurological Surgeon-in-Chief
- Charles Bagley, Jr.
- Richard B. Coblentz
- James D. Arnold, Jr.

## Neurological Surgeons
- Frank J. Otenasek
- John W. Chambers
- Raymond K. Thompson
- I. O. Riddely
- James W. Nelson
- Howard B. McElwain
- Simon H. Brager

## Associate Surgeons
- John A. O'Connor
- Charles W. Maxson
- I. Ridgeway Trimble
- Raymond F. Helfrich
- Julius Goodman
- S. Demarco, Jr.
- T. J. Touhey
- William N. McFaul, Jr.
- Meyer H. Zuravin
- Howard L. Zupnik
- Daniel R. Robinson
- Joseph V. Jerardi
- Wm. C. Dunnigan
- Harold H. Burns
- William L. Garlick
- John F. Schaeffer
- F. Ford Loker
- Patrick C. Phelan, Jr.
- Michael L. DeVincentis
- Harold P. Breil

## Thoracic Surgeon-in-Chief
- William L. Garlick

## Plastic Surgeons
- Edward A. Kitlowski
- Clarence P. Scarborough

## Ophthalmologist-in-Chief
- F. Edwin Knowles, Jr.

## Associate Ophthalmologist
- Joseph V. Jeppi
- M. Raskin

## Associate Ophthalmologists and Otologists
- Joseph I. Kemler
- F. A. Pacienza
MERCY HOSPITAL STAFF—Cont'd.

Consulting Rhinologists and Laryngologists .......................... W. Raymond McKenzie
                    (George W. Mitchell)
Rhinologist and Laryngologist-in-Chief ................................ Waitman F. Zinn
                    (Raymond McKenzie Consulting Rhinologists and Laryngologists)
Associate Rhinologists and Laryngologists ............................ Theodore A. Schwartz
                    (Benjamin S. Rich)
Assistant Rhinologist and Laryngologist ............................... Joseph V. Jeppi
Bronchoscopist-in-Chief .................................................. Waitman F. Zinn
Associate Bronchoscopist ................................................... Fayne A. Kayser
Assistant Bronchoscopists .................................................. Theodore A. Schwartz
                    (Robert Z. Berry)
Orthopaedic Surgeon-in-Chief .......................................... H. L. Rogers
Associate Orthopaedic Surgeon .......................................... Henry F. Ullrich
                    (I. H. Maseritz)
Assistant Orthopaedic Surgeons ...........................................
                    (J. H. Gaskel)
                    (Isaac Gutman)
                    (Everett D. Jones)
Proctologist-in-Chief .................................................... Simon P. Brager
Proctologist ................................................................. William J. Supic
Urologist-in-Chief .......................................................... Kenneth D. Legge
                    (Leon K. Fargo)
Associate Urologists ...................................................... Francis W. Gillis
                    (J. S. Haines)
                    (John D. Young, Jr.)
Dermatologist-in-Chief ...................................................... Francis A. Ellis
Dermatologists ............................................................... Eugene S. Bereston
                    (R. C. V. Robinson)
                    (William R. Bundick)
Dentist .......................................................... J. D. Fusco
Consulting Dentist ...................................................... Conrad L. Inman
Consulting Physician ..................................................... Maurice C. Pincoffs
Consultant, Diseases of the Chest ..................................... H. Vernon Langeluttig
Physician-in-Chief .......................................................... H. Raymond Peters
                    (Harvey G. Beck)
                    (Thomas P. Sprunt)
                    (George McLean)
                    (J. Sheldon Eastland)
                    (Louis A. M. Krause)
                    (Thomas C. Wolff)
                    (T. Nelson Carey)
                    (Sol Smith)
MERCY HOSPITAL STAFF—Cont'd.

Associate Physicians .........................................................
HUBERT C. KNAPP
BARTUS T. BAGGOTT
WETHERBEE FORT
HUGH J. WELCH
S. EDWIN MULLER
FREDERICK J. VOLLMER
WILLIAM H. KAMMER
S. A. TUMMINELLO
J. HOWARD BURNS
EARL L. CHAMBERS
K. W. GOLLEY
JOHN R. DAVIS, JR.

Assistant Physicians ..................................................
J. EMMETT QUEEN
JOHN C. OSBORNE
ARTHUR KARFGLN
HENRY J. MARRIOTT
JAMES J. NOLAN
MAURICE FELDMAN, JR.

Gastro-Enterologist ...................................................
MAURICE FELDMAN

Associate Gastro-Enterologist ..........................
PHILIP D. FLYNN

Consulting Pediatrician ......................................
EDGAR B. FRIEDENWALD

Pediatrician-in-Chief ........................................
FREDERICK B. SMITH

Associate Pediatrician ....................................
G. BOWERS MANSDORFER

| JEROME FINEMAN |
| O. WALTER SPURRIER |
| ISRAEL P. MERRANKI |
| EDWARD L. FREY, JR. |

Assistant Pediatricians ...................................
EARL WEEKS
A. M. BACON, JR. 6
DONALD D. COOPER
JOSEPH M. CORDI
J. CARLTON WICH
HARRY GOLDSMITH
PHILIP F. LERNER

Associate Neurologists and Psychiatrists ........
GEORGE G. MERRILL
EDWARD L. SUAREZ-MURIAS
FREDERICK S. WOLF 6

Anesthesiologist ..............................................
JAMES RUSSO

Consulting Obstetrician ................................
EDWARD P. SMITH

Obstetrician-in-Chief ..................................
JOHN J. ERWIN

Obstetricians ..................................................
THOMAS K. GALVIN
FRANK K. MORRIS
ERNEST S. EDELW
HUGH B. MCNALLY

---

6 In Military Service.
MERCY HOSPITAL STAFF—Cont’d.

Associate Obstetricians ........................................... William C. Duffy
Charles H. Doeller, Jr.
William A. Dodd
Harry McB. Beck
Joseph C. Sheehan
Robert B. Tunney
J. Howard Burns
Harry F. Kane
William J. Rysanek, Jr.

Assistant Obstetricians ..........................................

Gynecologist-in-Chief ............................................. Thomas K. Galvin

Gynecologists ....................................................... Edward P. Smith
John J. Erwin
Frank K. Morris
George A. Strauss, Jr.
Ernest S. Edlow

Associate Gynecologists .......................................... Charles H. Doeller, Jr.
William A. Dodd
Harry McB. Beck
William C. Duffy
Gerald A. Galvin
Joseph C. Sheehan
Robert B. Tunney
Harry F. Kane
William J. Rysanek, Jr.

Assistant Gynecologists ...........................................

Pathologist-in-Chief ............................................... Walter C. Merkel

Pathologist ......................................................... Hugh R. Spencer

Clinical Pathologist ................................................ H. T. Collenberg

Clinical Hematologist ............................................. H. Raymond Peters

Clinical Biochemist ................................................ Charles E. Brambel

Technicians ........................................................ Rita Berry
Jeanne Merritt
Florese Samorodin
Doris Stang
Mary Meyer
Anne Murdock

Radiologist .......................................................... Edward R. Dana

Technicians (X-ray) ................................................. Henrietta McCaffrey
Frances Muth
Shirley Akers

Sister M. Kevin
Mary Gorman
MERCY HOSPITAL RESIDENT AND INTERN STAFF
JULY 1, 1951—JUNE 30, 1952

RESIDENT STAFF

KARL A. DILLINGER, B.S., M.D. 
Resident Surgeon

CLYDE D. THOMAS, Jr., M.D. 
Associate Resident Surgeon

MARGARET L. SHERRARD, B.A., M.D. 
Senior Assistant Resident Surgeon

LEONARD G. HAMBERY, A.B., M.D. 
Junior Assistant Resident Surgeon

WILLIAM B. REVER, Jr., M.D. 
Junior Assistant Resident Surgeon

SIM PENTON, M.D. 
Resident in Thoracic Surgery*

POMEROY NICHOLS, Jr., M.D. 
Senior Resident in Neurosurgery (July 1, 1951—January 31, 1952)

GEORGE W. SMITH, M.D. 
Senior Resident in Neurosurgery (February 1, 1952—June 30, 1952)

JOHN A. FERRIS, B.S., M.D. 
Resident Gynecologist

ARTHUR R. FLEMING, B.S., M.D. 
Resident Obstetrician

HOWARD F. RASKIN, B.A., M.D. 
Resident Physician

CHARLES R. IRELAND, M.D. 
Assistant Resident Physician

FRANK T. KASIK, Jr., B.S., M.D. 
Assistant Resident Physician

FREDERICK J. HELDRICH, Jr., B.A., M.D. 
Resident Pediatrician

INTERNS

JOHN R. BUELL, Jr., M.D. 
WILLIAM H. H. SHEA, B.S., M.D.

RAYMOND L. CLEMMONS, B.S., M.D. 
LESLIE D. SIMMONS, B.S., M.D.

HOWARD C. KRAMER, M.D. 
EDWARD N. SIPPLE, M.D.

FRANK R. PERILLA, B.S., M.D. 
JOHN H. STONE, B.S., M.D.

JENO BAUMANN, M.D.†

MERCY HOSPITAL DISPENSARY STAFF

Dispensary Director.................................... SISTER M. ANITA
Director of Surgical Clinic............................ WALTER D. WISE
Chief of Surgical Clinic............................... HAROLD H. BURNS

I. RIDGEWAY TRIMBLE
HOWARD L. ZUPNIE
DANIEL R. ROBINSON
JOSEPH V. JERARDI
WILLIAM C. DUNNIGAN
JOHN F. SCHAEFFER

F. FORD LOKER
PATRICK C. PHelan
ARTHUR G. SWINSKI
MELVIN F. POLEK
MICHAEL L. DEVINCENTIS
PAUL R. ZIEGLER
HAROLD P. BIEHL

* Resident at Mercy, City and University Hospitals.
† Term expires February 11, 1952.
MERCY HOSPITAL DISPENSARY STAFF—Cont'd.

Chief of Plastic Surgery .................................. Edward A. Kitlowski
Assistant in Plastic Surgery .................................. Clarence P. Scarborough
Chief of Urology Clinic .................................. Kenneth D. Legge
Assistant Urologists .................................. Francis W. Gillis
L. K. Fargo
John S. Haines
John D. Young, Jr.
Chief of Orthopaedic Clinic .................................. Harry L. Rogers
Orthopaedic Surgeons .................................. Henry F. Ullrich
Isaac Gutman
I. H. Maseritz
Jason H. Gaskel
Everett D. Jones
Director of Neuro-Surgery Clinic ................................. Charles Bagley, Jr.
Neuro-Surgeons .................................. John W. Chambers
Frank J. Otenasek
Raymond K. Thompson
Director of Medical Clinic .................................. H. Raymond Peters
Chiefs of Medical Clinic .................................. Sol Smith
S. Edwin Muller
Frederick J. Vollmer
William H. Kammer
John R. Davis
J. Emmett Queen
Charles F. O'Donnell
Assistant Physicians .................................. Arthur Karfgin
John C. Osborne
Maurice Feldman, Jr.
James J. Nolan
Milton C. Linthicum
Burton Lock
Chief of Allergy Clinic .................................. S. Edwin Muller
Chief of Cardiovascular Clinic ................................. Thomas C. Wolff
Assistant Cardiologists .................................. Leon Ashman
Henry J. Marriott
Chief of Metabolism Clinic .................................. J. Sheldon Eastland
Assistant in Metabolism Clinic .................................. J. Emmett Queen
Gastro-Enterologist .................................. Maurice Feldman, Sr.
Associate Gastro-Enterologist .................................. Philip D. Flynn
Director of Pediatric Clinic .................................. Fred B. Smith
Chief of Pediatric Clinic .................................. G. Bowers Mansdorfer
MERCY HOSPITAL DISPENSARY STAFF—Cont'd.

Pediatricians ......................................................... [Israel T. Meranski
O. Walter Spurrier
Edward L. Frey, Jr.
Earl Weeks
Joseph Cordi]

Director of Neurologic and Psychiatric Clinics ............. [Philip F. Lerner
Associate Neurologist and Psychiatrist ...................... [George G. Merrill
Assistant Neurologist and Psychiatrists ......................... [Edward L. Suarez-Murias
Frank J. Ayd, Jr.]

Director of Dermatology Clinic ............................... [Francis A. Ellis
Assistant Dermatologists ........................................... [Eugene S. Bereston
R. C. V. Robinson
William R. Bundick
Oncologist .......................................................... [James W. Nelson
Director of Gynecology Clinic ................................. [Thomas K. Galvin
Chief of the Gynecology Clinic .............................. [Frank K. Morris
Edward P. Smith
J. J. Erwin
Ernest S. Edlow
Charles H. Doeller, Jr.
William A. Dodd
Harry McB. Beck
Assistant Gynecologists ........................................... [William C. Duffy
Joseph C. Sheehan
Robert B. Tunney
Gerald A. Galvin
John M. Palese
John F. Ullsperger
Harry F. Kane
Chief of Obstetrical Clinic ........................................ [John J. Erwin
Obstetricians .......................................................... [Harry F. Kane
William A. Dodd
Harry McB. Beck
Joseph C. Sheehan
Robert B. Tunney
William J. Rysanek, Jr.
Anthony DiPaula
Esophagoscopist .................................................. [Waitman F. Zinn
Associate Esophagoscopist ..................................... [Fayne A. Kayser
Waitman F. Zinn
Theodore A. Schwartz
Rhinologists and Laryngologists .......................... [Benjamin H. Isaacs
Arthur Ward
Robert Z. Berry]
MERCY HOSPITAL DISPENSARY STAFF—Cont’d.

M. Raskin
F. A. Pacienza
Joseph V. Jeppi
Chief of Proctology Clinic
Simon H. Brager
Assistant Proctologist
William T. Supik
Chief of Dental Clinic
J. D. Fusco
Assistant Chief, Dental Clinic
Edward R. Stinebert
Consulting Dentist
Conrad L. Inman

Physiotherapists
Leon Hannan
Alice R. Hannan
Sister M. Scholastica
Social Workers
Anna Shwbaker
Marian L. Kinney
Secretaries
Eva Applegarth
Nancy Arnold

MEDICAL CARE CLINIC

Director
S. Edwin Muller
Assistant Director
Frances V. Loughney

The Medical Care Clinic at Mercy Hospital is one of six special clinics established and conducted for the Baltimore City Health Department. These clinics were established by the Medical and Chirurgical Faculty of Maryland and the State Planning Commission. The program takes up an unmet need for the indigent.

The City Welfare Department certifies recipients of public assistance to the Health Department. The Health Department in turn, assigns recipients to one of the medical care clinics operated by local hospitals, namely—Johns Hopkins, Sinai, University of Maryland, Mercy, Provident and South Baltimore. The clinic assignments are made primarily on a geographic basis.

During the current year the Medical Care Clinic at Mercy Hospital is providing facilities for three thousand clients. It provides the eligible individual an initial physical examination, chest X-ray, bacteriological and other laboratory tests as indicated. Arrangements are also made by the Clinic to have each client register with a family physician of his or her choice selected from those Baltimore physicians who have agreed to participate in the program. The Clinic notifies the physician chosen, and sends to him a complete written report of the physical findings.

The plan gives physicians an opportunity for contacts with the personnel and diagnostic facilities of the participating hospitals. At the request of the client’s physician, consultation services of the Staff at Mercy are made available. These services include Medicine, Surgery, Gynecology, Urology, Orthopedics, Dermatology, Neurology and other specialties, together with clinical laboratory facilities.

The Mercy Clinic is located on the 4th floor of the College Building. It includes a reception area, offices and examining rooms. An active personnel of Doctors, Nurses, Medical Technician and Medical Secretary are on duty from 9 A.M. to 5 P.M.

6 On Leave.
MERCY HOSPITAL OUT-PATIENT REPORT  
JANUARY 1, 1950 TO JANUARY 1, 1951

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<tr>
<td><strong>Total</strong></td>
<td><strong>8,168</strong></td>
<td><strong>17,334</strong></td>
<td><strong>25,502</strong></td>
</tr>
</tbody>
</table>

THE BALTIMORE CITY HOSPITALS  
STAFF, 1951–1952  
PARKER J. McMillin, Superintendent

**Surgeon-in-Chief** .......................................................... OTTO C. BRANTIGAN, M.D.

| James C. Owings, M.D. |
| I. Ridgeway Trimble, M.D. |
| Amos Koontz, M.D. |
| Thurston R. Adams, M.D. |
| Harry C. Bowie, M.D. |
| Donald B. Hebb, M.D. |

**Visiting Surgeons** ..........................................................

**Visiting Thoracic Surgeon** .............................................. WILLIAM L. GARLICK, M.D.

**Consultant in Traumatic Surgery** ...................................... C. A. REIFSCHNEIDER, M.D.

**Visiting Hand Surgeon** .................................................. RAYMOND M. CURTIS, M.D.

**Visiting Neuro-Surgeons** ................................................ RICHARD G. COBLENTZ, M.D.

| Charles Bagley, M.D. |
| James G. Arnold, M.D. |
Assistant Visiting Neuro-Surgeon R. K. THOMPSON, M.D.
Consultant in Plastic Surgery EDWARD A. KITLOWSKI, M.D.
Visiting Plastic Surgeon CLARENCE P. SCARBOROUGH, M.D.
Visiting Proctologist MONTE EDWARDS, M.D.
Visiting Urologists W. HOUSTON TOULSON, M.D.
Hugh JEWITT, M.D.
Howard B. MAYS, M.D.
Assistant Visiting Urologist JOHN D. YOUNG, M.D.
Consulting Gynecologist J. MASON HUNDELEY, JR., M.D.
Visiting Gynecologist BEVERLY COMPTON, M.D.
Visiting Proctologist MONTE EDWARDS, M.D.
Assistant Visiting Gynecologists ERNEST I. CORNBROOKS, M.D.
WILLIAM K. DIEHL, M.D.
EVERETT S. DIGGS, M.D.
Assistant Visiting Orthopedic Surgeons ALLEN F. VOSHELL, M.D.
MILTON J. WILDER, M.D.
Assistant Visiting Orthopedic Surgeons ISAAC A. GUTMAN, M.D.
EVERETT D. JONES, M.D.
Visiting Laryngologists JOHN BORDLEY, M.D.
FRED T. KYPER, M.D.
Assistant Visiting Laryngologists JOHN H. HIRSCHFELD, M.D.
ALFRED T. LIEBERMAN, M.D.
Visiting Ophthalmologist CHARLES E. ILLIFF, JR., M.D.
Visiting Oncologist ARTHUR G. SIWINSKI, M.D.
Visiting Anesthesiologists ALFRED T. NELSON, M.D.
THEODORE STACY, M.D.
LEONARD ABRAMOVITZ, M.D.
Consultant in Peripheral Vascular Diseases GEORGE H. YEAGER, M.D.
Chief Pathologist C. GARDNER WARNER, M.D.
Visiting Neuropathologist JOHN A. WAGNER, M.D.
Consultant in Psychiatry ESTHER L. RICHARDS, M.D.
Chief Radiologist JOHN DECARLO, JR., M.D.
Chief Pediatrician HAROLD E. HARRISON, M.D.
Assistant Chief Pediatrician DOUGLAS E. JOHNSTONE, M.D.
Visiting Pediatricians MILTON MARKOWITZ, M.D.
LAURENCE FINBERG, M.D.
Chief Hospital Physician—Tuberculosis H. VERNON LANGELETTIG, M.D.
Assistant Hospital Physician—Tuberculosis EDMUND G. BEACHAM, M.D.
Visiting Physicians—Tuberculosis ALVIN S. HARTZ, M.D.
JOHN H. HIRSCHFELD, M.D.
Chief Physician, Acting C. HOLMES BOYD, M.D.
Assistant Chief Physician HOWARD K. RATHBUN, M.D.
Baltimore City Hospital Staff—Cont’d.

Visiting Physicians
- Louis A. M. Krause, M.D.
- William G. Speed, III, M.D.
- Crawford N. Kirkpatrick, M.D.
- Earnest Gross, M.D.
- Joseph King, M.D.
- John H. Miller, M.D.
- Donald M. Watkins, M.D.
- Milton Landowne, M.D.

Assistant Visiting Physicians (USPHS)
- Rodger K. MacDonald, M.D.
- Morton D. Bogdonoff, M.D.
- Harold M. Silver, M.D.

Physiologist
- Nathan W. Shock, PH.D.

Visiting Neurologist
- J. W. Magladery, M.D.

Assistant Visiting Neurologist
- David B. Clark, M.D.

Visiting Dermatologist
- Raymond C. V. Robinson, M.D.

Visiting Laboratory Physician
- Julius Waghelstein, M.D.

Consultant in Hematology
- Philip F. Wagley, M.D.

Consultant in Neurology
- Frank R. Ford, M.D.

Chief Dental Surgeon
- H. Glenn Waring, D.D.S.

Assistant Visiting Dental Surgeons
- L. W. Bimestefer, D.D.S.
- Michael Varipatis, D.D.S.
- B. W. Mikinski, D.D.S.

Orthodontist
- R. Kent Tongue, D.D.S.

Exodontist
- Richard Colman, D.D.S.

Chief Obstetrician
- Louis H. Douglass, M.D.

Visiting Obstetrician
- J. Morris Reese, M.D.

Assistant Visiting Obstetricians
- W. Newton Long, Jr., M.D.
- George W. Anderson, M.D.
- Louis C. Gareis, M.D.

The James Lawrence Kernan Hospital and Industrial School of Maryland for Crippled Children

Staff, 1951–1952

Surgeon-in-Chief and Medical Director
- Allen Fiske Voshell, A.B., M.D.

Consultant in Orthopaedic Surgery and Roentgenology
- Albertus Cotton, A.M., M.D.
- Moses Gellman, B.S., M.D.
- Harry F. Ullrich, M.D.
- Winthrop M. Phelps, A.B., M.D.

Associate Orthopaedic Surgeons
- Milton J. Wilder, M.D.
- David L. Filtzer, M.D.
- James P. Miller, M.D.
KERNAN HOSPITAL STAFF—Cont'd.

Roentgenologist ........................................ Charles N. Davidson, M.D.
Plastic Surgeon .......................................... Edward A. Kitlowski, A.B., M.D.
Aurist and Laryngologist ............................. Benjamin S. Rich, A.B., M.D.
Dentist ...................................................... M. E. Coberth, D.D.S.
Cardiologist .............................................. Helen M. Taussig, M.D.
Pediatrist .................................................. Melchijah Spragins, M.D.
Consulting Surgeon ............................ Charles Reid Edwards, A.B., M.D.
Consulting Neurological Surgeon .......... Charles Bagley, Jr., M.A., M.D.
Consulting Dermatologists ....................... Harry M. Robinson, Sr., M.D.
Consulting Neurologists ........................... Irving J. Spear, M.D.
Consulting Pediatrists ............................. Benjamin Tappan, A.B., M.D.
Consulting Dentist .................................. Harry B. McCarthy, D.D.S.
Consulting Pathologist ............................. Hugh R. Spencer, M.D.
Consulting Roentgenologist ........................ Henry J. Walton, M.D.
Resident Orthopaedic Surgeons ................. John J. Tansey, M.D.
Superintendent ........................................ Miss Maud M. Gardner, R.N.
Dispensary and Social Service Nurse .......... Mrs. Evelyn Byrd Zapf, R.N.
Physical Therapists and X-ray Technicians ... Mrs. Anna H. Erlanger
                                      Mrs. Georgiana Wisong
Occupational Therapist ............................ Mrs. T. Lynn Buttrick, O.T.
                                      Miss Virginia Cooper, O.T.
Instructor in Grammar School .................... Miss Bertha Sendelbach

HISTORY OF THE SCHOOL OF MEDICINE

The present School of Medicine, with the title University of Maryland School of Medicine and College of Physicians and Surgeons, is the result of a consolidation and merger of the University of Maryland School of Medicine with the Baltimore Medical College (1913) and the College of Physicians and Surgeons of Baltimore (1915).

Through the merger with the Baltimore Medical College, an institution of thirty-two years' growth, the facilities of the School of Medicine were enlarged in faculty, equipment and hospital connection.

The College of Physicians and Surgeons was incorporated in 1872, and established on Hanover Street in a building afterward known as the Maternité, the first obstetrical hospital in Maryland. In 1878 union was effected with the Washington University School of Medicine, in existence since 1827, and the college was removed to Calvert and Saratoga Streets. Through the consolidation with
the College of Physicians and Surgeons, medical control of the teaching beds in the Mercy Hospital was obtained.

The School of Medicine of the University of Maryland is one of the oldest foundations for medical education in America, ranking fifth in point of age among the medical colleges of the United States. It was organized in 1807 and chartered in 1808 under the name of the College of Medicine of Maryland, and its first class was graduated in 1810. In 1812 the College was empowered by the Legislature to annex three other colleges or faculties: Divinity, Law, and Arts and Sciences; and the four colleges thus united were "constituted an University by the name and under the title of the University of Maryland."

The original building of the Medical School at the N. E. corner of Lombard and Greene Streets was erected in 1812. It is the oldest structure in this country from which the degree of doctor of medicine has been granted annually since its erection. In this building were founded one of the first medical libraries and one of the first medical school libraries in the United States.

At this Medical School dissection was made a compulsory part of the curriculum, and independent chairs for the teaching of gynecology and pediatrics (1867), and of ophthalmology and otology (1873), were installed for the first time in America.

This School of Medicine was one of the first to provide for adequate clinical instruction by the erection of its own hospital in 1823. In this hospital intramural residency for senior students was established for the first time.

The School of Medicine has been co-educational since 1918.

BUILDINGS AND FACILITIES

The original medical building at the N. E. corner of Lombard and Greene Streets houses the office of the Dean, Room 101, the office of the Committee on Admissions, Room 102, two lecture halls, the faculty room and office of the assistant business manager.

The Administration Building, to the east of the original building, contains the Baltimore offices of the Registrar and two lecture halls.

The laboratory building at 31 South Greene Street is occupied by the departments of Pathology, Bacteriology and Biochemistry.

The Frank C. Bressler Research Laboratory provides the departments of Anatomy, Histology and Embryology, Pharmacology, Physiology and Clinical Pathology with facilities for teaching and research. It also houses the research laboratories of the clinical departments, animal quarters, a laboratory for teaching Operative Surgery, a lecture hall and the Bressler Memorial Room.

This building was erected in 1939–1940 at 29 South Greene Street opposite the University Hospital. It was built with funds left to the School of Medicine by the late Frank C. Bressler, an alumnus, supplemented by a grant from the Federal government. The structure, in the shape of an I, extends east from Greene Street, just north of the original building.

MEDICAL LIBRARY

The Medical Library of the University of Maryland, founded in 1813 by the purchase of the collection of Dr. John Crawford, now numbers 33,000 volumes and
several thousand pamphlets and reprints. Over four hundred of the leading medical journals, both foreign and domestic, are received regularly. The library is housed in Davidge Hall, in close proximity to classrooms and laboratories, and is open daily for the use of members of the faculty, the student body and the profession generally. Libraries pertaining to particular phases of medicine are maintained by several departments of the medical school.

The library of the Medical and Chirurgical Faculty of Maryland and the Welch Medical Library are open to students of the medical school without charge. Other libraries of Baltimore are the Peabody Library and the Enoch Pratt Free Library.

**DISPENSARY BUILDING**

The old hospital building has been remodeled and is occupied by the Out-patient Department. Thus the students have been provided with a splendidly appointed group of clinics for their training in out-patient work. All departments of clinical training are represented in this remodeled building and all changes have been predicated on the teaching function for which this department is intended.

The office of the Medical School Physician is located in this building.

The Department of Art also occupies quarters here.

**UNIVERSITY HOSPITAL**

The University Hospital, which is the property of the University of Maryland, is the oldest institution for the care of the sick in the state of Maryland. It was opened in September 1823, under the name of the Baltimore Infirmary, and at that time consisted of but four wards, one of which was reserved for patients with diseases of the eye.

In 1933-1934 the new University Hospital was erected and patients were admitted to this building in November 1934. The new hospital is situated at the southwest corner of Redwood and Greene Streets, and is consequently opposite the medical school buildings. The students, therefore, are in close proximity and little time is lost in passing from the lecture halls and laboratories to the clinical facilities of the new building.

This new building, with its modern planning, makes a particularly attractive teaching hospital and is a very valuable addition to the clinical facilities of the medical school.

The new hospital has a capacity of 435 beds and 65 bassinets devoted to general medicine, surgery, obstetrics, pediatrics, and the various medical and surgical specialties.

The teaching zone extends from the second to the eighth floor and comprises wards for surgery, medicine, obstetrics, pediatrics, and a large clinical lecture hall. There are approximately 270 beds available for teaching.

The space of the whole north wing of the second floor is occupied by the department of roentgenology. The east wing houses clinical pathology and special laboratories for clinical microscopy, biochemistry, bacteriology, and an especially well appointed laboratory for students’ training. The south wing provides space for electro-cardiographic and basal metabolism departments, with new and very
attractive air-conditioned or oxygen therapy cubicles. The west wing contains
the departments of rhinolaryngology and bronchoscopy, industrial surgery, and
male and female cystoscopy.

The third and fourth floors each provide two medical and two surgical wards. The fifth floor contains two wards for pediatrics, and on the sixth floor there are
two wards for obstetrics. Each ward occupies the space of one wing of the
hospital.

On the seventh floor is the general operating suite, the delivery suite, and the
central supply station. The eighth floor is essentially a students' floor and affords
a mezzanine over the operating and delivery suites, and a students' entrance to the
clinical lecture hall.

In the basement there is a very well appointed pathological department with a
large teaching autopsy room and its adjunct service of instruction of students in
pathological anatomy.

The hospital receives a large number of accident patients because of its prox-
imity to the largest manufacturing and shipping districts of the city.

The obstetrical service provides accommodation for 40 ward patients and
assures the student abundant obstetrical training. During the year ending De-
cember 31st 1950, 3217 patients were delivered and discharged. Of these, 2288
were service cases and available for teaching. Each member of the graduating
class participated in an average of 15 deliveries in addition to those he attended
at Baltimore City Hospitals as a junior student.

The dispensaries associated with the University Hospital and the Mercy Hospi-
tal are organized upon a uniform plan in order that the teaching may be the same
in each. Each dispensary has the following departments: medicine, surgery,
pediatrics, ophthalmology, otology, genito-urinary, gynecology, gastroenterology,
neurology, orthopaedics, proctology, dermatology, laryngology, rhinology, car-
diology, tuberculosis, psychiatry, oral surgery and oncology.

All students in their junior year work each day during one-third of the year
in the departments of medicine and surgery of the dispensaries. In their senior
year, all students work one hour each day in the special departments.

MERCY HOSPITAL

The Sisters of Mercy first assumed charge of the Hospital at the corner of Cal-
vert and Saratoga Streets, then owned by the Washington University, in 1874.
By the merger of 1878 the Hospital came under the control of the College of
Physicians and Surgeons, but the Sisters continued their work of ministering to the
patients.

In a very few years it became apparent that the City Hospital, as it was then
called, was much too small to accommodate the rapidly growing demands upon it. However, it was not until 1888 that the Sisters of Mercy, with the assistance of
the Faculty of the College of Physicians and Surgeons, were able to lay the corner-
stone of the present hospital. This building was completed and occupied late in
1889. Since then the growing demands for more space have compelled the erec-
tion of additions, until now there are accommodations for 350 patients.
In 1909 the name was changed from The Baltimore City Hospital to Mercy Hospital.

The clinical material in the free wards is under the exclusive control of the Faculty of the University of Maryland School of Medicine and College of Physicians and Surgeons.

THE BALTIMORE CITY HOSPITALS

The clinical facilities of the School of Medicine have been largely increased by the liberal decision of the Department of Public Welfare to allow the use of the wards of these hospitals for medical education. The autopsy material also is available for student instruction.

Members of the junior class make daily visits to these hospitals for clinical instruction in medicine, surgery, and the specialties.

The Baltimore City Hospitals consist of the following separate divisions:
- The General Hospital, 400 beds, 90 bassinets.
- The Hospital for Chronic Cases, 575 beds.
- The Hospital for Tuberculosis, 280 beds.
- Infirmary (Home for Aged) 700 beds.

THE JAMES LAWRENCE KERNAN HOSPITAL AND INDUSTRIAL SCHOOL OF MARYLAND FOR CRIPPLED CHILDREN

This institution is situated on an estate of 75 acres at Dickeyville. The site is within the northwestern city limits and of easy access to the city proper.

The location is ideal for the treatment of children, in that it affords all the advantages of sunshine and country air.

A hospital unit, complete in every respect, offers all modern facilities for the care of any orthopaedic condition in children.

The hospital is equipped with 80 beds—endowed, and city and state supported.

The orthopaedic dispensary at the University Hospital is maintained in closest affiliation and cares for the cases discharged from the Kernan Hospital. The physical therapy department is very well equipped with modern apparatus and trained personnel. Occupational therapy has been fully established and developed under trained technicians.

THE BALTIMORE EYE, EAR, AND THROAT HOSPITAL

This institution was first organized and operated in 1882 as an outgrowth of the Baltimore Eye and Ear Dispensary, which closed on June 14, 1882. The name then given to the new hospital was The Baltimore Eye and Ear Charity Hospital. It was located at the address now known as 625 W. Franklin St. The out-patient department was opened on September 18, 1882 and the hospital proper on November 1 of the same year. In 1898 a new building afforded 24 free beds and 8 private rooms; by 1907 the beds numbered 47; at present there are 60 beds, 29 of which are free. In 1922 the present hospital building at 1214 Eutaw Place was secured and in 1926 the dispensary was opened. In 1928 a clinical laboratory was installed. During 1950 the out-patient visits numbered 20,720.
Through the kindness of the Hospital Board and Staff, our junior students have access to the dispensary which they visit in small groups for instruction in ophthalmology.

REQUIREMENTS FOR ADMISSION

METHOD OF MAKING APPLICATION

Requests for application forms should be filed not earlier than September 15th preceding by one year the desired date of admission. These forms may be secured from the Committee on Admissions, School of Medicine, University of Maryland, Baltimore 1, Maryland.

APPLICATION FOR ADMISSION TO THE FIRST YEAR

Application for admission is made by filing the required form and by having all pertinent data sent directly to the Committee on Admissions, in accordance with the instructions accompanying the application.

Consideration will be given applications received after December 1st provided the class is not complete.

APPLICATION FOR ADMISSION TO ADVANCED STANDING

Students who have attended approved medical schools are eligible to file applications for admission to the second- and third-year classes only. These applicants must be prepared to meet the current first-year entrance requirements in addition to presenting acceptable medical school credentials, and a medical school record based on courses which are quantitatively and qualitatively equivalent to similar courses in this school.

Application to advanced standing is made in accordance with the instructions accompanying the application form.

Persons who already hold the degree of Doctor of Medicine will not be admitted to the Medical School as a candidate for that degree from this university.

MINIMUM REQUIREMENTS FOR ADMISSION

The minimum requirements for admission to the School of Medicine are:

(a) Graduation from an approved secondary school, or the equivalent in entrance examinations, and

(b) Three academic years of acceptable college credit, exclusive of physical education and military sciences, earned in colleges of arts and sciences, whose names occur in the current list of "Approved Colleges of Arts and Sciences" as compiled by the Council on Medical Education and Hospitals of the American Medical Association. The quantity and quality of this course of study shall be equivalent to that required for recommendation by the institution where the college courses are being, or have been, pursued.
(c) The following courses and credits in basic required subjects must be completed by June of the year the applicant desires to be admitted:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester hours</th>
<th>Quarter hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General biology or zoology</td>
<td><em>(6)</em> 8</td>
<td><em>(9)</em> 12</td>
</tr>
<tr>
<td>Inorganic chemistry</td>
<td><em>(6)</em> 8</td>
<td><em>(9)</em> 12</td>
</tr>
<tr>
<td>Organic chemistry</td>
<td>6-8</td>
<td>9-12</td>
</tr>
<tr>
<td>General physics</td>
<td><em>(6)</em> 8</td>
<td><em>(9)</em> 12</td>
</tr>
<tr>
<td>English</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Modern language (German, French, Spanish)</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

* Consideration will be given applicants from the New England area where 6 semester hours, or 9 quarter hours, is the standard credit for a science course.

(d) The total semester-hour or quarter-hour credits presented must be equivalent in quantity and quality to three-fourths of the credit requirement for graduation by the recommending institution, exclusive of courses in physical education and military sciences.

Applicants who are unable to complete these requirements by June of the year admission is desired, will be considered contingent on places being available, provided all basic required courses and credits shall have been absolved by June as indicated in (c) above.

(e) Students will not be admitted who have unabsolved conditions or failures in college courses.

Elective courses should be selected from the following three groups. Highly desirable courses are shown in bold face type.

<table>
<thead>
<tr>
<th>Humanities</th>
<th>Natural Sciences</th>
<th>Social Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>English (an advanced course in English composition should be taken, if possible)</td>
<td>Vertebrate Embryology</td>
<td>Economics</td>
</tr>
<tr>
<td>Scientific German or French (A reading knowledge of either language is desirable, although German is preferred)</td>
<td>Comparative Vertebrate Anatomy</td>
<td>History</td>
</tr>
<tr>
<td>Philosophy</td>
<td>Quantitative Analysis</td>
<td>Political Science</td>
</tr>
<tr>
<td></td>
<td>Physical Chemistry</td>
<td>Psychology (a general course is desirable)</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td>Sociology, etc.</td>
</tr>
</tbody>
</table>

Careful attention should be given to the selection of elective courses in the natural sciences. It is suggested that the elective list given herewith be used as a guide. The remainder of college credits should be accumulated from courses designed to promote a broad cultural development. Thirty six hours or the equivalent in session hours or courses in the humanities are recommended. Students should avoid taking courses in college which are included in the medical curriculum, for example histology, human anatomy, bacteriology, physiology, neurology and physiological chemistry.

It is not intended that these suggestions be interpreted as restrictions upon
the education of students who exhibit an aptitude for the natural sciences or as limitations upon the development of students who plan to follow research work in the field of medicine.

In accepting candidates for admission, preference will be given to those applicants who have acceptable scholastic records in secondary school and college, satisfactory scores in the Medical College Admission Test, given in May each year, favorable letters of recommendation from their premedical committees, or from one instructor in each of the departments of biology, chemistry, and physics, and who in other respects give promise of becoming successful students and physicians of high standing.

Those candidates for admission who are permanently accepted will receive a certificate of matriculation from the office of the Dean.

**COMBINED COURSE IN ARTS AND SCIENCES AND MEDICINE**

A combined seven years' curriculum leading to the degrees of Bachelor of Science and Doctor of Medicine is offered by the University of Maryland. The first three years are taken in residence in the College of Arts and Sciences at College Park, and the last four years in the School of Medicine in Baltimore. (See University catalogue for details of quantitative and qualitative college course requirements.)

If a candidate for the combined degree completes the work of the first year in the School of Medicine with an average of C or better without failures, and if he has absolved the quantitative and qualitative college requirements set up by the University, he is eligible to recommendation by the Dean of the School of Medicine that the degree of Bachelor of Science be conferred.

Because the general commencement usually takes place before the School of Medicine is prepared to release grades of the first-year class, this combined degree of Bachelor of Science is conferred at the commencement following the candidate's second year of residence in the School of Medicine.

**STATE MEDICAL STUDENT QUALIFYING CERTIFICATES**

Candidates for admission who live in or expect to practice medicine in Pennsylvania, New Jersey or New York, should apply to their respective state boards of education for medical student qualifying certificates (Pennsylvania and New Jersey) or approval of applications for medical student qualifying certificates (New York).

Those students who are accepted must file satisfactory State certificates in the office of the Committee on Admissions, School of Medicine, before registration. No exceptions will be made to this requirement.

*Addresses of the State Certifying Offices*

- Director of Credentials Section, Pennsylvania Department of Public Instruction, Harrisburg, Pa.
- Chief of the Bureau of Credentials, New Jersey Department of Public Instruction, Trenton, N. J.
- Supervisor of Qualifying Certificates, The State Education Department, Examinations and Inspections Division, Albany, N. Y.
**DEFINITION OF RESIDENCE STATUS OF STUDENTS**

Students who are minors are considered to be resident students if, at the time of their registration, the parents* have been residents of this State for at least one year.

Adult students are considered to be resident students if, at the time of their registration, they have been residents of this State for at least one year, provided such residence has not been acquired while attending any school or college in Maryland.

The status of the residence of a student is determined at the time of his first registration in the university and may not thereafter be changed by him unless, in the case of a minor, his parents* move to and become legal residents of this state by maintaining such residence for at least one full calendar year. However, the right of the student (minor) to change from a non-resident to a resident status must be established by him prior to registration for a semester in any academic year.

**CURRENT FEES**

<table>
<thead>
<tr>
<th>Service</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matriculation fee (paid once)</td>
<td>$10.00</td>
</tr>
<tr>
<td>Tuition fee (each year)—Residents of Maryland</td>
<td>450.00</td>
</tr>
<tr>
<td>Tuition fee (each year)—Non-Residents</td>
<td>700.00</td>
</tr>
<tr>
<td>Laboratory fee (each year)</td>
<td>25.00</td>
</tr>
<tr>
<td>Student health service fee (each year)</td>
<td>20.00</td>
</tr>
<tr>
<td>Student activities and service fee (each year)</td>
<td>15.00</td>
</tr>
<tr>
<td>¹Lodging and meals fee</td>
<td>6.75</td>
</tr>
<tr>
<td>Graduation fee</td>
<td>15.00</td>
</tr>
<tr>
<td>Re-examination fee (each subject)</td>
<td>5.00</td>
</tr>
<tr>
<td>Transcript fee to graduates. First copy gratis, each copy thereafter</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**RULES FOR PAYMENT OF FEES**

No fees are returnable.

Make all checks or money orders payable to the “University of Maryland”.

When offering checks or money orders in payment of tuition and other fees, students are requested to have them drawn in the exact amount of such fees. Personal checks whose face value is in excess of the fees due will be accepted for collection only.

Acceptance.—Payment of the matriculation fee of $10.00 and of a deposit on tuition of $50.00 is required of accepted applicants before the expiration date specified in the offer of acceptance. This $60.00 deposit is not returnable and

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* The term “parents” includes persons who have been legally constituted the guardians of or stand in loco parentis to such minor students.

¹ Junior Students will be billed for this fee, covering lodging and meals while on obstetrical service at Baltimore City Hospitals. Section B. on Schedule 2 will be billed for the first semester; Section A on Schedule 2 for the second semester. This fee must be paid by all junior students whether or not they serve during the previous summer or the academic year.
will be forfeited if the applicant fails to register, or it will be applied to the applicant's first semester's charges on registration.

Registration.—All students, after proper certification, are required to register at the business office, Gray Laboratory. (See calendar page 5 of this bulletin for dates for the payments of fees, and the note regarding late registration fee.)

One-half of the tuition fee, the laboratory fee, the student health fee, the maintenance and service fee and the student activities fee are payable on the date specified for registration for the first semester.

The remainder of the tuition fee shall be paid on the date designated for the payment of fees for the second semester. Fourth year students shall pay the graduation fee, in addition, at this time.

**PENALTY FOR NON-PAYMENT OF FEES**

If semester fees are not paid in full on the specified registration dates, a penalty of $5.00 will be added.

If a satisfactory settlement, or an agreement for settlement, is not made with the business office within ten days after a payment is due, the student automatically is debarred from attendance on classes and will forfeit the other privileges of the School of Medicine.

**REEXAMINATION FEE**

A student who is eligible to reexaminations must pay the business office $5.00 for each subject in which he is to be examined, and he must present the receipt to the faculty member giving the examination before he will be permitted to take the examination.

**STUDENT ACTIVITIES AND SERVICE FEE**

This fee pays for the use of clothing lockers, provides library privileges, maintains student loan collections, a student lounge and cafeteria. It supports a recreational program for students of all classes, provides photographs for all school purposes, including state boards. It supports the activities of the Student Council.

**STUDENT HEALTH SERVICE**

James R. Karns, M.D. ..........................  Director, Student Health Service.

The Medical School has made provision for the systematic care of students according to the following plan:

1. *Preliminary Examination*—All new students will be examined during the first week of the semester. Notice of the date, time, and place of the examination will be announced to the classes and on the bulletin board. The passing of this physical examination is necessary before final acceptance of any student.

2. *Medical Attention*—Students in need of medical attention will be seen by the school physician, Dr. James R. Karns, in his office at the medical school, at 9 A.M. daily, except Saturday and Sunday. In case of necessity, students will be seen at their homes.
3. Hospitalization—If it becomes necessary for any student to enter the hospital during the school year, the school has arranged for the payment of part or all of his hospital expenses, depending on the length of his stay and special expenses incurred. This applies only to students admitted through the school physician's office.

4. Physical Defects—Prospective students are advised to have any known physical defects corrected before entering school in order to prevent loss of time which later correction might incur.

5. Eye Examination—Each new matriculant is required to undergo an eye examination at the hands of an oculist (Doctor of Medicine) within the three months immediately preceding his entrance to the School of Medicine. Long study hours bring out unsuspected eye defects which cause loss of time and inefficiency in study if not corrected before school work is under way.

6. Limitations—It is not the function of this service to treat chronic conditions contracted by students before admission, nor to extend treatment to acute conditions arising in the period between academic years, unless the school physician recommends this service.

GENERAL RULES

The right is reserved to make changes in the curriculum, the requirements for graduation, the fees and in any of the regulations whenever the university authorities deem it expedient.

GRADING SYSTEM

Official grades are designated by these symbols:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Scholarship</th>
<th>Numerical Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior</td>
<td>93–100</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>87–92</td>
</tr>
<tr>
<td>C</td>
<td>Fair</td>
<td>80–86</td>
</tr>
<tr>
<td>D</td>
<td>Passing</td>
<td>75–79</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>Below 75</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>—</td>
</tr>
<tr>
<td>WF</td>
<td>Withdrew, failing</td>
<td>—</td>
</tr>
</tbody>
</table>

The class standing of seniors only will be released. This standing will appear on senior grade reports sent out from the Registrar's office after graduation.

ADVANCEMENT AND GRADUATION

1. No medical student will be permitted to begin work for credit in any semester of any year who reports for classes later than one week after classes begin, except by permission of the Dean.

2. No student will be permitted to advance with unabsolved failures.

3. An average of C or better without failures in the year most recently completed is required for advancement to junior and senior standing and for graduation.

4. A student who in any one year has one failure together with grades of D in all other subjects, will be dropped from the rolls.
5. A student who has failures in two completed major subjects will be dropped from the rolls.

6. All students are required to attend 85% of scheduled classes and (excluding seniors) take spring examinations unless excused by the Dean.

7. Should a student be required to repeat any year in any course, he must pay regular fees.

8. A student failing his final examinations for graduation at the end of the fourth year will be required to repeat the entire course of the fourth year and take examinations in such other branches as may be required, provided he is permitted to enter the school as a candidate for graduation.

9. The general fitness of a candidate for graduation as well as the results of his examinations will be taken into consideration by the faculty.

EQUIPMENT

10. At the beginning of the first year, all freshmen must provide themselves with microscopes of a satisfactory type equipped with a mechanical stage and a substage lamp. Also, each freshman must possess a complete set of dissecting instruments.

A standard microscope of either Bausch & Lomb, Leitz, Spencer, Zeiss or any other make, fitted with the following attachments, will meet the requirements.

Students are cautioned that odd-lot instruments may be valueless and difficult to repair.

- 16 mm., 10x, 0.25 N.A.—4.9 mm. working distance.
- 4 mm., 43x, 0.65 N.A.—0.6 mm. working distance.
- 1.8 mm., 97x, oil immersion, 1.25 N.A.—0.13 mm. working distance.
- Oculars: 10x and 5x. Huygenian eyepieces.
- Triple nose pieces with 16 mm., 4 mm., and 1.9 mm. 125 N.A. oil immersion lens.

Wide aperture stage with quick screw condenser and built on, but detachable, ungraduated mechanical stage. Substage condenser, variable focusing type 1.25 N.A. with iris diaphragm. A rack and pinion focusing device is preferred. Mirror plane on one side, concave on the other. A carrying case is recommended.

Students are cautioned with respect to the purchase of used microscopes since some older instruments were equipped with a 4 mm. (high dry) objective whose N.A. is marked as 0.85 N.A. This objective has such a short working distance (0.3 mm.) that it is difficult or impossible to focus through thick cover glasses or the standard haemocytometer cover glass without breakage. All used microscopes are subject to inspection and approval by the Department of Microscopic Anatomy, second floor Bressler Research Laboratory, 29 S. Greene Street. See Dr. Lutz. This inspection is not made during August.

11. Students in the second year class are required to provide stethoscopes.

12. Third- and fourth-year students are required to provide themselves with haemocytometers, sphygmomanometers, ophthalmoscopes and otoscopes.

STATE QUALIFYING CERTIFICATES

13. Candidates for admission who live in or expect to practice medicine in Pennsylvania, New Jersey or New York must file State qualifying certificates in
the office of the Committee on Admissions, School of Medicine, before registration. No exception will be made to this rule.

EYE EXAMINATION BEFORE ADMISSION

14. Each new matriculant in each class is required to present to the Committee on Admissions a certificate from an oculist, (a graduate in medicine) that the matriculate's eyes have been examined and are in condition, with or without glasses as the case may be, to endure the strain of close and intensive reading.

It is required that this examination be completed within three months prior to registration and that the certificate be mailed to the Committee on Admissions not later than one month before registration.

AWARDING OF COMBINED DEGREES

15. Students entering the School of Medicine on a three-year requirement basis from colleges which usually grant a degree on the successful completion of the first year of medicine, are restricted by the following regulations:

a—The candidate must present a certificate from his college or university that he has absolved the quantitative and qualitative premedical requirements for this degree.

b—The candidate must acquire an average of C or better without failures for the work of his first year in the School of Medicine.

c—The Dean of the School of Medicine reserves the right to withhold his recommendation that a bachelor's degree be conferred at a commencement which occurs before the official release of first-year medical grades.

COST OF TRANSCRIPTS

16. Graduates will receive the first transcript of record without charge. Subsequent copies will cost one dollar each. Requests for transcripts must be filed with the Registrar's Office, University of Maryland, Lombard and Greene Streets, Baltimore-1, Maryland.

HOUSING

There are no housing or living accommodations on the campus of the medical school.

PARKING

Because of lack of space on the university parking lots no parking facilities are provided thereon for students.

LIBRARY REGULATIONS

Loan Regulations

Loan periods have been worked out according to demand for and protection of different types of material.

Two-Week Loans: All books except those on reserve.

One-Week Loans: All journals except the latest number (which does not circulate), and those on reserve.
**Overnight Loans:** Books and journals on reserve.
(4 p.m.–12:30 a.m.)

*Special Rules for Books on Reserve:*

Students whose names appear on the check-list for the Mercy Hospital section will be granted the necessary hours to return reserve books. Overnight books may be reserved in advance only within the week in which they will be used. Books may be reserved on Saturday for the following Monday. Overnight books may not be reserved two successive nights by the same person. Advance reserves will be held until one hour before closing.

*Fines*

Fines are imposed not to acquire money, but to assure equal access to books.

- **Two-Week Loans:** 5¢ per day.
- **One-Week Loans:** 5¢ per day.
- **Overnight Loans:** 15¢ for first hour; 5¢ for each additional hour or fraction thereof.

*Lost Books:* List price of the book. (Lost books should be reported at once). All books must be returned, lost books replaced or paid for, and fines paid before a student can finish the year in good standing.

In fairness to all concerned, these rules must be enforced without exception.

**CERTIFICATION FOR STATE BOARD AND NATIONAL BOARD EXAMINATIONS**

No student will be certified to State Board or National Board examiners who has unabsolved failures in subjects taken during the academic period covered by these examinations.

**WITHDRAWALS AND REFUNDS**

*Formal Withdrawal Procedures*

Students over 21 years of age desiring to leave the School of Medicine at any time during the academic year are required to file with the Dean a written application for withdrawal. In addition, the student must secure an “honorable dismissal release” form from the Dean’s secretary, and return this to the Dean’s office appropriately signed by representatives of the departments listed thereon, together with his “matriculation certificate.”

If these procedures are not completed, the student will not be entitled to honorable dismissal nor to refund of fees.

Students under 21 years of age, must supplement the procedures previously described with the written consent of their parents or guardians.

*Academic Standing On Withdrawal*

Students who voluntarily withdraw during an academic semester will be given no credit.

Students are not permitted to resort to withdrawal in order to preclude current or impending failures. Their standing on withdrawal will be recorded in the registrar’s office.
Students who withdraw from the School of Medicine, must apply to the Committee on Admissions for readmission, unless other arrangements have been consummated with the Dean's written consent.

Refunds on Withdrawal

Students who are eligible to honorable dismissal will receive a refund of current charges, after the matriculation fee has been deducted, according to the following schedule:

<table>
<thead>
<tr>
<th>Period elapsed after instruction begins</th>
<th>Percentage refundable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two weeks or less</td>
<td>80%</td>
</tr>
<tr>
<td>Between two and three weeks</td>
<td>60%</td>
</tr>
<tr>
<td>Between three and four weeks</td>
<td>40%</td>
</tr>
<tr>
<td>Between four and five weeks</td>
<td>20%</td>
</tr>
<tr>
<td>After five weeks</td>
<td>0</td>
</tr>
</tbody>
</table>

PRIZES

THE FACULTY PRIZE

The Faculty will award the Faculty Gold Medal and Certificate and five Certificates of Honor to six of the first ten highest ranking candidates for graduation who, during the four academic years, have exhibited outstanding qualifications for the practice of medicine.

THE DR. A. BRADLEY GAITHER MEMORIAL PRIZE

A prize of $25.00 is given each year by Mrs. A. Bradley Gaither as a memorial to the late Dr. A. Bradley Gaither, to the student in the senior class doing the best work in genito-urinary surgery.

THE WILLIAM D. WOLFE MEMORIAL PRIZE

(Value $100.00 each)

A certificate of proficiency and a prize of $100.00 will be awarded each year until the fund is dissipated, to the graduate selected by the Advisory Board of the Faculty showing greatest proficiency in Dermatology.

THE DR. LEONARD M. HUMMEL MEMORIAL AWARD

A gold medal and certificate of proficiency will be awarded annually, as a memorial to the late Dr. Leonard M. Hummel, to the graduate selected by the Advisory Board of the Faculty who has manifested outstanding qualifications in Internal Medicine.

SCHOLARSHIPS

All scholarships are assigned for one academic year, unless specifically reawarded on consideration of an application.

Official application forms are obtainable at the Dean's office, where they should be filed four months before the ensuing academic year.

THE DR. SAMUEL LEON FRANK SCHOLARSHIP

(Value $100.00)

This scholarship was established by Mrs. Bertha Rayner Frank as a memorial to the late Dr. Samuel Leon Frank, an alumnus of this university.
It is awarded by the Trustees of the Endowment Fund of the University each year upon nomination by the Advisory Board of the Faculty "to a medical student of the University of Maryland, who in the judgment of said Council, is of good character and in need of pecuniary assistance to continue his medical course."

This scholarship is awarded to a second, third or fourth year student who has successfully completed one year's work in this school. No student may hold this scholarship for more than two years.

THE CHARLES M. HITCHCOCK SCHOLARSHIPS
(Value $100.00 each)

Two scholarships were established from a bequest to the School of Medicine by the late Charles M. Hitchcock, M.D., an alumnus of the university.

These scholarships are awarded annually by the Trustees of the Endowment Fund of the University, upon nomination by the Advisory Board of the Faculty, to students who have meritoriously completed the work of at least the first year of the course in medicine, and who present to the Board satisfactory evidence of a good moral character and of inability to continue the course without pecuniary assistance.

THE RANDOLPH WINSLOW SCHOLARSHIP
(Value $100.00)

This scholarship was established by the late Randolph Winslow, M.D., LL.D.

It is awarded annually by the Trustees of the Endowment Fund of the University, upon nomination by the Advisory Board of the Faculty, to a "needy student of the Senior, Junior, or Sophomore Class of the Medical School."

"He must have maintained an average grade of 85% in all his work up to the time of awarding the scholarship."

"He must be a person of good character and must satisfy the Faculty Board that he is worthy of and in need of assistance."

THE DR. LEO KARLINSKY MEMORIAL SCHOLARSHIP
(Value $125.00)

This scholarship was established by Mrs. Ray Mintz Karlinsky as a memorial to her husband, the late Dr. Leo Karlinsky, an alumnus of the university.

It is awarded annually by the Trustees of the Endowment Fund of the University, upon the nomination of the Advisory Board of the Faculty, to "a needy student of the Senior, Junior or Sophomore Class of the Medical School."

He must have maintained in all his work up to the time of awarding the scholarship a satisfactory grade of scholarship.

He must be a person of good character and must satisfy the Faculty Board that he is worthy of and in need of assistance.

THE UNIVERSITY SCHOLARSHIP

A scholarship which entitles the holder to exemption from payment of tuition fee for the year, is awarded annually by the Advisory Board of the Faculty to a student of the senior class in need of assistance who presents to the Board satisfactory evidence of good character and scholarship.
THE FREDERICA GEHRMANN SCHOLARSHIP  
(Value $200.00)  
(Not open to holders of Warfield and Cohen Scholarships)  
This scholarship was established by the bequest of the late Mrs. Frederica Gehrmann and is awarded to a third-year student who at the end of the second year has passed the best practical examinations in physiology, pharmacology, pathology, bacteriology, immunology, serology, surgical anatomy and neuro-anatomy.

THE CLARENCE AND GENEVRA WARFIELD SCHOLARSHIPS  
(Value $300.00 each)  
There are five scholarships established by the regents from the income of the fund bequeathed by the will of Dr. Clarence Warfield.  
Terms and Conditions: These scholarships are available to students of any of the classes of the course in medicine. Preference is given to students from the counties of the state of Maryland which the Advisory Board of the Faculty may from time to time determine to be most in need of medical practitioners.  
Any student receiving one of these scholarships must agree, after graduation and a year's internship, to undertake the practice of medicine, for a term of two years, in the county to which the student is accredited, or in a county selected by the Board. In the event that a student is not able to comply with the condition requiring him to practice in the county to which he is accredited by the Board, the money advanced by the regents shall be refunded by the student.

THE ISRAEL AND CECelia E. COHEN SCHOLARSHIP  
(Value $150.00)  
This scholarship was established by the late Eleanor S. Cohen in memory of her parents, Israel and Cecelia E. Cohen. Terms and conditions: This scholarship will be available to students of any one of the classes of the course in medicine; preference is given to students of the counties in the state of Maryland which the Advisory Board of the Faculty may from time to time determine to be most in need of medical practitioners. Any student receiving one of these scholarships must, after graduation and a year's internship, agree to undertake the practice of medicine for a term of two years in the county to which the student is accredited, or in a county selected by the council. In the event that a student is not able to comply with the condition requiring him to practice in the county to which he is accredited by the Board, the money advanced by the regents shall be refunded.

THE DR. HORACE BRUCE HETTRICK SCHOLARSHIP  
(Value $125.00)  
This scholarship was established by Dr. Horace Bruce Hetrick as a memorial to his sons, Bruce Hayward Hetrick and Augustus Christian Hetrick. It is to be awarded by the Advisory Board of the Faculty to a student of the senior class.
THE HENRY ROLANDO SCHOLARSHIP
(Value approximately $250.00)

The Henry Rolando Scholarship was established by the Board of Regents of the University of Maryland from a bequest to the Board by the late Anne H. Rolando for the use of the Faculty of Medicine.

This scholarship will be awarded each academic year on the recommendation of the Advisory Board of the Faculty to a "poor and deserving student."

THE READ SCHOLARSHIPS

The sum of $500.00 is now available to cover two (2) scholarships in the amount of $250.00 each for a given academic year. Beginning in 1945, these scholarships were made possible by a donation from the Read Drug and Chemical Company of Baltimore, Maryland. Two students are to be selected by the Dean of the School of Medicine in collaboration with the Scholarship and Loan Committees of the Medical School with the provision that the students selected shall be worthy, deserving students, residents of the State of Maryland.

LOAN FUNDS

W. K. KELLOGG FUND

This loan fund was established in the academic year 1942 with money granted by the W. K. Kellogg Foundation. The interest paid on the loans, together with the principal of the fund as repaid, will be used to found a rotating loan fund. Loans will be made on the basis of need, character and scholastic attainment.

FACULTY OF MEDICINE LOAN FUND

A Faculty of Medicine Loan Fund was established with money derived from the bequest of Dr. William R. Sanderson, Class 1882, and the gift of Dr. Albert Stein, Class 1907. Loans will be made on the basis of need, character, and scholastic ability.

THE JAY W. EATON LOAN FUND

This fund was established by the local chapter of the Nu Sigma Nu Fraternity in memory of Jay W. Eaton of the class of 1946.

Beginning in 1946 an interest-free loan of $100.00 will be made to some worthy member of the senior class, on recommendation of the Scholarship Committee of the School of Medicine. This loan is to be credited to the tuition fee of the appointed student and is to be repaid by the student within four years following his graduation.

THE SENIOR CLASS LOAN FUND

The senior class of 1945 originated this fund which will accumulate by subscription from among members of each senior class.

The conditions of the agreement provide that the dean of the School of Medicine award a loan of $100.00 to a needy member of the senior class on the recommendation of a self-perpetuating committee of two members of the faculty.

Loans from this fund are to be credited to the tuition fee of the appointed student and are to be repaid within five years from the date of graduation.
THE STUDENT AID FUND FOR SENIORS

This fund was originated by the class of 1950 and is sponsored by the senior class of each succeeding year. The purpose of the fund is to provide financial aid for any deserving member of the senior class. All members of the senior class are eligible to apply for a loan. Applications may be filed at the office of the dean.

The conditions of the agreement provide that the Scholarship and Loan Committee award loans to members of the senior class on recommendation of a self-perpetuating committee of two members of the faculty who may call on the president of the senior class for assistance, if desired.

Loans from this fund are made on a non-interest bearing basis and are payable within five years. A signed note is required. No co-signers are necessary.

ORGANIZATION OF THE CURRICULUM

The curriculum is organized under fifteen departments.
1. Anaesthesiology.
3. Bacteriology and Immunology.
4. Biological Chemistry.
5. Gynecology.
6. Medicine (including Medical Specialties).
7. Obstetrics.
11. Pharmacology and Materia Medica.
12. Physiology.
13. Psychiatry.
15. Surgery (including Surgical Specialties).

The instruction is given in four academic years of graded work.

Several courses of study extend through two years or more, but in no case are the students of different years thrown together in the same course of teaching.

The first and second years are devoted largely to the study of the structures, functions and chemistry of the normal body. Laboratory work occupies most of the student's time during these two years.

Some introductory instruction in medicine and surgery is given in the second year. The third and fourth years are almost entirely clinical.

A special feature of instruction in the school is the attempt to bring together teacher and student in close personal relationship. In many courses of instruction the classes are divided into small groups and a large number of instructors insures attention to the requirements of each student.

In most courses the final examination as the sole test of proficiency has disappeared and the student's final grade is determined largely by partial examinations, recitations and assigned work carried on throughout the course.
THIRD YEAR

Lectures are given on the general physiology and pharmacology of anesthesia, with consideration of the special physiology and pharmacology of each anesthetic agent. The methods of induction and administration of anaesthesia are discussed. The factors influencing the selection of the anesthetic are emphasized, and the preparation and care of the anaesthetized patient are carefully explained.

These lectures are correlated with practical demonstrations, supplemented by lantern slides and motion pictures, at the University Hospital.

FOURTH YEAR

Each senior student is required to spend six hours per week for four weeks observing and administering anaesthetics in the operating room.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third year</td>
<td>10</td>
</tr>
<tr>
<td>Fourth year</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
</tr>
</tbody>
</table>

ANATOMY

EDUARD UHLENHUTH.......................... Professor of Anatomy and Head of the Department
FRANK H. J. FIGGE.......................... Professor of Anatomy
OTTO C. BRANTIGAN.......................... Professor of Surgical Anatomy
O. G. HARNE............................... Associate Professor of Anatomy
VERNON E. KRAHL............................ Associate Professor of Anatomy
W. WALLACE WALKER.......................... Associate Professor of Surgical Anatomy
JOHN F. LUTZ............................... Assistant Professor of Anatomy
WILLIAM B. SETTLE.......................... Assistant Professor of Surgical Anatomy
KARL F. MECH............................... Assistant Professor of Anatomy
HERBERT E. REIFSCHEIDER.................... Associate in Surgical Anatomy
HARRY C. BOWIE.............................. Associate in Surgical Anatomy
ROSS Z. PIERPONT........................... Associate in Surgical Anatomy
H. PATTERSON MACK........................... Associate in Anatomy
PATRICK C. PHelan, JR...................... Associate in Anatomy
V. V. BRUNST............................... Research Associate in Anatomy
ROBERT E. MCCAFFERTY...................... Instructor in Anatomy
GLADYS E. WADSWORTH....................... Instructor in Anatomy
GEORGE W. SMITH............................ Instructor in Anatomy
RICHARD M. GARRETT.......................... Associate in Surgical Anatomy
GERALDINE F. WOLFE........................ U. S. P. H. Fellow
DeWitt T. Hunter.......................... John F. B. Weaver Fellow in Anatomy
A. Gibson Packard.......................... John F. B. Weaver Fellow in Anatomy
WILLIAM E. LOECHEL........................ U.S.P.H. Fellow in Medical Art
GROSS ANATOMY. First Year. First semester. The gross structure of the human body, studied by dissection of the human cadaver. The entire human body is dissected. Approximately 370 hours; of these 80 hours are devoted to lectures and conferences, the rest to laboratory work and demonstrations. Drs. Uhlenhuth, Krah, Mech, McCafferty, Phelan and Miss Wadsworth.

First Year. First Semester. Peripheral Nervous System. A lecture course of approximately 32 hours, in two-hour periods each Saturday morning. Dr. Uhlenhuth.

HISTOLOGY AND EMBRYOLOGY First Year. First Semester. The Microscopic Structure of the Organs, Tissues and Cells of the Human Body.

This course will present an integrated study of the histology and embryology of the human body, but most of the time is devoted to the study of histology. An attempt will be made to correlate this with gross anatomy as well as other subjects in the medical curriculum. Special emphasis will be placed on the dynamic and functional aspects of the subject. 150 hours. Dr. Figge, Prof. Harne, Drs. Lutz, Mack, Brunst and Miss Wolfe.

NEUROANATOMY. First Year. Second Semester. The Central Nervous System. The study of the detailed anatomy of the central nervous system will be coordinated with the structure and function of the entire nervous system. This study will require the dissection of a human brain and the examination of stained microscopic sections of various levels of the brain stem. 100 hours. Dr. Figge, Prof. Harne, Drs. Lutz, Mack, Smith and Miss Wolfe.

SURGICAL ANATOMY. Second Year. Second Semester. Topographic and Surgical Anatomy. The course is designed to bridge the gap between abstract anatomy and clinical anatomy as applied to the study and practice of medicine and surgery. Students are required to dissect and demonstrate all points, outlines and regions of the cadaver. Underlying regions are dissected to bring outlines and relations of structures. Dr. Brantigan and staff.

Total hours: 96

GRADUATE AND POSTGRADUATE COURSES. Consult the general catalog of the University of Maryland for descriptions of these courses.

ART AS APPLIED TO MEDICINE

CARL DAME CLARKE . . . . . . . . . . . . . . Associate Professor of Art as Applied to Medicine
THOMAS M. STEVENSON, JR. . . . . . . . . . . . Assistant in Art as Applied to Medicine
JANE L. BLEAKLEY . . . . . . . . . . . . . . . . . Assistant in Art as Applied to Medicine
RAYMOND J. CLAYTON, JR. . . . . . . . . . . . Assistant in Art as Applied to Medicine
SHIRLEY K. FITZGERALD . . . . . . . . . . . . Assistant in Art as Applied to Medicine
JENIFRED S. BOEHM . . . . . . . . . . . . . . . . Assistant in Art as Applied to Medicine

This department is maintained for the purpose of supplying pictorial and plastic illustrations for visual teaching in the classrooms of the medical school and for publication in scientific periodicals. Research in prosthetics and the production of prosthetic appliances are also carried out in this department.

Special courses of instruction are given to qualified students.
BACTERIOLOGY AND IMMUNOLOGY

FRANK W. HACHTEL .................................. Professor of Bacteriology and Head of the Department
LLOYD D. FELTON .................................. Visiting Research Professor of Bacteriology
EDWARD STEERS .................................... Associate Professor of Bacteriology
ANDREW G. SMITH .................................. Assistant Professor of Bacteriology
H. EDMUND LEVIN .................................. Associate in Bacteriology
MERRILL J. SNYDER .................................. Instructor in Bacteriology
JOSEPH R. MERKEL .................................. Research Assistant in Bacteriology
ERNEST C. HERRMANN, JR. ......................... Research Assistant in Bacteriology
RICHARD E. BROWN .................................. Research Assistant in Bacteriology
BERNARD KRAMER .................................. Research Assistant in Bacteriology

Second Year. First Semester. The principles of general bacteriology are taught by quiz, conference, and lecture.

Instruction given in the laboratory includes the methods of preparation of culture media, the study of pathogenic bacteria, and the bacteriological examination of water and milk. The bacteriological diagnosis of communicable diseases is also included.

Second Year. Second Semester. The principles of immunology are presented by means of quizzes, conferences and lectures.

The course includes a consideration of infection and immunity, the nature and action of the various antibodies, complement fixation and flocculation tests, hypersensitiveness, and the preparation of bacterial vaccines.

Experiments are carried out by the class in the laboratory. During the latter half of the semester the class is divided into sections.

Total hours: Bacteriology 120.
Immunology 72.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

BIOLOGICAL CHEMISTRY

EMIL G. SCHMIDT .................................. Professor of Biological Chemistry and Head of the Department
EDWARD J. HERBST .................................. Assistant Professor of Biological Chemistry
RAYMOND E. VANDERLINDE ......................... Assistant Professor of Biological Chemistry
WILLIAM H. SEMMERSOHN ......................... Lecturer in Biological Chemistry
ANN VIRGINIA BROWN .............................. Instructor in Biological Chemistry
JEAN D. NIMMO .................................... Research Assistant in Biological Chemistry
ELEANOR B. Glinos .................................. Research Assistant in Biological Chemistry
DOROTHY D. HUBBARD .............................. Williams Research Corporation Fellow in Biological Chemistry
GERALD KESLER .................................. Nutrition Foundation Fellow in Biological Chemistry
ROBERT G. LEONARD, B.S., M.S. ............... Bressler Reserve Fund Fellow in Biological Chemistry

First Year. Second Semester. This course is designed to present the principles of biological chemistry and to indicate their applications to the clinical aspects of medicine. The phenomena of living matter and its chief ingredients, secretions and excretions are discussed in lectures and conferences and examined experimentally. Training is given in biochemical methods of investigation. Total hours: 208.
Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

CARDIOLOGY [A DIVISION OF MEDICINE]

In the third year a series of lectures and clinics correlated with pathological studies is given the entire class.

In the fourth year students are assigned for two periods weekly for five weeks to the Cardiac Clinic and attend consultation rounds and conferences on cardiovascular cases on the Medical wards.

CLINICAL PATHOLOGY [A DIVISION OF MEDICINE]

Milton S. Sacks ................... Associate Professor of Medicine and Head of the Division of Clinical Pathology
Sol Smith ......................... Assistant Professor of Medicine
Marie A. Andersch ............... Biochemist, University Hospital, Associate in Medicine
S. Edwin Muller .................. Associate in Medicine
L. Ann Heilen .................... Instructor in Medicine
Audrey M. Funk .................. Instructor in Medicine
Perry O. Futterman ............. Instructor in Medicine
Charles P. Barnett .............. Baltimore Rh Laboratory Fellow in Medicine

Third Year. First and second semesters. The course in Clinical Pathology is designed to train the student in the performance and interpretation of fundamental diagnostic laboratory procedures used in clinical medicine.

During the first semester the work is devoted to a thorough consideration of diseases of the hematopoietic system. In the second semester, laboratory work in urinalysis, gastric analysis, hepatic, pancreatic and renal functions, together with a thorough discussion of underlying biochemical and physiological mechanisms is undertaken. During this semester examination of cerebrospinal fluid, transudates and exudates is included. Elements of clinical parasitology complete the work in this semester.

Each student provides his own microscope and blood counting equipment. A completely equipped locker is assigned to every student.

Total Hours: 128.

Fourth Year. During the fourth year the student applies in the laboratories of the various affiliated hospitals the knowledge acquired during the preceding year. A completely equipped locker is assigned enabling him to work independent of the general laboratories. Instructors are available during certain hours to give necessary assistance and advice.

DENTISTRY [A DIVISION OF SURGERY]

Brice M. Dorsey .................. Professor of Oral Surgery
Myron S. Aisenberg .............. Professor of Pathology

1 Faculty Member, School of Dentistry.
This section has been reorganized for the teaching of both medical and dental students. There has been established a division in the out-patient department, and beds will be provided in the University Hospital, for the care of patients who will be available for the teaching of students from both schools.

Senior year: clinics weekly.

Ward instruction and group teaching are given. This includes diagnosis and treatment of diseases of the face, mouth and jaws.

DERMATOLOGY AND SYPHILOLOGY [A DIVISION OF MEDICINE]

Harry M. Robinson, Sr. .................................................. Professor of Dermatology
Francis A. Ellis ......................................................... Assistant Professor of Dermatology
Harry M. Robinson, Jr. .................................................. Assistant Professor of Dermatology
Eugene S. Bereston ....................................................... Associate in Dermatology
A. Albert Shapiro ......................................................... Associate in Dermatology
Israel Zeligman ............................................................ Associate in Dermatology
R. C. V. Robinson .......................................................... Associate in Dermatology
William R. Bundick ........................................................ Associate in Dermatology
Lucile J. Caldwell ........................................................ Instructor in Dermatology
Mark B. Hollander ........................................................ Instructor in Dermatology
V. Harwood Link ........................................................... Instructor in Dermatology
Morris M. Cohen ........................................................... Instructor in Dermatology
Lee R. Lerman ............................................................. Assistant in Dermatology

The third year class receives six lecture-demonstrations on the principles of dermatology by Dr. Robinson.

The senior course consists of conferences and demonstrations of the common skin diseases and venereal diseases in the outpatient dermatologic and syphilis clinics and on the medical wards.
GASTRO-ENTEROLOGY

Third Year. A series of six lectures is given on the diseases of the digestive tract.

Fourth Year. Students attend the gastro-intestinal clinic for two periods weekly for five weeks, and consultation rounds on gastro-intestinal cases on the Medical wards. Practical instruction is given in the use of modern methods of study of the diseases of the gastro-intestinal tract.

GYNECOLOGY
Third Year. A comprehensive course of 30 lectures in the field of gynecology, female urology, and female oncology is given to the entire class.

Fourth Year. An intensive course is given to small groups of students throughout the year, during which time the students are assigned exclusively to this department. The course consists of instructions including lectures, seminars, ward rounds, and operative clinics. In addition, two special instruction periods are given in pathology at which time a review of the pathological material seen at operation is made with especial reference to the pathology of malignant disease. The students are assigned patients on the gynecological wards, and also work in the gynecological, cystoscopy and oncology dispensaries each day.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
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<tr>
<td>Third year</td>
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<tr>
<td>Fourth year</td>
<td>75</td>
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<td>Total:</td>
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HISTORY OF MEDICINE

Louis A. M. Krause ........................................... Professor of Clinical Medicine

Beginning with the spring of 1942 a group of lectures on the history of medicine has been presented on selected phases and trends of the development of medical knowledge and practice. It is planned to avoid duplication of subject matter for at least four years.

These lectures are offered primarily for our students, but a cordial invitation is extended to anyone who may wish to attend.

Announcement of the lectures will be made by mail and on the bulletin board of the School of Medicine.

HYGIENE AND PUBLIC HEALTH [A DIVISION OF MEDICINE]

Huntington Williams ........................................... Professor of Hygiene and Public Health
William H. F. Warthen ................................. Associate Professor of Hygiene and Public Health
Ross Davies .................................................. Associate Professor of Hygiene and Public Health

Third Year. A one-hour lecture is given to the whole class each Tuesday during both semesters. Basic instruction is afforded in the clinical and public health aspects of the communicable diseases including syphilis and tuberculosis. The lectures are under the auspices of the Department of Medicine and are given by staff members of that department, including physicians representing pediatrics, hygiene and public health, and by staff members of the Baltimore City Health Department.

Fourth Year. Elective work is also assigned at the Western Health District Building of the City Health Department, 617 West Lombard Street, where the District Health Officer arranges for home visiting and the student prepares and presents a Home Survey Report.

The course deals with the fundamentals of public health and supplements the work in the third year. The major emphasis in both years is on the practice of
preventive medicine and the relation of prevention to diagnosis and treatment, and on the civic and social implications of the medical services.

INDUSTRIAL MEDICINE AND SURGERY [A DIVISION OF SURGERY]

This section is under the combined supervision of the medical and surgical departments. It is a cooperative effort by members of the medical school and hospital staff to afford means for clinical and laboratory study of the patient who has been subjected to traumatic or medical industrial hazard, so that adequate care may be instituted to promote his physical well-being. The facilities of the laboratories of the medical school and hospital are available as required.

Under direction of this department limited undergraduate instruction is given, especially in the methods of examination and of keeping records and in the general medico-legal principles as they affect the industrial employee, the employer, the general insurers, the physician and the hospital. There is also instruction on methods of making life insurance and other physical examinations, whether for employment or for health purposes. The wards of the University, Mercy and Baltimore City Hospitals provide for bed-side instruction.

Total hours: 8.

LEGAL MEDICINE [A DIVISION OF MEDICINE]

Third Year. This course embraces a summary of medical jurisprudence including the laws governing the practice of medicine, industrial compensation and malpractice, proceedings in criminal and civil prosecution, medical evidence and testimony, identification of bodies, injuries by blunt force, gunshot and other mechanisms, natural and homicidal deaths, medicolegal toxicology and the medicolegal autopsy. (12 hours.)

Elective Course (summer). A small number of students may upon application be assigned to elective work in the laboratory of the Chief Medical Examiner of the State of Maryland.
THOMAS C. WOLFF .................................................. Associate Professor of Medicine
HOWARD M. BUBERT .................................................. Associate Professor of Medicine
J. SHELDON EASTLAND ............................................. Associate Professor of Medicine
MILTON S. SACKS ..................................................... Associate Professor of Medicine
LEWIS P. GUNDRY ..................................................... Associate Professor of Medicine
SAMUEL MORRISON .................................................. Associate Professor of Medicine
THEODORE E. WOODWARD .......................................... Associate Professor of Medicine
WILLIAM H. SMITH .................................................. Associate Professor of Medicine
GEORGE MCLean ..................................................... Assistant Professor of Medicine
WETHERBEE FORT ................................................... Assistant Professor of Medicine
FRANK J. GERAGHTY .................................................. Assistant Professor of Medicine
H. VERNON LANGELUTTIG ........................................ Assistant Professor of Medicine
SOL SMITH ............................................................... Assistant Professor of Medicine
EDWARD F. COTTER .................................................. Assistant Professor of Medicine
C. EDWARD LEACH ................................................... Assistant Professor of Medicine
EPHRAIM T. LISANSKY .............................................. Assistant Professor of Medicine
SAMUEL T. R. REVELL, JR. .......................................... Assistant Professor of Medicine
HENRY J. MARRIOTT .................................................. Assistant Professor of Medicine
ROBERT A. REITNER .................................................. Assistant Professor of Medicine
SAMUEL LEGUM ....................................................... Associate in Medicine
W. GRAFTON HERSBERGER ......................................... Associate in Medicine
MEYER W. JACOBSON ................................................ Associate in Medicine
CONRAD B. ACTON .................................................... Associate in Medicine
FRANCIS G. DICKEY .................................................. Associate in Medicine
LAWRENCE M. SERRA ................................................ Associate in Medicine
MARIE A. ANDERESCH .............................................. Associate in Medicine and Lecturer in Biological Chemistry
HARRY M. ROBINSON, JR. .......................................... Associate in Medicine
WILLIAM K. WALLER ................................................ Associate in Medicine
ARTHUR KARFGIN .................................................... Associate in Medicine
M. PAUL BYERLY ..................................................... Associate in Medicine
HENRY W. D. HOLLIES ............................................. Associate in Medicine
S. EDWIN MULLER ................................................... Associate in Medicine
SIDNEY SCHERLIS .................................................... Associate in Medicine
KURT LEVY ............................................................. Associate in Medicine
WILFRED H. TOWNSHEND ........................................ Associate in Medicine
ALVIN J. HARTZ ....................................................... Associate in Medicine
JAMES R. KARNS ....................................................... Associate in Medicine
EDMUND G. BEACHAM .............................................. Associate in Medicine
RICHARD A. CAREY .................................................. Associate in Medicine
LOUIS V. BLUM ........................................................ Associate in Medicine
LEON ASHMAN ......................................................... Associate in Medicine
LOUIS KROLL ........................................................... Associate in Medicine
DANIEL WILFSON, JR. ............................................... Associate in Medicine
JONAS COHEN ........................................................ Associate in Medicine
WALTER KARFGIN .................................................... Associate in Medicine
IRVING FREEMAN ..................................................... Associate in Medicine
PHILIP D. FLYNN ..................................................... Instructor in Medicine
EDWARD S. KALLINS ................................................ Instructor in Medicine
JOHN A. MYERS ....................................................... Instructor in Medicine
William G. Helfrich .................................. Instructor in Medicine
Joseph E. Muse ....................................... Instructor in Medicine
William H. Kammer, Jr .................................. Instructor in Medicine
Samuel J. Hankin ....................................... Instructor in Medicine
Frederick J. Vollmer .................................. Instructor in Medicine
John R. Davis .......................................... Instructor in Medicine
John B. deHoff .......................................... Instructor in Medicine
Charles F. Brambel .................................... Instructor in Medicine
L. Ann Hellen ........................................... Instructor in Medicine
Audrey M. Funk ......................................... Instructor in Medicine
J. Emmett Queen ........................................ Instructor in Medicine
Leon A. Kochman ........................................ Instructor in Medicine
Robert E. Bauer ........................................ Instructor in Medicine
C. Herman Williams ..................................... Instructor in Medicine
Jerome Sherman .......................................... Instructor in Medicine
Perry O. Futterman ...................................... Instructor in Medicine
Elizabeth D. Sherrill ................................... Instructor in Medicine
Philip D. Flynn ......................................... Instructor in Medicine
Joseph Furnari .......................................... Instructor in Medicine
Robert T. Parker ........................................ Instructor in Medicine
Morris Fine .............................................. Instructor in Medicine
Stephen J. Van Lill, III ................................ Instructor in Medicine
Stuart D. Sunday ........................................ Instructor in Medicine
Irvin B. Kemick ......................................... Instructor in Medicine
Maurice Feldman, Jr .................................... Instructor in Medicine
James J. Nolan .......................................... Instructor in Medicine
Charles E. Shaw ........................................ Instructor in Medicine
Joseph G. Bird .......................................... Instructor in Medicine
Rollin C. Hudson ........................................ Assistant in Medicine
Franklin E. Leslie ....................................... Assistant in Medicine
John C. Osborne ......................................... Assistant in Medicine
Raymond M. Lauer ...................................... Assistant in Medicine
Lauriston L. Keown .................................... Assistant in Medicine
Burton V. Lock .......................................... Assistant in Medicine
Carl F. Myers ........................................... Assistant in Medicine
Jack Wexler .............................................. Assistant in Medicine
Bernard Burgin .......................................... Assistant in Medicine
Marvin Goldstein ....................................... Assistant in Medicine
Donald Mintzer ......................................... Assistant in Medicine
Franklin Leslie .......................................... Assistant in Medicine
Joseph C. Myers ........................................ Assistant in Medicine
Thomas Worsley ........................................ Assistant in Medicine
Edward S. Kallins ...................................... Assistant in Medicine
Joseph B. Workman ..................................... Research Fellow in Medicine
Charles P. Barnett .................................... Baltimore Rh Typing Laboratory Fellow in Medicine

Second Year

Introduction to clinical medicine.

(a) Introductory physical diagnosis. (1 hour a week, first semester; 2 hours a week, second semester.)

(b) Medical clinics. (1 hour a week, second semester.)
SCHOOL OF MEDICINE

THIRD YEAR

I. The methods of examination: (a) History taking. (b) Physical diagnosis. (c) Clinical pathology.
   Instruction includes lectures and practice in the wards, outpatient department and laboratory.

II. The principles of medicine:
   (a) Lectures, clinics and demonstrations in general medicine, neurology, and preventive medicine.

Third Year teaching of physical diagnosis is carried out chiefly in the various units of the City Hospital.

FOURTH YEAR

The practice of medicine:

I. Clinical clerkship on the medical wards (31 hours a week for ten weeks).
   (a) Responsibility, under supervision, for the history, physical examination, laboratory examinations and progress notes of assigned cases.
   (b) Ward classes, ward rounds and conferences in general medicine, the medical specialties, and therapeutics.

II. Dispensary work in the medical specialties.

III. Clinical-pathological conferences (1 hour a week).

The medical dispensary of the University Hospital is utilized for teaching in the third year. Each student spends two hours daily for ten weeks in dispensary work. The work is done in groups of four to six students under an instructor. Systematic history-taking is especially stressed. Physical findings are demonstrated. The student becomes familiar with the commoner acute and chronic disease processes.

Clinical clerkships in the Fourth Year are served on the medical wards of both the University and Mercy Hospitals.

NEUROLOGICAL SURGERY [A DIVISION OF SURGERY]

Charles Bagley, Jr. .................. Professor of Neurological Surgery
Richard G. Coblentz .................. Professor of Clinical Neurological Surgery
James G. Arnold, Jr. .................. Associate Professor of Neurological Surgery
John A. Wagner ...................... Associate Professor of Pathology and Neuropathology
Robert Oster ......................... Associate in Electro-physiology, and Director of the Hoffberger Electroencephalographic Laboratory

Raymond K. Thompson .................. Associate in Neurological Surgery, Director of Neurological Surgery Research
Frank J. Otensek ...................... Instructor in Neurological Surgery
John W. Chambers ..................... Instructor in Neurological Surgery
Louis O. J. Manganello .............. Research Fellow, Fund B, assigned to Neurological Surgery, Exchange Resident in Neurosurgery, Baltimore City Hospitals

Robert M. N. Crosby .................. Fellow in Neurological Surgery
Pomeroy Nichols, Jr. .................. Fellow in Neurological Surgery

Third year. The course covers instruction in diagnosis and treatment of surgical conditions of the brain, spinal cord and the peripheral nerves. Drs. Bagley, Coblentz, Arnold and Thompson.
Fourth year. Weekly ward rounds and conferences are given at the University Hospital. Drs. Bagley, Coblentz, Arnold and Thompson. Instruction is given (elective) in the out-patient dispensary by Drs. Louis Manganiello, George Smith and José A. Alvarez.

Third year.................................................. 12 hours
Fourth year.................................................. 15 hours
Conference and ward rounds (elective).......................... 32 hours
Neurological Surgery Dispensary (elective)............. 48 hours
Total.................................................. 107 hours

**NEUROLOGY**

Leon Freedom........................................ Associate Professor of Neurology
Philip F. Lerner..................................... Assistant Professor of Neurology
William L. Fearing.................................. Associate in Neurology
Edward F. Cotter..................................... Associate in Neurology
Harry Teitelbaum................................... Associate in Neurology
George G. Merrill.................................. Associate in Neurology

Second Year. Fifteen one-hour lectures are given to correlate the anatomy and physiology of the nervous system with clinical neurology.

Third Year. Twenty hours of instruction are given to the whole class in neuropathology supplemented with pathological demonstrations. Sixteen lecture-demonstrations are given in which the major types of the diseases of the nervous system are discussed. A course is also given at the Baltimore City Hospitals, comprising eight periods of two hours each, in which the students in small groups carry out complete neurological examinations of selected cases which illustrate the chief neurological syndromes.

Fourth Year. Fourth year students in the Medical section attend neurological consultation rounds on ward patients in the University and Mercy Hospitals. All patients presented at these clinics are carefully examined.

**Dispensary Instructions.** Small sections are instructed in the neurological dispensary of the Mercy Hospital five afternoons each week. In this way students are brought into contact with nervous diseases in their early and late manifestations.

**OBSTETRICS**

Louis H. Douglass.......................... Professor of Obstetrics and Head of the Department
J. Morris Reese.......................... Associate Professor of Obstetrics
D. Frank Kaltreider.......................... Associate Professor of Obstetrics
Isadore A. Siegel.......................... Assistant Professor of Obstetrics
John E. Savage.......................... Assistant Professor of Obstetrics
Hugh B. McNally.......................... Assistant Professor of Obstetrics
Margaret B. Ballard.......................... Associate in Obstetrics
D. McClelland Dixon.......................... Associate in Obstetrics
Osborne C. Christensen.......................... Associate in Obstetrics
J. Tyler Baker.......................... Associate in Obstetrics
J. Huff Morrison.......................... Associate in Obstetrics
George H. Davis.......................... Instructor in Obstetrics
J. King B. E. Seegar.......................... Instructor in Obstetrics
Fourth Year: The instruction is entirely clinical. The "block system" is used. One-sixteenth of the class is assigned to obstetrics only for a period of 2 weeks. Students live at the University Hospital during this time and are on call 24 hours a day. They receive formal class instruction, are required to attend all rounds and staff conferences and are present at the majority of the deliveries as observers, assistants or as accoucheurs. In this way each student will actively participate in about 15 deliveries. Operative work on an obstetrical mannikin is an organized part of the course. Each student receives 6 hours of this type of instruction.

Each student spends 20 hours in the prenatal and postnatal clinics, where instructions in these fields are given.

Students assigned to obstetrics are required to attend the monthly meetings of the Committee on Maternal Mortality of Baltimore, where all maternal deaths occurring in this city are presented and discussed.

<table>
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<td>Second</td>
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<td>Third</td>
<td>148</td>
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<tr>
<td>Fourth</td>
<td>106</td>
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ONCOLOGY [A DIVISION OF GYNECOLOGY AND SURGERY]

J. Mason Hundley, Jr. ........................................ Professor of Gynecology
Beverley C. Compton ........................................... Assistant Professor of Gynecology
William K. Diehl ............................................. Assistant Professor of Gynecology
Everett S. Diggs ............................................. Assistant Professor of Gynecology
Ernest I. Cornbrookes, Jr. .................................. Assistant Professor of Gynecology
Arthur G. Siwinski .......................................... Assistant Professor of Surgery
John C. Dumler ................................................ Assistant Professor of Gynecology
Edwin H. Stewart ........................................... Associate in Surgery
J. Duer Moores .............................................. Instructor in Surgery
Louis F. Goodman ............................................ National Cancer Institute Trainee in Pathology
Girardo B. Folanco .......................................... Assistant Radiologist
Thomas A. Stebbins ....................................... Medical Illustrator in Oncology and Gynecology

The purpose of the courses in Oncology is to give students training in the diagnosis and treatment of neoplastic diseases not obtained in other departments and at the same time to correlate this training with that received in surgery, medicine, roentgenology and other specialties.

Third year. Six didactic lectures are given on the diagnosis and treatment of cancer of the generative organs. Dr. Hundley and staff.

Five lectures in general oncology are given to the entire Junior Class at the end of the year. The increasing importance of the cancer problem is emphasized. The biological aspects of cancer and the relation of hormones, carcinogenic agents, and etiological factors are discussed. The gradation of neoplasms, and the biophysical effects of irradiation therapy are presented. The diagnosis, surgical and radiological treatment of neoplasms of the head and neck, oral cavity, skin, breasts, and hemopoietic system are discussed. Dr. Ward and staff.

Fourth Year. Ten senior students of the University section are assigned to the Oncology clinic. Five students are assigned to the Tuesday morning clinic, and the alternate group to the Friday morning clinic. The diagnosis and treatment, both surgical and radiological are discussed in the presence of a staff member of the departments of Pathology, Radiology, and Surgery.

An outpatient Gynecological Clinic is held bi-weekly which affords an opportunity for instruction of small groups of students, which are assigned in rotation, in the various phases of malignancy of the generative organs. Weekly ward rounds and operative clinics are held for seniors.

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<th>Oncology</th>
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<td>5 hours</td>
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<td>Fourth year</td>
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<td>Total</td>
<td>17 hours</td>
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OPHTHALMOLOGY

F. Edwin Knowles, Jr.
Assistant Professor of Ophthalmology and Chairman of the Department
Third Year. Second semester. Dr. Friedman reviews the anatomy and physiology of the eye and discusses the methods used in making the various examinations. Errors of refraction and their effect upon the general system are explained. Weekly section work, demonstrating the use of the ophthalmoscope, with the aid of kodachrome transparencies of the fundus oculi is carried on during the entire session at the Baltimore Eye, Ear, and Throat Hospital by Dr. Kremen.

Fourth Year. Clinics and demonstrations are given in diseases of the eye, twice weekly, for one year. Dr. Knowles.

The course consists of instruction in the clinic to small groups of students four days a week for four weeks. During this period, the student examines patients, diagnoses and treats various ocular diseases, under the supervision of Drs. Knowles, Smith, Brumback, Friedman and Ozazewski. Twice weekly lectures and lantern slide demonstration are given upon diseases of the eye, with particular reference to their diagnosis, management and relation to general medicine. Special lectures are given the entire class on vascular changes in the eye, refraction, cataract and neuro-ophthalmology. Certain operations are demonstrated by motion pictures.

Weekly ward classes are held at the University and Mercy Hospitals during which the eye grounds in the various medical and surgical conditions are demonstrated. Drs. Knowles, Kemler, Kremen, Smith, Brumback, Jeppi and Pacienza.

Third year ........................................ 20 hours
Fourth year ....................................... 41 hours
Total .................................................. 61 hours

ORTHOPAEDICS [A DIVISION OF SURGERY]

Allen Fiske Voshell .................................. Professor of Orthopaedic Surgery
Harry L. Rogers ...................................... Clinical Professor of Orthopaedic Surgery
Moses Gellman ........................................ Associate Professor of Orthopaedic Surgery
Henry F. Ullrich ...................................... Associate Professor of Orthopaedic Surgery
Milton J. Wilder ...................................... Assistant Professor in Orthopaedic Surgery
I. H. Masertiz .......................................... Associate in Orthopaedic Surgery
Jason H. Gaskel ...................................... Instructor in Orthopaedic Surgery
Isaac Gutman .......................................... Instructor in Orthopaedic Surgery
James P. Miller ....................................... Instructor in Orthopaedic Surgery
Everett D. Jones ..................................... Assistant in Orthopaedic Surgery
Robert C. Abrams .................................... Assistant in Orthopaedic Surgery

Didactic instruction is given in the second, third and fourth years. Clinical,
bedside and outpatient instruction is given at the University, Mercy Hospitals and their Outpatient Departments, Kernan Hospital for Crippled Children, and Baltimore City Hospitals. Brief discussions and demonstrations of physical and occupational therapy are included in the course.

Second year ................................................................. 19 hours
Third year ................................................................. 36 hours
Fourth year ............................................................... 90 hours
Total ................................................................. 145 hours

OTOLARYNGOLOGY [A DIVISION OF SURGERY]

EDWARD A. LOOPER......................... Professor of Otolaryngology and Head of the Department
WATMAN F. ZINN........................................ Professor of Otolaryngology
THOMAS R. O’ROURKE....................................... Professor of Otolaryngology
FREDERICK T. KYPER............................ Associate Professor of Otolaryngology
BENJAMIN S. RICH................................. Associate Professor of Otolaryngology
FAYNE A. KAYSER................................. Associate Professor of Otolaryngology
W. RAYMOND MCKENZIE........................ Assistant Professor of Otolaryngology
THEODORE A. SCHWARTZ........................ Assistant Professor of Otolaryngology
ROBERT Z. BERRY................................. Associate in Otolaryngology
ARTHUR WARD............................... Associate in Otolaryngology
JOHN H. HIRSCHFELD.......................... Assistant in Otolaryngology
BENJAMIN H. ISAACS.......................... Associate in Otolaryngology
SAMUEL L. FOX................................. Associate in Otolaryngology
RICHARD J. CROSS................. Instructor in Otolaryngology

Third Year. Instruction to the whole class is given in the common diseases of the nose and throat, attention being especially directed to infections of the accessory sinuses, the importance of focal infections in the etiology of general diseases and modern methods of diagnosis. Lectures illustrated by lantern slides are given one hour weekly for eight weeks by Dr. Looper.

Fourth Year. Dispensary instruction is given for three hours daily, to small sections at the University and the Mercy Hospitals. The student is afforded an opportunity to study, diagnose and treat patients under supervision. Ward classes and clinical demonstrations are given in periods of one and one-half hours weekly throughout the session in the University and Mercy Hospitals.

The Looper Clinic for bronchoscopy and esophagoscopy, recently established in the University Hospital, affords unusual opportunities for students to study diseases of the larynx, bronchi and esophagus. The clinic is open to students daily from 2 to 4 P.M. under direction of Dr. Looper, and associates.

The Mercy Hospital clinic for bronchoscopy and esophagoscopy is under the direction of Dr. Zinn. In these two clinics the etiology, symptomatology, diagnosis and treatment of foreign bodies in the air and food passages, as well as bronchoscopy, are taught to students as an aid in the diagnosis and treatment of diseases of the lungs.

Third year ................................................................. 9 hours
Fourth year ............................................................ 53 hours
Total ................................................................. 62 hours
SCHOOL OF MEDICINE

OTOLOGY [A DIVISION OF SURGERY]

Thomas R. O'Rourke .................................................. Professor of Otolaryngology

The course in otology is planned to give a practical knowledge of the anatomy and physiology of the ear, and its proximity and relationship to the brain and other vital structures. The inflammatory diseases, their etiology, diagnosis, treatment and complications are particularly stressed, with emphasis upon their relationship to the diseases of children, head-surgery and neurology.

Third Year. The whole class is given instruction by means of talks, anatomical specimens and lantern slides. Dr. O'Rourk and associates.

Fourth Year. Small sections of the class receive instruction and make personal examinations of patients under the direction of an instructor. The student is urged to make a routine examination of the ear in his ward work in general medicine and surgery. Dr. O'Rourk and associates.

Third year ................................................................. 12 hours
Fourth year ............................................................... 40 hours
Total ................................................................. 52 hours

PATHOLOGY

Hugh R. Spencer .................................................. Professor of Pathology and Head of the Department
Robert B. Wright .................................................. Associate Professor of Pathology
C. Gardner Warner .................................................. Associate Professor of Pathology
Walter C. Merkel .................................................. Associate Professor of Pathology
Dexter L. Reimann .................................................. Associate Professor of Pathology
John A. Wagner .................................................. Associate Professor of Pathology
Albert E. Goldstein ............................................ Assistant Professor of Pathology
Milton S. Sacks .................................................. Associate in Pathology
Benedict Skitarelic .................................................. Associate in Pathology
Charles P. Barnett .................................................. Associate in Pathology
Conrad B. Acton .................................................. Instructor in Pathology
Howard B. Mays .................................................. Instructor in Pathology
Ephraim T. Lisanskey ............................................ Instructor in Pathology
D. McClelland Dixon ............................................. Instructor in Pathology
William B. VandeGriet ........................................... Instructor in Pathology
William J. Bryson .................................................. Instructor in Pathology
Karl F. Mech .................................................. Instructor in Pathology
Seymour W. Rubin .................................................. Instructor in Pathology
Theodore Kardash .................................................. Instructor in Pathology
Louis C. Gareis .................................................. Instructor in Pathology
Roy B. Turner .................................................. Instructor in Pathology
Edward L. J. Kreig ............................................. Instructor in Pathology
James H. Ramsey .................................................. Assistant in Pathology
Harry Cohen .................................................. Assistant in Pathology
Gerardo B. Polanco ............................................ National Cancer Institute Trainee

Courses of instruction in pathology are given during the second and third years. The courses are based on the previous study of normal structure and function and aim to outline the history of disease. The relationship between clinical symptoms and anatomical lesions is constantly stressed.
General Pathology. Second Semester, Second Year. This course includes the study of disturbances of the body fluids; disturbances of structure, nutrition and metabolism of cells; disturbances of fat, carbohydrate and protein metabolism; disturbances of pigment metabolism; inflammation and tumors.

Laboratory instruction is based on the study of prepared slides (loan collection) and corresponding gross material.

Applied Pathology, Including Gross Morbid Anatomy and Morbid Physiology. Third Year. The laboratory instruction in this course is carried out in small teaching museums where prepared specimens and material from autopsies with clinical histories and sections are available for study. For this work the class is divided into small groups. Clinical correlation is stressed.

Autopsies. Third Year. Students in small groups attend autopsies at the morgues of the University Hospital and the Baltimore City Hospitals.

Clinical-Pathological Conference. (Fourth Year.) These exercises are held in collaboration with the various clinical departments. Selected cases are discussed and autopsy findings are presented.

Second year........................................... 184 hours
Third year........................................... 160 hours
Fourth year.......................................... 30 hours
Total.................................................. 374 hours

PEDIATRICS

J. EDMUND BRADLEY .................................. Professor of Pediatrics and Head of the Department
C. LORING JOSLIN ...................................... Professor of Pediatrics
A. H. FINKELSTEIN .................................... Associate Professor of Pediatrics
FREDERICK B. SMITH ................................... Associate Professor of Pediatrics
GORDON E. GIBBS ..................................... Associate Professor Clinical Research
ALBERT JAFFE .......................................... Associate Clinical Professor of Pediatrics
SAMUEL S. GLICK ...................................... Assistant Professor of Pediatrics
JEROME FINEMAN ...................................... Assistant Professor of Pediatrics
GIBSON J. WELLS ...................................... Assistant Professor of Pediatrics
WILLIAM M. SEABOLD ................................... Assistant Professor of Pediatrics
CLEWELL HOWELL ...................................... Associate in Pediatrics
G. BOWERS MANDSDORFER ................................ Associate in Pediatrics
ARNOLD F. LAVENSTEIN ................................ Instructor in Pediatrics
MARY L. HAYLECK ..................................... Instructor in Pediatrics
ISRAEL P. MERANSKI .................................. Instructor in Pediatrics
MELCHIJAH SPARGINS .................................. Instructor in Pediatrics
THOMAS A. CHRISTENSEN ................................ Instructor in Pediatrics
JOSPEH M. CORDI ...................................... Instructor in Pediatrics
WILLIAM EARL WEEKS .................................. Assistant in Pediatrics
J. CARLTON WICH ...................................... Assistant in Pediatrics
O. WALTER SPURRIER .................................. Assistant in Pediatrics
LESTER CAPLAN ........................................ Assistant in Pediatrics
A. MAYNARD BACON, JR. ................................ Assistant in Pediatrics
SARA COOK ............................................. Assistant in Pediatrics
RUTH BALDWIN ......................................... Assistant in Pediatrics
A. MAYNARD BACON, JR. ............................... Assistant in Pediatrics
Assistant in Pediatrics

Melvin N. Borden
Howard Goodman
Richard A. Young
Margaret Lucille Ward

Third Year. The course is presented as follows:

Lectures on infant feeding and the fundamentals of diseases of infants and children. (15 hours.)

Lectures on contagious diseases in conjunction with the Department of Hygiene and Preventive Medicine. (14 hours.)

A special course in physical diagnosis is given at City Hospitals. (20 hours.)

Clinical conferences demonstrating diseases of the new-born. (6 hours.)

Fourth Year. A clinic in the amphitheatre is given at which time patients are shown demonstrating the features of the diseases discussed. (30 hours.)

Conferences and demonstrations are given in problems of diagnosis, care, treatment and clinical pathology of diseases of infants and children. (30 hours.)

Students are assigned subjects on which to prepare theses.

Clinical clerkships are assigned on the pediatric wards, where experience is gained in taking histories, making physical examinations, doing routine laboratory work, and following up patients’ progress. This is under the supervision of the visiting staff. (140 hours.)

Instruction is given in the pediatric clinic of the out-patient department of the University Hospital. This consists of 1½ hours daily for five weeks—30 minutes each day is devoted to a clinical demonstration of some interesting case by a member of the staff; one hour daily to taking histories and making physical examinations under the supervision of an instructor. (45 hours.)

Total hours: 300.

PHARMACOLOGY

John C. Krantz, Jr. . Professor of Pharmacology and Head of the Department
C. Jelleff Carr . Professor of Pharmacology
Raymond M. Burgison . Assistant Professor of Pharmacology
Ruth Musser . Instructor in Pharmacology
Joseph G. Bird . Assistant in Pharmacology
Amedeo S. Marrazzi . Lecturer in Pharmacology
William G. Harne . Demonstrator in Pharmacology
Frederick K. Bell . Fellow in Pharmacology
Mary S. Fassel . Emerson Fellow in Pharmacology
John B. Harmon . Fellow in Pharmacology
Go Lu . Fellow in Pharmacology
Leonard S. Brahen . Eli Lilly Fellow in Pharmacology
Johnson S. L. Ling . Eli Lilly Fellow in Pharmacology

This course is designed to include those phases of pharmacology necessary for an intelligent use of drugs in the treatment of disease. The didactic instruction includes materia medica, pharmacy, prescription-writing, toxicology, posology, pharmacodynamics, and experimental therapeutics. The laboratory exercises parallel the course of lectures.
In addition, optional conference periods and lectures are available for students desiring further instruction or advice.

Total hours: 216.

Graduate Courses. Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

PHYSICAL DIAGNOSIS [A DIVISION OF MEDICINE]

T. CONRAD WOLFF
Associate Professor of Medicine, and Head of the Division of Physical Diagnosis

ROBERT A. REITER.................................................. Assistant Professor of Medicine
SAMUEL LEGUM.................................................. Associate in Medicine
GRAPTON HERSPERGER........................................... Associate in Medicine
EDMUND G. BEACHAM............................................ Associate in Medicine
LOUIS KROLL..................................................... Associate in Medicine
DANIEL WILFSON.................................................. Associate in Medicine
LEON ASHMAN..................................................... Associate in Medicine
JOSEPH MUSE..................................................... Instructor in Medicine
SAMUEL HANKIN.................................................. Instructor in Medicine
 JOHN B. DeHoff.................................................... Instructor in Medicine
WILLIAM G. HELFRICH.......................................... Instructor in Medicine
LEON A. KOCHMAN............................................... Instructor in Medicine
STUART D. SUNDAY............................................... Instructor in Medicine
ELIZABETH D. SHERRILL........................................ Instructor in Medicine
STEPHEN J. VAN LILL, III................................. Instructor in Medicine
FRANKLIN LESLIE.................................................. Assistant in Medicine
THOMAS WORSLEY.................................................. Assistant in Medicine
LAURISTON KEOWN............................................... Assistant in Medicine
JACK WEXLER..................................................... Assistant in Medicine
CARL F. MYERS................................................... Assistant in Medicine
BERNARD BURGIN.................................................. Assistant in Medicine

The course in physical diagnosis starts with the first semester of the Sophomore year and ends with the termination of the second semester of the Junior year.

First Semester—Second Year—Lecture, one hour weekly covering the technique of history writing and the mechanics of the physical signs elicited in the normal person through inspection, palpation, percussion and auscultation.

Second Semester—Second Year—Lecture, one hour weekly, covering the technique of history writing in cases involving disease, and the mechanics of pathological physical signs on inspection, palpation, percussion and auscultation.

In the third and fourth quarters small tutorial groups are formed, each under the direction of an instructor. Experience in physical examination of normal individuals is given in the third quarter for one afternoon weekly. In the fourth quarter the students become acquainted with abnormal signs through examination of hospital patients.

Third Year—a. The class is divided into four sections. Each section receives bedside instruction in physical diagnosis for seven weeks (2 hrs. daily). For this purpose small groups under an instructor are formed. The instruction is carried
on in the Baltimore City Hospitals but in addition advantage is occasionally taken of the clinical opportunities in other institutions.

b. Lecture course (1 hr. weekly for 15 weeks) covering the mechanisms of abnormal signs.

**PHYSIOLOGY**

**WILLIAM R. AMBERSON** .................. Professor of Physiology and Head of the Department
**DIETRICH C. SMITH** ........................... Professor of Physiology
**FREDERICK P. FERGUSON** .................. Associate Professor of Physiology
**J. M.CCULLOUGH TURNER** ................. Associate Professor of Physiology
**HAROLD E. HIRMICH** ....................... Lecturer in Physiology
**SAMUEL L. FOX** ............................. Instructor in Physiology
**SYLVIA HIMMELFARB** ...................... Assistant in Physiology
**FRANCES C. BROWN** ....................... Assistant in Physiology
**JEANNE ANN QUINLIN** ..................... Assistant in Physiology
**JOHN I. WHITE** ............................ U.S.P.H. Fellow in Physiology
**RICHARD F. C. EGAN** ........................ John F. B. Weaver Fellow in Physiology
**ANNEMARIE WEBER** .......................... U.S.P.H. Research Fellow in Physiology
**CAROLYN F. HENDRICKSON** ............... Research Assistant in Physiology

The course in physiology is given in two parts:

*First Year.* Second Semester. Neuro-muscular physiology is presented in two lectures a week, without laboratory work.

*Second Year.* First Semester. The remainder of the subject is presented in four lectures, one conference, and two laboratory periods a week.

The fundamental concepts of physiology are presented with special reference to mammalian problems.

Total hours: 224.

**Graduate Courses.** Consult the catalogue of the Graduate School for descriptions of the graduate courses offered by members of the staff.

**PLASTIC SURGERY** .......................... [A DIVISION OF SURGERY]

**EDWARD A. KITLOWSKI** ................... Clinical Professor of Plastic Surgery
**CLARENCE P. SCARBOROUGH** ............... Instructor in Plastic Surgery
**WALTER J. BENAVENT** ..................... Assistant in Plastic Surgery

This course is designed to acquaint students with the problems of reconstructive and plastic surgery. A subdivision in the dispensary has been established and beds for patients will be available for instruction in this course at the University and Baltimore City Hospitals and Kernan's Hospital for Crippled Children.

*Third Year.* Five lectures are given to the whole class. Dispensary instruction is provided on Mondays and Fridays.

*Fourth Year.* Ward rounds and operative demonstrations are held at the hospitals.

**PROCTOLOGY** ............................... [A DIVISION OF SURGERY]

**MONTE EDWARDS** ........................... Professor of Proctology
**THURSTON R. ADAMS** ...................... Assistant Professor of Proctology
**SIMON H. BRAGER** ......................... Assistant Professor of Proctology
Donald B. Hebb ........................................... Instructor in Proctology
William T. Supik ........................................... Instructor in Proctology
Raymond M. Cunningham ................................ Instructor in Proctology

Third Year. Seven lectures are given to the whole class. The course is for
instruction in the diseases of the colon, sigmoid flexure, rectum and anus, and
covers the essential features of the anatomy and physiology of the large intestine
as well as the various diseases to which it is subject. Dr. Monte Edwards.

Fourth Year. Ward and dispensary instruction is given in the University and
Mercy Hospitals, where different phases of the various diseases are taught by
direct observation and examination. The use of the proctoscope and sigmoidos-
cope in the examination of the rectum and sigmoid is made familiar to each stu-
dent. Mercy Hospital—Drs. Supik and Brager. University Hospital—Drs.
Monte Edwards and Adams.

Third year .................................................. 7 hours
Fourth year .................................................. 16 hours
Total .......................................................... 23 hours

PSYCHIATRY

Jacob E. Finesinger ..................................... Professor of Psychiatry and Head of the Department
John R. Reid ................................................ Visiting Professor of Psychiatry
H. Whitman Newell ....................................... Associate Professor of Psychiatry
Harry M. Murdock ......................................... Assistant Professor of Psychiatry
Philip S. Wagner .......................................... Assistant Professor of Psychiatry
Hans W. Loewald .......................................... Assistant Professor of Psychiatry
William W. Elgin ......................................... Assistant Professor of Psychiatry
J. G. N. Cushing .......................................... Assistant Professor of Psychiatry
Kathryn L. Schultz ........................................ Assistant Professor of Psychiatry
Robert G. Grenell ........................................ Assistant Professor of Psychiatric Research
Isadore Tuerk .............................................. Associate in Psychiatry
Ephraim T. Libansky ..................................... Associate in Psychiatry
Kathryn Dice ................................................ Associate in Clinical Psychology
Elizabeth LaForge ........................................ Associate in Psychiatric Social Work
Mortiz Michaelis ......................................... Research Associate in Biochemistry
Harold E. Himwich ....................................... Lecturer in Psychiatry
A. Russell Anderson ..................................... Instructor in Psychiatry
Francis J. McLaughlin .................................. Instructor in Psychiatry
Samuel Novey ............................................. Instructor in Psychiatry
Marion W. Mathews ...................................... Instructor in Psychiatry
Enoch Callaway, Jr. ...................................... Instructor in Psychiatry
William N. Fitzpatrick ................................... Assistant in Psychiatry
Gertrude Gross ............................................. Assistant in Psychiatry
Marcella Weisman ........................................ Assistant in Psychiatric Social Work
Vesta May Stevens ....................................... Assistant in Psychiatric Social Work
Marjorie R. Fleitzer ..................................... Assistant in Psychiatric Social Work
Hermione Hunt Hawkins ............................... Assistant in Clinical Psychology
Marvin Jaffe ................................................ Fellow in Psychiatry
Virginia Suttonfield ..................................... Fellow in Psychiatry
Ruth Page Edwards ....................................... Fellow in Psychology
First Year. Fourteen two-hour periods during the second semester are devoted to a consideration of human relations as applied to the practice of medicine. The topics dealt with include personality development, reactions to stress, and situational and social factors in disease. The emphasis is upon observing, understanding and evaluating the personal and social factors in the disease process, in treatment and prevention. Consideration is given to problems of values and scientific methodology as they apply to the work of the physician. Patients with common medical and surgical complaints are interviewed to illustrate methods of interviewing and developing a useful therapeutic relationship. The course is conducted by means of group discussion, supplemented by reading.

Second Year. Fourteen two-hour periods are spent in the first semester in discussions and lectures. The emphasis is on methods of examining patients, and methods of developing and utilizing the doctor-patient relationship. The discussions center about psychopathology, as it operates in disease and in the treatment process. An attempt is made to relate emotional disturbances to what is known in neurophysiology, endocrinology, psychology and sociology. Patients are interviewed and examined to illustrate the general principles and the specific procedures used in the examination of patients. The group discussions are supplemented by suggested reading.

Third Year. Sixteen lecture hours are devoted to further considerations of special psychopathology and the principles of psychotherapy. Specialized forms of treatment are reviewed, but the main emphasis is toward familiarizing the student with forms of therapy feasible in routine medical practice. During 36 clinic hours the student will be supervised in history-taking, mental status and psychometric examination, and follow-up studies of patients.

Fourth Year. A clinical clerkship is offered in the wards of the University Hospital for one month. Patients are assigned for treatment under supervision. Emphasis is placed on diagnosis, methods of interviewing, methods of developing and managing a therapeutic doctor-patient relationship, and carrying out psychotherapy. This is supplemented by seminar meetings for discussion of child psychiatry, psychotherapy, clinical psychology and social service. Topics are assigned from the current literature for group discussion. Four afternoons are spent in the wards of the Spring Grove State Mental Hospital in examining patients with emphasis in the diagnosis, treatment and management of the psychoses. Eight clinics are held for the entire fourth-year class.

ROENTGENOLOGY

WALTER L. KILBY.................. Professor of Roentgenology, and Head of the Department
CHARLES N. DAVIDSON.................. Associate Professor of Roentgenology
JOHN DECARLO, JR.................. Assistant Professor of Roentgenology
Donald J. Barnett. Assistant Professor of Roentgenology
Edward R. Dana. Associate in Roentgenology
John T. Brackin. Instructor in Roentgenology
John M. Dennis. Instructor in Roentgenology
Eugene R. McNinch. Fellow in Roentgenology
Robert W. Swain. Consultant in Radiologic Physics

During the academic year, small groups of the third and fourth year classes are given weekly instruction in the diagnostic and therapeutic uses of the Roentgen rays. An effort is made to familiarize the student with the indications for and the limitations of the Roentgen ray examinations. The history, physics and practical therapeutic application of Roentgen rays are given stressing the use of radiation as a weapon now available in a variety of disorders of the human body ranging from simple inflammations to malignant neoplastic conditions. Conferences are held with the various departments during the school year which are also open to members of the fourth year class.

<table>
<thead>
<tr>
<th>Class</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Third year</td>
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<td>Fourth year</td>
<td>24</td>
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<td>Total</td>
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SPEECH TRAINING CLINIC [A DIVISION OF SURGERY]
Edward A. Kitlowski. Clinical Professor of Plastic Surgery
Ray Ehrensberger. Professor of Speech
Merle Ansberry. Associate Professor of Speech

This department has been installed in conjunction with the Department of Speech of the University at College Park to evaluate the speech difficulties in children with congenital defects. Admission to the Clinic is by appointment only. The Clinic operates all day Thursdays.

SURGERY
Charles Reid Edwards. Professor of Surgery, and Acting Head of the Department
Walter D. Wise. Professor of Surgery
Elliott H. Hutchins. Professor of Surgery
D. J. Pessagno. Professor of Clinical Surgery
F. L. Jennings. Professor of Clinical Surgery
George H. Yeager. Clinical Professor of Surgery
Monte Edwards. Professor of Clinical Surgery
Otto C. Brantigan. Professor of Clinical Surgery
Harry C. Hull. Professor of Clinical Surgery
James W. Nelson, M.D. Professor of Clinical Surgery
R. Ridgeway Trimble. Professor of Clinical Surgery
Charles A. Reifschneider. Clinical Professor of Traumatic Surgery
Thomas R. Chambers. Associate Professor of Surgery
R. W. Locher. Associate Professor of Clinical Surgery
Edward S. Johnson. Associate Professor of Surgery
Grant E. Ward. Associate Professor of Surgery
Cyrus F. Horine. Associate Professor of Surgery
Charles W. Maxson. Associate Professor of Surgery
<table>
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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>C. W. Peake</td>
<td>Associate Professor of Surgery</td>
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<tr>
<td>William F. Reinhoff, Jr.</td>
<td>Associate Professor of Surgery</td>
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<tr>
<td>W. Wallace Walker</td>
<td>Associate Professor of Surgery and Surgical Anatomy</td>
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<tr>
<td>H. F. Bongardt</td>
<td>Assistant Professor of Surgery</td>
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<tr>
<td>I. O. Ridgely</td>
<td>Assistant Professor of Surgery</td>
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<tr>
<td>Arthur G. Siwinski</td>
<td>Assistant Professor of Surgery</td>
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<tr>
<td>Simon H. Brager</td>
<td>Assistant Professor of Surgery and Proctology</td>
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<tr>
<td>Thurston R. Adams</td>
<td>Assistant Professor of Surgery</td>
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<tr>
<td>Raymond F. Helfrich</td>
<td>Associate in Surgery</td>
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<tr>
<td>William B. Settle</td>
<td>Associate in Surgery</td>
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<tr>
<td>George Govatos</td>
<td>Associate in Surgery</td>
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<tr>
<td>Joseph V. Jerardi</td>
<td>Associate in Surgery</td>
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<tr>
<td>Herbert E. Reifsneider</td>
<td>Associate in Surgery</td>
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<td>Harold H. Burns</td>
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<td>William L. Garlick</td>
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<td>Harry C. Bowie</td>
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<tr>
<td>Edward H. Stewart</td>
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<tr>
<td>Joseph M. Miller</td>
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<td>J. Duer Moores</td>
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<td>Calvin Hyman</td>
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<td>Clyde F. Karns</td>
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<td>Daniel R. Robinson</td>
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<td>George H. Brouillet</td>
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<td>John F. Schaefner</td>
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<td>Robert F. Healy</td>
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<td>Robert C. Sheppard</td>
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<tr>
<td>Samuel E. Proctor</td>
<td>Instructor in Surgery</td>
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<tr>
<td>F. Ford Loker</td>
<td>Instructor in Surgery</td>
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<tr>
<td>E. Roderick Shipley</td>
<td>Instructor in Surgery</td>
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<tr>
<td>Patrick C. Phelan, Jr.</td>
<td>Instructor in Surgery</td>
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<tr>
<td>Louis E. Goodman</td>
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<tr>
<td>William R. Geraghty</td>
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<tr>
<td>Howard B. McElwain</td>
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<tr>
<td>A. V. Buchness</td>
<td>Assistant in Surgery</td>
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<tr>
<td>T. J. Tootey</td>
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<tr>
<td>Samuel H. Culver</td>
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<tr>
<td>L. T. Chance</td>
<td>Assistant in Surgery</td>
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<tr>
<td>W. Allen Deckert</td>
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<tr>
<td>William C. Donnigan</td>
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<tr>
<td>Howard L. Zupnik</td>
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<tr>
<td>Raymond M. Cunningham</td>
<td>Assistant in Surgery</td>
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<tr>
<td>John W. Chambers</td>
<td>Assistant in Surgery</td>
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<tr>
<td>Ross Z. Pierpont</td>
<td>Assistant in Surgery</td>
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<tr>
<td>Michael L. DeVincentis</td>
<td>Assistant in Surgery</td>
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<tr>
<td>James N. Cianos</td>
<td>Assistant in Surgery</td>
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<tr>
<td>Richard M. Garrett</td>
<td>Assistant in Surgery</td>
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<tr>
<td>William D. Lynn</td>
<td>Assistant in Surgery</td>
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<tr>
<td>R. Adam Cowley</td>
<td>Assistant in Thoracic Surgery; Assistant Director Surgical Research</td>
</tr>
<tr>
<td>David R. Will</td>
<td>Assistant in Surgery</td>
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<tr>
<td>Harold P. Biehl</td>
<td>Assistant in Surgery</td>
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</tbody>
</table>
Instruction is given by means of lectures, laboratory work, recitations, dispensary work, bedside instruction, ward classes, and clinics. The work begins in the second year and continues throughout the third and fourth years.

The teaching is done in the anatomical laboratory, operative surgery laboratory, the dispensaries, wards, laboratories and operating rooms of the University and Mercy Hospitals, and in the wards and operating rooms of the Baltimore City Hospitals.

SECOND YEAR

TOPOGRAPHIC AND SURGICAL ANATOMY. Second semester. The course is designed to bridge the gap between anatomy in the abstract and clinical anatomy applied to the study and practice of medicine and surgery.

The teaching is done in the anatomical laboratory. Students are required to dissect and to demonstrate all points, outlines, and regions on the cadaver. Underlying regions are dissected to bring out outlines and relations of structures.

Two lectures and two laboratory periods per week. Drs. Brantigan, Walker, Settle, Bowie, H. E. Reifschneider, Pierpont and Garrett.

Total hours: 96.

PRINCIPLES OF SURGERY. Second semester. The course includes discussions of irritants, infection, repair of tissue, healing of tissue, relationship of bacteriology to surgery, modern chemotherapy in surgical diseases, ulcers, wounds, thrombophlebitis, phlebothrombosis, peripheral vascular diseases, thermal burns, injuries due to cold, surgical shock, diseases of the lymphatics, gangrene of the skin and extremities, aneurysms, hemorrhage, varicose veins, embolism, sinuses and fistulae, tetanus, anthrax and actinomycosis.

Lectures, two hours a week for one semester, are given to the whole class. Drs. Adams and Sheppard.

THIRD YEAR

GENERAL AND REGIONAL SURGERY. Lectures, recitations and clinics on the principles of surgery, general surgery including fractures and dislocations are given three hours a week to the whole class. Dr. Hull.

The class is divided into groups and receives instruction in history-taking and surgical pathology under the supervision of the chief of the pathology department of the Baltimore City Hospitals. Instruction is also given in surgical diagnosis and in general surgery at the bedside and in the classroom at this institution by Drs. Bowie, Koontz, Brantigan and Adams. Two hours per week are given in orthopaedic surgery by Dr. Voshell, chief of the orthopaedic service of this institution.

OPERATIVE SURGERY. Lectures and operative demonstrations are given under the supervision of Dr. Yeager assisted by Dr. Govatos. The class is divided into sections and each section is given practical and individual work under the supervision of instructors.

SURGICAL OUT-PATIENT DEPARTMENT. Under supervision, the student takes the history, makes the physical examination, attempts the diagnosis and, as far as possible, carries out the treatment of ambulatory surgical patients in the University and Mercy Hospitals. Mercy Hospital—Dr. Raymond F. Helfrich
assisted by the out-patient staff. University Hospital—Drs. Settle and Sheppard assisted by the out-patient staff.

FOURTH YEAR

CLINICS. Surgical pathological Conference. A weekly conference is conducted at the University Hospital for the entire class. Daily ward classes at University and Mercy Hospitals, and half day ward work under the supervision of Dr. E. R. Shipley at University and Dr. F. Ford Loker, Mercy Hospital.


TRAUMATIC SURGERY. This course deals with operative and post-operative treatment of accident cases and with instructions as to the relationship between the state, the employee, the employer, and the physician's duty to each. One hour a week to sections of the class throughout the year. Dr. C. A. Reifschneider.

CLINICAL CLERKSHIP. This work includes the personal study of assigned hospital patients under supervision of the staffs of the University and Mercy Hospitals, and embraces history-taking, and physical examination of patients, laboratory examinations, attendance at operations and observation of post-operative treatment.


THORACIC SURGERY [A DIVISION OF SURGERY]

Otto C. Brantigan .............................................. Professor of Thoracic Surgery
William L. Garlick ........................................... Associate Professor of Thoracic Surgery
Donald B. Hebb ................................................ Assistant in Thoracic Surgery
R. Adams Cowley .............................................. Assistant in Thoracic Surgery
Sim Penton ......................................................... Resident in Thoracic Surgery
Frank Faraino ..................................................... Fellow in Thoracic Surgery

Men having completed three years of American Board of Surgery training are eligible for appointment. The first year is spent in thoracic research surgery. The second year is in clinical thoracic surgery at Baltimore City, Mercy and University Hospitals.

TROPICAL MEDICINE [A DIVISION OF MEDICINE]

Certain phases of tropical medicine are considered in the course on clinical pathology. In addition, a course of lectures and demonstrations is given to the entire fourth year class.

TUBERCULOSIS [A DIVISION OF MEDICINE]

During the third year in connection with the instruction in physical diagnosis a practical course is given at the Municipal Tuberculosis Hospital. Stress is laid upon the recognition of the physical signs of the disease, as well as upon its symptomatology and gross pathology.
Third Year. This course is given for seven hours to the whole class. It consists of lectures and demonstrations, including the use of lantern slides and motion pictures. Dr. Toulson.

Fourth Year. The course includes explanations and demonstrations of urethroscopy, cystoscopy, ureteral catheterization, renal function tests, urography, urine cultures and the various laboratory procedures. The teaching consists of clinics and ward rounds to small groups, and attendance by members of the senior class upon the out-patients in the dispensary. The student is placed on his own responsibility in arriving at a diagnosis. These dispensary classes are conducted at both the Mercy and University Hospitals where practically every variety of urogenital disease is seen and used for teaching purposes.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
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<tr>
<td>Third</td>
<td>6</td>
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<tr>
<td>Fourth</td>
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<tr>
<td>Total</td>
<td>45</td>
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MEDICAL LIBRARY

Howard Rovelstad, A.B., M.A., B.S.L.S. Director of Libraries and Professor of Library Science

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Florence R. Kirk Assistant Librarian

Marie Harvin, B.A., B.S.L.S. Cataloguer

Charlotte Wilson Assistant to the Cataloguer

Jane Spacek Secretary to the Librarian

POSTGRADUATE COURSES

COMMITTEE ON POSTGRADUATE STUDIES

Howard M. Bubert, Chairman and Director
Calendar: Postgraduate courses are offered throughout the year.

During the past year, the Post Graduate Committee has given an extramural course in Hagerstown. Enrollment was 25. The Committee will consider the request of any Maryland County Medical Society for a series of lectures to begin in the Fall of 1951.

A sub-committee appointed to survey the hospitals in the State which desire assistance in the training of house staffs has been working actively during the year, and progress has been made.

The Basic Science course in OB-GYN has been withdrawn temporarily.

The following intramural postgraduate courses have been continued.

GENERAL ANATOMY: The course is designed to prepare candidates for the examination of the American Board of General Surgery and Surgical Specialties. There is no strict rule governing either the content or duration of the course. Students may dissect a complete cadaver or any particular region in which they may be interested. Tuition arranged according to course content and duration.

ANATOMY OF HEAD AND NECK as applied to the eye, ear, nose and throat. Duration 150 hours, beginning on October 1 and ending approximately February 28, comprising two periods of 4 hours per week. Tuition $75.00. Details as to the time of the individual periods will be arranged with candidates who wish to take the course.

SURGICAL ANATOMY: The course is designed to prepare candidates for the examination in Anatomy of the American Board of Surgery. This is a ninety-hour course (3 hours a day, 2 days a week) given in conjunction with the regular sophomore medical course in surgical anatomy. Tuition $150.00.

PATHOLOGY: This course is designed to prepare candidates for certification in surgery, surgical specialties and internal medicine. Individuals will receive training in autopsy and surgical pathology. Minimum duration is full time, six months. Tuition $150.00.

NEURO-PATHOLOGY: This course is designed to aid in meeting the requirements of the specialty boards in neurological sciences and covers basic studies in diseases of the central nervous system. Duration is six months, full time. Tuition $200.00 plus $10.00 laboratory fee.

GYNECOLOGY AND OBSTETRICS: This is a review for general practitioners. Students attend lectures, ward rounds and clinics, and observe operations and deliveries. Full time for twelve weeks. Tuition $150.00.
GYNECOLOGY, ONCOLOGY AND FEMALE UROLOGY: This is a review designed primarily for the general practitioner. Students attend lectures, ward rounds and clinics and observe operations. Full time for ten weeks. Tuition $125.00.

BASIC SCIENCES AS THEY APPLY TO THE PRACTICE OF MEDICINE. This course is designed to familiarize students with the advances in basic sciences during recent years. The course consists of 32 periods of 2 hours each, once a week between October and June. Tuition $50.00.

Full descriptions of these courses are available. Inquiries should be addressed to the Post Graduate Committee, University of Maryland School of Medicine, Baltimore 1, Maryland.

LECTURERS IN POSTGRADUATE MEDICINE

Thurston R. Adams  Russel S. Fisher  J. Morris Reese
Marie A. Andersch  Albert E. Goldstein  Herbert E. Reifschneider
James G. Arnold, Jr.  Lewis P. Gundry  Dexter L. Reimann
Robert E. Bauer  Frank W. Hachtel  Henry L. Rigdon
Joseph G. Bird  Jerome Hartz  Harry M. Robinson, Sr.
Harry C. Bowie  Charles W. Hawkins  Raymond C. V. Robinson
J. Edmund Bradley  Nathan B. Herman  Milton S. Sacks
Otto C. Brantigan  Harry C. Hull  John E. Savage
George H. Brouillet  J. Mason Hundley, Jr.  Sidney Scherlis
Howard M. Bubert  D. Frank Kaltreider  Emil G. Schmidt
T. Nelson Carey  Theodore Kardash  William B. Settle
C. Jelleff Carr  Vernon E. Kralh  Dietrich C. Smith
Robert Chenowith  John C. Krantz, Jr.  Hugh R. Spencer
Ernest I. Cornbrooks, Jr.  L. A. M. Krause  Melchiah Spragins
Richard J. Cross, Jr.  C. Edward Leach  Harry A. Teitelbaum
Francis G. Dickey  Ephraim T. Lisansky  W. Houston Toulson
Everett S. Diggs  Wm. V. Lovitt, Jr.  Henry F. Ullrich
D. McClelland Dixon  Fred R. McCrumb  Allen Fiske Voshell
Louis H. Douglass  Hugh B. McNally  John A. Wagner
John C. Dumler  Howard B. Mays  Wallace Walker
J. Sheldon Eastland  Samuel Morrison  Milton J. Wilder
Charles Reid Edwards  H. Whitman Newell  Walter D. Wise
William L. Fearing  Frank J. Otenasek  Henry L. Wollenweber
Frank H. J. Figge  Robert T. Parker  Theodore E. Woodward
Jacob E. Finesinger  Ross Z. Pierpont  Robert B. Wright
A. H. Finkelstein  Maurice C. Pincoffs  George H. Yeager
# FIRST YEAR SCHEDULE

## FIRST SEMESTER, SEPTEMBER 20, 1951 TO JANUARY 26, 1952

<table>
<thead>
<tr>
<th>Hours</th>
<th>Monday</th>
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<th>Wednesday</th>
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<tbody>
<tr>
<td>9.00 to 12.00</td>
<td>*Histology and Embryology Lecture and Lab. 2nd Floor Bressler</td>
<td>*Histology and Embryology Lecture and Lab.</td>
<td>Orientation 9:00-10:00 1st 3 Lectures A.H. Anatomy 10:00-12:00 1st 3 Sessions After Oct. 10 Anatomy 9:00-12:00 1st Floor Br. Lab.</td>
<td>*Histology and Embryology Lecture and Lab.</td>
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<td>Gross Anatomy A.H.</td>
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<tr>
<td>12.00 to 1.00</td>
<td>Lunch</td>
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<td>1.00 to 5.00</td>
<td>Gross Anatomy Lectures A.H. (1-2) Daily and Laboratories Bressler 1 (2-5) Daily</td>
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*Course ends December 21, 1951.

## SECOND SEMESTER, JANUARY 28 TO JUNE 7, 1952

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<td>1.00 to 2.00</td>
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<tr>
<td>2.00 to 3.00</td>
<td>Psychiatry 2-4 Amp. Univ. Hosp. and Neuro-Physiology 4-5 Bressler 2nd Floor</td>
<td>Neuro-Anatomy Lecture Biol. Chem. Conference Adm. 1 and</td>
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<td>Neuro-Anatomy Lecture and</td>
<td>Neuro-Physiology Bressler 2 (3-4)</td>
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<tr>
<td>3.00 to 5.00</td>
<td>Bressler 2nd Floor</td>
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</table>

Locations of Lecture Halls and Laboratories:
Adm. 1—First Floor, Administration Building, 520 W. Lombard Street.
A. H.—Anatomical Hall—Upper Hall, N. E. Cor, Lombard and Greene Streets.
C. H.—Chemical Hall, Lower Hall, 522 W. Lombard Street.
Biological Chemistry Laboratory—Third Floor, 31 South Greene Street.
Bressler Research Laboratory—29 S. Greene Street.
Gross Anatomy—First Floor.
Histology and Embryology—Second Floor.
Neuro-anatomy—Second Floor.

*Mid-Year Examinations—January 21-26, 1952*
*Final Examinations—Begin May 26, 1952*
SECOND YEAR SCHEDULE
FIRST SEMESTER, SEPTEMBER 20, 1951 TO JANUARY 26, 1952

<table>
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<tr>
<th>Hours</th>
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<td>Diagnosis</td>
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<td>Orthopaedics</td>
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<td>U. H. D.</td>
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SECOND SEMESTER, JANUARY 28 TO JUNE 7, 1952

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<td>8.30</td>
<td>Surgery</td>
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<td>U. H. D.</td>
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† Bacteriology Laboratory—Section work during the last month.

<table>
<thead>
<tr>
<th>Locations of Lecture Halls and Laboratories:</th>
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<tbody>
<tr>
<td>Adm. 1—First Floor, Administration Building, 520 W. Lombard Street.</td>
</tr>
<tr>
<td>C. H.—Chemical Hall, Lower Hall, 522 W. Lombard Street.</td>
</tr>
<tr>
<td>Amp.—Wilson Memorial Amphitheatre, New University Hospital, Greene and Redwood Streets, Eighth Floor.</td>
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<tr>
<td>U. H. D.—University Hospital Dispensary, Old Hospital Building.</td>
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Laboratories:

- Physiology, Pharmacology, Surgical Anatomy—Bressler Building.
- Bacteriology, Immunology, Pathology, Second Floor, 31 S. Greene Street.

Mid-Year Examinations—January 21-26, 1952

Final Examinations—Begin May 26, 1952
### SCHOOL OF MEDICINE

#### THIRD YEAR SCHEDULE

**SEPTEMBER 20, 1951 TO JUNE 7, 1952**

### SCHEDULE 1

<table>
<thead>
<tr>
<th>Hours</th>
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<tr>
<td>9.30 to 10.00</td>
<td>(Whole Class) Gynecology March 31 to May 12</td>
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<tr>
<td>12.00 to 1.00</td>
<td>Transfer and Lunch</td>
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<td>Lunch</td>
<td>Transfer and Lunch</td>
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<tr>
<td>1.00 to 2.00</td>
<td>(Whole Class) Nose &amp; Throat, Urology, Otolaryngology, Proctology, Plastic Surgery C. H.</td>
<td>(Whole Class) <em>Gynecology Eye</em>—10 wks. Jan. 29 to Apr. 1, 10 wks. Apr. 8 to May 6 C. H.</td>
<td>Medical Clinic</td>
<td>(Whole Class) Clinical Pathology</td>
<td>B. C. H.</td>
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<td>2.00 to 4.00</td>
<td>Pathology Laboratory 31</td>
<td>Surgery</td>
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<td>Bressler 2</td>
<td>B. C. H.</td>
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<tr>
<td>4.00 to 5.00</td>
<td>(Whole Class) Legal Medicine §Industrial Medicine</td>
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<td>Psychiatry C. H.</td>
<td>(Whole Class) Hygiene and Public Health C. H.</td>
<td>Orthopaedics Roentgenology B. C. H.</td>
<td>B. C. H.</td>
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Transfer to Baltimore City Hospitals

- Physical Diagnosis, Pathology, Pediatrics and Neurology at B. C. H. (See Group Schedules)

* First Semester. † Second Semester. ‡ Sept. 24 to Dec. 10. § Dec. 17 to Feb. 11. || Feb. 18 to May 12
<table>
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<tr>
<td>8.30 to</td>
<td>(Whole Class) Obstetrics</td>
<td>(Whole Class) Surgery</td>
<td>(Whole Class) Obstetrics</td>
<td>(Whole Class) Surgery</td>
<td>(Whole Class) Pathology</td>
<td>(Whole Class) Surgery</td>
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<tr>
<td>1.00</td>
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<td>Ophthalmoscopy</td>
<td>Same as</td>
<td>Psychiatry</td>
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<td></td>
</tr>
<tr>
<td>to</td>
<td>Clinic</td>
<td>** (5 weeks)</td>
<td>Schedule 1</td>
<td>Dermatology</td>
<td>U. H. Disp</td>
<td></td>
</tr>
<tr>
<td>2.00</td>
<td>Amp.</td>
<td>B. E. H.</td>
<td></td>
<td>1-4</td>
<td></td>
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<tr>
<td>to</td>
<td>Same as</td>
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<tr>
<td>4.00</td>
<td>Schedule 1</td>
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<tr>
<td>5.00</td>
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</tr>
</tbody>
</table>

Operative Surgery—Bressler 6
Medical and Surgical Dispensaries—(Univ. and Mercy Sections)

The Junior Class will be divided into two sections—A and B. Each section reports to classes in keeping with the following schedule assignment, in which the letters represent the class sections and the numerals indicate the schedules to be followed for the periods shown.

‡Pediatrics given the last week in each semester.

Schedule Assignment

<table>
<thead>
<tr>
<th>Semester Periods:</th>
<th>Sections and Schedules</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 20, 1951 to January 26, 1952</td>
<td>A-1, B-2</td>
</tr>
<tr>
<td>January 28 to May 17, 1952</td>
<td>B-1, A-2</td>
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** 5-week periods:

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Sept. 20-Oct. 24</td>
<td>Jan. 26-Mar. 4</td>
</tr>
<tr>
<td>Oct. 25-Dec. 4</td>
<td>Mar. 5-Apr. 8</td>
</tr>
<tr>
<td>Dec. 5-Jan. 19</td>
<td>Apr. 9-May 17</td>
</tr>
</tbody>
</table>

Locations of Lecture Halls, etc.
Adm. 1.—First Floor, Administration Building, 520 W. Lombard Street.
A. H.—Anatomical Hall, Upper Hall, 522 W. Lombard Street.
Amp.—Wilson Memorial Amphitheatre, New University Hospital, Eighth Floor.
B. E. H.—Baltimore Eye, Ear and Throat Hospital, 1214 Eutaw Place.
Bressler—Bressler Building, 29 S. Greene Street.
C. H.—Chemical Hall, Lower Hall, 522 W. Lombard Street.
Univ. Hosp.—New University Hospital, Greene and Redwood Streets.
U. H. Disp.—Old Hospital Building, S. W. Cor. Lombard and Greene Streets.
31—31 South Greene Street.
Clinical Pathology Laboratory—Fifth Floor, Bressler Building.
Pathology Laboratory—31 South Greene Street, Special Rooms, Basement.
Mid-Year Examinations—January 21-26, 1952
Final Examinations—Begin May 19, 1952

96
**FOURTH YEAR SCHEDULE**

**SEPTEMBER 20, 1951 TO MAY 24, 1952**

**CLASS DIVISIONS**

<table>
<thead>
<tr>
<th>Division 1†</th>
<th>Division 2</th>
<th>Division 3†</th>
<th>Division 4</th>
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<tbody>
<tr>
<td>Medicine and Medical Specialties (8 weeks)</td>
<td>Pediatrics (4 weeks)</td>
<td>Surgery and Surgical Specialties (8 weeks)</td>
<td>Obstetrics (2 weeks)</td>
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<tr>
<td>Neurology</td>
<td>Psychiatry (4 weeks)</td>
<td>Urology</td>
<td>Gynecology</td>
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<tr>
<td>Cardiology</td>
<td></td>
<td>Neuro Surgery</td>
<td>Oncology (2 weeks)</td>
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<tr>
<td>Gastro-Enterology</td>
<td></td>
<td>Otology, Rhinology and Laryngology</td>
<td>Dermatology &amp; Syphilology</td>
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<tr>
<td>Metabolism</td>
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<td></td>
<td>Oncology</td>
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<tr>
<td>Allergy</td>
<td></td>
<td>Orthopaedics</td>
<td>Ophthalmology</td>
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<tr>
<td>Roentgenology</td>
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<td>Roentgenology</td>
<td>Anesthesiology (4 weeks)</td>
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**STUDENT GROUP ASSIGNMENTS**

<table>
<thead>
<tr>
<th>1st Quarter</th>
<th>3rd Quarter</th>
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<tbody>
<tr>
<td><strong>Sept. 20, 1951 to Nov. 15, 1951</strong> (8 weeks)</td>
<td><strong>Jan. 28, 1952 to March 26, 1952</strong> (8 weeks)</td>
</tr>
<tr>
<td>Groups 1, 2, 3, 4 to Division 1†</td>
<td>Groups 1, 2, 3, 4 to Division 3†</td>
</tr>
<tr>
<td>Groups 5, 6, 7, 8 to Division 2</td>
<td>Groups 5, 6, 7, 8 to Division 4</td>
</tr>
<tr>
<td>Groups 9, 10, 11, 12 to Division 3†</td>
<td>Groups 9, 10, 11, 12 to Division 1†</td>
</tr>
<tr>
<td>Groups 13, 14, 15, 16 to Division 4</td>
<td>Groups 13, 14, 15, 16, to Division 2</td>
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</tbody>
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<table>
<thead>
<tr>
<th>2nd Quarter</th>
<th>4th Quarter</th>
</tr>
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<tbody>
<tr>
<td><strong>Nov. 16, 1951 to Jan. 26, 1952</strong> (8 weeks)</td>
<td><strong>March 27, 1952 to May 24, 1952</strong> (8 weeks)</td>
</tr>
<tr>
<td>Groups 1, 2, 3, 4 to Division 2</td>
<td>Groups 1, 2, 3, 4 to Division 4</td>
</tr>
<tr>
<td>Groups 5, 6, 7, 8 to Division 3†</td>
<td>Groups 5, 6, 7, 8 to Division 1†</td>
</tr>
<tr>
<td>Groups 9, 10, 11, 12 to Division 4</td>
<td>Groups 9, 10, 11, 12 to Division 2</td>
</tr>
<tr>
<td>Groups 13, 14, 15, 16 to Division 1†</td>
<td>Groups 13, 14, 15, 16 to Division 3†</td>
</tr>
</tbody>
</table>

*The curriculum is arranged into 4 divisions, and the senior class into 16 groups.
† The curriculum of Divisions 1 and 3 is given at the University and Mercy Hospitals simultaneously. There are 4 groups assigned to each division. Two groups or one half the students of each division are assigned work for 4 weeks at each hospital. Students belonging to groups 1, 2, 9 and 10 report to the University Hospital for the 1st 4 weeks. Groups 3, 4, 11 and 12 report to Mercy. At the end of 4 weeks the students at the University Hospital report to Mercy and the groups at Mercy report to the University Hospital for a similar period, thus completing for each group involved one division of work.*
UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE
AND COLLEGE OF PHYSICIANS AND SURGEONS

GRADUATES, JUNE 9, 1951

AGER, LAW LAMAR, B.S. .......... Alabama
ARTHUR, ROBERT KEY, JR., B.S. ... Georgia
BARTHEL, JOHN PAUL ............ Maryland
BEARDSLEY, EARL MILLER ........ Maryland
BEL, ARTHUR KEITH, B.A. ....... Maryland
BILDER, JOSEPH, JR., B.S. ......... Ohio
BIRELY, BEVERLY ROBERT ......... Maryland
BLADES, NANCY, B.A. ............ New Jersey
BOSSARD, JOHN WESLEY, B.A. .... Maryland
BRANNON, JOHN VANDALE, B.S. .... West Virginia
BUELL, JOHN RUSSELL, JR. ....... Maryland
CHRISTOPHER, RUSSELL LEE, B.A. Massachusetts
CLEMMENS, RAYMOND LEOPOLD, B.S. Maryland
COFFMAN, KAOLIN MINER, B.A. ... Pennsylvania
COHEN, SOLOMON, B.A. ........... Maryland
CURANZEY, RAYMOND RALPH, B.S. Pennsylvania
DECKELBAUM, JOSEPH, B.S. ...... Maryland
DETTBARN, ERNEST ALBERT, B.S. Maryland
DONNER, LEON, B.S. ............. Maryland
DUDLEY, WINSTON CLARK, B.A. ... Massachusetts
DUNN, GEORGE MITCHELL, JR. .... Washington, D. C.
DUNNAGAN, WILLIAM ANDREW, B.A. North Carolina
EDWARDS, DAVID EVERETT, Pennsylvania
EDWARDS, WILLIAM HUNTER, JR., B.A. Maryland
ESMOND, WILLIAM GEORGE, B.S. .. Maryland
EVANS, OTIS DRUELL, JR., B.S. .... North Carolina
FERGUSON, CHARLES KIRKPATRICK .. Colorado
FITZGERALD, JOSEPH CARROLL, B.A. Maryland
FULLILove, ROWLAND ELDER JACK .. Georgia
GALLAGHER, JAMES PATRICK, B.A. West Virginia
GARCIA PALLMIER, MARIO RUBEN, B.S. Puerto Rico
GARDNER, FRANCIS SIDNEY, JR., B.A. North Carolina
GATES, JOHN BUTLER ............. Wisconsin
GORDON, BENJAMIN DICHTER, B.A. New York
HATEM, FREDERICK JOSEPH, B.S. .... Maryland
HOPKINS, ROBERT CHARLES, B.S. .... Pennsylvania
ITEN, GEORGE JOSEPH, B.A. ....... California

JOHNSON, FREDERICK MILLER, B.S., M.S. Maryland
JOHNSON, WALLACE EDWARD ....... New Hampshire
KASCHEL, PAUL EDWARD, B.A. .. New Jersey
KINDT, WILLARD FREED ......... Pennsylvania
KING, VICTOR FRANCIS .......... Maryland
KIPNIS, DAVID MORRIS, B.A., M.A. Maryland
KNIPP, HARRY LESTER ............ Maryland
KRAMER, HOWARD CARLOW, B.S. .. Maryland
LAMB, WILLIAM EUGENE, B.S. ... Florida
LANNING, THEODORE REUNEY, B.S. New Jersey
LEIBMAN, JACK, B.A. ............. Maryland
LEY, LEO HENRY, JR. ............. Maryland
LISTER, LEONARD MELVIN ......... Maryland
MACDONALD, JAMES MELVIN, JR., B.S. Maryland
MCFADDEN, EARL BOYD, B.S. ... Maryland
MCFADDEN, JOHN WILLIAM, B.S. ... Maryland
MCGRADDY, CHARLES WINFRED, JR., B.S. Georgia
MCGRADDY, KATHLEEN REILLY, B.S. New York
MENDEZ BRYAN, RICARDO TOMAS, B.S. Puerto Rico
METCALF, JOHN SHELBY, JR. ....... California
MOSSER, ROBERT SCHAAF, B.S., Maryland
MUTTER, ARTHUR ZELIG, B.S. ... Maryland
MYERS, DONALD JOHNSON, B.S. ... Ohio
NYGREN, EDWARD JOSEPH, B.A., Maryland
ORTH, JOHN STAMBAUGH ........... Maryland
PACKARD, DOUGLAS RICHARDS, Jr., Maryland
PENCHEFF, DORRIS MARIE, B.A., California
PERILLA, FRANK ROBERT, B.S. ... Maryland
PERRY, HENRY DAVID, JR., B.A. .. Florida
REESER, GUY MCCLELLAND, JR., B.A. Maryland
REEVES, HENRY GRAY, JR. ......... North Carolina
REX, EUGENE BRAIDEN ............ Colorado
REYNOLDS, GEORGINA, B.A. ....... Maryland
RICHARDSON, AUBREY DeVaughIN, B.S. North Carolina
ROMBO, MARVIN JAY, B.A. ....... Maryland
ROWLAND, HARRY SHEPARD, JR., B.A. New Jersey
SAAVEDRA AMAOR, ARMANDO, B.S. Puerto Rico
SCHMALE, ARTHUR HENRY, JR., NEBRASKA
SCOTT, ROGER DAVID ......... Florida
SCULLY, JOHN THORNSEN ......... Indiana
SHEA, WILLIAM HAROLD HOLLAND, B.S. Maryland
SHERRY, SAMUEL NORMAN, B.S., Maryland
Simmons, Leslie Dale, B.S.  West Virginia
Sipple, Edward M., B.A.  Maryland
Skorton, Roy Kennedy, B.S.  Maryland
Solomon, David Milton  .  Maryland
Stone, John Hopkins, B.S.  Maryland
Sutton, Julian Theopulous, B.A.  North Carolina
Tobias, Richard Boyd, B.S.  Pennsylvania
Twig, Homer Lee, Jr.  Maryland
Udel, Melvin, B.A.  Maryland
Venrose, Robert James, B.A.  Ohio
Watson, Charles Polk, Jr., B.A.  West Virginia
Weekley, Robert Dean, B.S.  Ohio
Wheelwright, Harvey Pearse  .  Utah
Williams, Charles Ray, B.A.  Pennsylvania
York, Shelley Clyde, Jr., B.S.  North Carolina
York, Thomas Luther, B.A.  North Carolina
Young, Calvin Lessey, B.S.  Maryland

HONORS

University Prize Gold Medal
David Morris Kipnis

Certificate of Honor
Leonard Melvin Lister
Frank Robert Perilla

Leonard Melvin Lister

William George Esmond

The Dr. A. Bradley Gaither Memorial Prize
Leonard Melvin Lister

The William D. Wolfe Memorial Prize and Certificate of Proficiency

Charles Polk Watson, Jr.

Internships—Graduates of June 9, 1951

July 1, 1951–June 30, 1952

Ager, Law Lamar  .  Jefferson Hillman Hospital, Birmingham, Ala.
Arthur, Robert Key, Jr.  Jefferson Hillman Hospital, Birmingham, Ala.
Bartell, John Paul  .  St. Luke's Methodist Hospital, Cedar Rapids, Iowa
Beardsey, Earl Miller  .  U. S. Naval Hospital, San Diego, Cal.
Bell, Arthur Keith  .  The Toledo Hospital, Toledo, Ohio
Bilder, Joseph, Jr.  .  The City Hospital of Akron, Akron, Ohio
Birley, Beverly Robert  .  Union Memorial Hospital, Baltimore, Maryland
Blades, Nancy  .  The Christ Hospital, Cincinnati, Ohio
Bossard, John Wesley  .  University Hospital, Baltimore, Md.
Brannon, John Vandale  .  U. S. Naval Hospital, San Diego, Cal.
Buell, John Russell, Jr.  .  Mercy Hospital, Baltimore, Md.
Christopher, Russell Lee  .  Harrisburg Polyclinic Hospital, Harrisburg, Pa.
Clemmens, Raymond Leopold  .  Mercy Hospital, Baltimore, Md.
Coffman, Kaohlin Miner  .  The Williamsport Hospital, Williamsport, Pa.
Cohen, Solomon  .  Sinai Hospital, Baltimore, Md.
Curranzy, Raymond Ralph  .  Reading Hospital, Reading, Pa.
Deckelbaum, Joseph  .  Sinai Hospital, Baltimore, Md.
Dettbarn, Ernest Albert  .  Lutheran Hospital of Maryland, Inc., Baltimore, Md.
Donner, Leon  .  Sinai Hospital, Baltimore, Md.
University of Texas Medical Branch Hospitals, Galveston, Texas

Ferguson, Charles Kirkpatrick .......................... Bethesda Hospital, Cincinnati, Ohio

Gallaher, James Patrick .............................. The Reading Hospital, Reading, Pa.

Garcia Palmieri, Mario Ruben .......................... Fajardo District Hospital, Fajardo, Puerto Rico

Gardner, Francis Sydney, Jr. ......................... City of Detroit Receiving Hospital, Detroit, Mich.

Gates, John Butler ................................. Mercy Hospital, San Diego, Cal.

Gordon, Benjamin Dichter ............................. King County Hospital, Brooklyn, N. Y.

Hatem, Frederick Joseph ............................... U. S. Naval Hospital, Staten Island, N. Y.

Hopkins, Robert Charles .............................. St. Vincent's Hospital, Erie, Pa.

Iten, George Joseph ................................. St. Agnus Hospital, Baltimore, Md.

Johnson, Frederick Miller .......................... Baltimore City Hospitals, Baltimore, Md.

Johnson, Wallace Edward ........................... St. Francis Hospital, Hartford, Conn.

Kaschel, Paul Edward ............................... Baltimore City Hospitals, Baltimore, Md.

Kindt, Willard Freed ............................... Allentown General Hospital, Allentown, Pa.

King, Victor Francis ............................... St. Agnes Hospital, Baltimore, Md.

Kipnis, David Morris ............................. The Johns Hopkins Hospital, Baltimore, Md.

Knipp, Harry Lester ................................. St. Agnes Hospital, Baltimore, Md.

Kramer, Howard Calvin ............................ Mercy Hospital, Baltimore, Md.

Lamb, William Eugene ............................... Gallinger Municipal Hospital, Washington, D. C.

Lanning, Theodore Reuney ............................. Kings County Hospital, Brooklyn, N. Y.

Leibman, Jack ................................. Mount Zion Hospital, San Francisco, Cal.

Levy, Leo Henry, Jr. ............................... St. Agnes Hospital, Baltimore, Md.

Lister, Leonard Melvin .............................. Barnes Hospital, St. Louis, Mo.

MacDonald, James Melvin ............................. U. S. Naval Hospital, Bethesda, Md.

McFadden, Earl Boyd ............................... Spartanburg General Hospital, Spartanburg, S. C.

McFadden, John William .............................. St. Luke's Hospital, Cleveland, Ohio

McGrady, Charles Winfred, Jr. ........................ Gallinger Municipal Hospital, Washington, D. C.

McGrady, Kathleen Reilly ........................... Gallinger Municipal Hospital, Washington, D. C.

Mendez Bryan, Ricardo Tomas .......................... Fajardo District Hospital, Fajardo, Puerto Rico

Metcalf, John Shelby, Jr. .......................... University Hospital, Baltimore, Md.

Mosser, Robert Schaf ............................... University Hospital, Baltimore, Md.

Mutter, Arthur Zelig .............................. Michael Reese Hospital, Chicago, Ill.

Myers, Donald Johnson ............................... McKeesport Hospital, McKeesport, Pa.

Nygren, Edward Joseph .............................. The New York Hospital, Cornell Medical Center, New York, N. Y.

Orth, John Stambaugh ............................... Tripler General Hospital, Oahu, Ha.

Packard, Douglas Richard .......................... Elizabeth Buxton Hospital, Newport News, Va.

Penchieff, Dorris Marie .............................. Los Angeles County General Hospital, Los Angeles, Cal.

Perilla, Frank Robert ............................... Mercy Hospital, Baltimore, Md.

Perky, Henry David, Jr. .......................... University Hospital, Baltimore, Md.

Reeser, Guy McClelland, Jr. ........................... Lutheran Hospital of Maryland, Inc., Baltimore, Md.

Reeves, Henry Gray, Jr. .......................... University Hospital, Baltimore, Md.
SCHOOL OF MEDICINE

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>City, State</th>
</tr>
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<tbody>
<tr>
<td>Rex, Eugene Braiden</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Reynolds, Georgia</td>
<td>Gallinger Municipal Hospital</td>
<td>Washington, D.C.</td>
</tr>
<tr>
<td>Richardson, Aubrey DeVaughn</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
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<tr>
<td>Rombro, Marvin Jay</td>
<td>Lutheran Hospital of Maryland, Inc.</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Rowland, Harry Shepard, Jr.</td>
<td>Jersey City Medical Center</td>
<td>Jersey City, N.J.</td>
</tr>
<tr>
<td>Saaavedra Amador, Armindo</td>
<td>St. Joseph's Hospital</td>
<td>Baltimore, Md.</td>
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<tr>
<td>Schmale, Arthur Henry, Jr.</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
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<tr>
<td>Scott, Roger David</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Scully, John Thorsen</td>
<td>Youngstown Hospital Association</td>
<td>Youngstown, Ohio</td>
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<tr>
<td>Shea, William Harold Holland</td>
<td>Mercy Hospital</td>
<td>Baltimore, Md.</td>
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<td>Sherry, Samuel Norman</td>
<td>Sinai Hospital</td>
<td>Baltimore, Md.</td>
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<td>Simmons, Leslie Dale</td>
<td>Mercy Hospital</td>
<td>Baltimore, Md.</td>
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<tr>
<td>Sipple, Edward M.</td>
<td>Mercy Hospital</td>
<td>Baltimore, Md.</td>
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<td>Skipton, Roy Kennedy</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
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<tr>
<td>Solomon, David Milton</td>
<td>Sinai Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Stone, John Hoskins</td>
<td>Mercy Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Sutton, Julian Theopulous</td>
<td>Charlotte Memorial Hospital</td>
<td>Charlotte, N.C.</td>
</tr>
<tr>
<td>Tobias, Richard Boyd</td>
<td>The Williamsport Hospital</td>
<td>Williamsport, Pa.</td>
</tr>
<tr>
<td>Udel, Melvin</td>
<td>U.S. Marine Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Watson, Charles Polk, Jr.</td>
<td>University Hospital</td>
<td>Baltimore, Md.</td>
</tr>
<tr>
<td>Weekley, Robert Dean</td>
<td>St. Luke's Hospital</td>
<td>Cleveland, Ohio</td>
</tr>
<tr>
<td>Wheelwright, Harvey Pearse</td>
<td>U.S. Marine Hospital</td>
<td>Seattle, Wash.</td>
</tr>
<tr>
<td>Williams, Charles Ray</td>
<td>U.S. Marine Hospital</td>
<td>San Diego, Cal.</td>
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<tr>
<td>York, Shelley Clyde, Jr.</td>
<td>Medical College of Virginia</td>
<td>Richmond, Va.</td>
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<tr>
<td>York, Thomas Luther</td>
<td>U.S. Marine Hospital</td>
<td>Galveston, Texas</td>
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<tr>
<td>Young, Calvin Lessey</td>
<td>U.S. Marine Hospital</td>
<td>Staten Island, N.Y.</td>
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MATRICULANTS

SENIOR CLASS, SEPTEMBER 21, 1950 TO JUNE 9, 1951

AGER, LAW LAMAR, B.S., University of North Carolina, School of Medicine, September 1947 to June 1949. North Carolina

ARThUR, ROBERT KEY, Jr., B.S., Mercer University, 1948. Georgia

BARTHEL, JOHN PAUL, Western Maryland College. Maryland

BEARDSLEY, EARL MILLER, University of Maryland. Maryland

BELL, ARTHUR KEITH, A.B., Oberlin College, 1947. Maryland

BILDER, JOSEPH, Jr., B.S., University of Akron, 1944. Ohio

BIRELY, BEVERLY ROBERT, University of Maryland. Maryland


BOSSARD, JOHN WESLEY, A.B., Duke University, 1947. Maryland

BRANNON, JOHN VANDALE, B.S., Fairmount State Teachers College, 1948. West Virginia

BUELL, JOHN RUSSELL, Jr., University of Maryland. Maryland

CHRISTOPHER, RUSSELL LEE, A.B., Bowdoin College, 1947. Massachusetts

CLEMMENS, RAYMOND LEOPOLD, B.S., Loyola College, 1947. Maryland

COFFMAN, KAOLIN MINER, A.B., Western Maryland College, 1947. Pennsylvania

COHEN, SOLOMON, A.B., University of Denver, 1947. Maryland

CURANZY, RAYMOND RALPH, B.S., Juniata College, 1947. Pennsylvania

DECKELBAUM, JOSEPH, B.S., University of Maryland, 1947. Maryland

DETTBARN, ERNEST ALBERT, B.S., Randolph-Macon, 1947. Maryland

DONNER, LEON, B.S., State Teachers College, 1942. Maryland

DUDLEY, WINSTON CLARK, A.B., Oberlin College, 1943. Massachusetts

DUNN, GEORGE MITCHELL, Jr., George Washington University. District of Columbia

DUNGAN, WILLIAM ANDREW, A.B., University of North Carolina, School of Medicine, September 1947 to June 1949. North Carolina
EDWARDS, David Everett, University of Maryland

EDWARDS, William Hunter, Jr., A.B., Johns Hopkins University, 1940

ESMOND, William George, B.S., University of Maryland, 1940

EVANS, Otis Druehl, Jr., B.S., Davidson College, 1947

FERGUSON, Charles Kirkpatrick, Muskingum College

FITZGERALD, Joseph Carroll, Middlebury College, 1947

FULLLOVE, Jack, University of Georgia

GALLAHER, James Patrick, B.A., West Virginia University, 1947

GARCIA PALMIERI, Mario Ruben, B.S., University of Puerto Rico

GARDINER, Frances, B.S., University of North Carolina, School of Medicine, September 1947 to June 1949

GATES, John Butler, University of Wisconsin

GORDON, Benjamin Dichter, B.A., Amherst College, 1947

HATM, Frederic Joseph, B.S., Georgetown University, 1947

HOPKINS, Robert Charles, B.S., Allegheny College, 1946

ITEN, George Joseph, A.B., Goshen College, 1946

JOHNSON, Frederick Miller, B.S., M.S., University of Maryland, 1943-1947

JOHNSON, Wallace Edward, Wesleyan University

KASOWITZ, Paul Edward, A.B., Wheaton College, 1947

KINDT, Willard Fred, Muhlenberg College

KING, Victor Francis, University of Maryland

KIPLING, David Morris, A.B., A.M., Johns Hopkins University, 1943-1944

KNIPP, Harry Lester, Loyola College

KRAMER, Howard Calvin, University of Maryland

LAMB, William Eugene, B.S., University of Florida, 1947

LANNING, Theodore Keuney, B.S., Springfield College, 1944

LEANMAN, Jack, A.B., Johns Hopkins University, 1947

LEY, Leo Henry, Jr., Mt. St. Mary’s College of Maryland

LISTER, Leonard Melvin, Loyola College

MACDONALD, Frances, B.S., Loyola College, 1947

MCFADDEN, Earl Boyd, B.S., University of Maryland, 1947

MCFADDEN, John William, Mt. Union College

MCGRADY, Charles Winifred, Jr., A.B., Emory University, 1947

MCGRADY, Kathleen Reilly, B.S., Long Island University, 1947

MENDEZ BRYAN, Ricardo Tomas, University of Puerto Rico

METCALF, John Shelby, Jr., B.S., University of California, 1950

MOSER, Robert Schaaf, B.S., University of Maryland, 1949


MYERS, Donald Johnson, B.S., Belhaven College, 1934

NYGREN, Edward Joseph, A.B., Western Maryland College, 1947

ORTHOFF, John Stambaugh, University of Maryland

PACKARD, Douglas Richard, University of Maryland

PENCHEFF, Dorris Marie, A.B., University of California, 1946

PERILLA, Frank Robert, B.S., University of Maryland, 1947

PERRY, Henry David, Jr., A.B., Emory University, 1947

REESE, Guy McClelland, Jr., A.B., Western Maryland College, 1947

REEVES, Henry Gray, Jr., B.S., Wake Forest College, 1947

REYNOLDS, Georgia, A.B., Western Maryland College, 1947

RICHARDSON, Aubrey DeVaughn, B.S., University of North Carolina, School of Medicine, Sept. 1947 to June 1949

ROMBRO, Marvin Jay, A.B., Bucknell University, 1947

ROWLAND, Harry Shepard, Jr., A.B., Wesleyan University, 1947

SAAVEDRA AMADOR, Armando, University of Puerto Rico

SCHMIDT, Arthur Henry, Jr., Pennsylvania State College

SCOTT, Roger, David, University of Virginia

SCULLY, John Thorsen, Indiana University

SHEA, William Harold Holland, B.S., Loyola College, 1947

SHERRY, Samuel Norman, B.S., University of Maryland, 1949

SIMMONS, Leslie Dale, B.S., West Virginia University, School of Medicine, Sept. 1947 to June 1949

SIPPLE, Edward M., B.A., Earlham College, 1949
SCHOOL OF MEDICINE

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SKIPTON, ROY KENNEDY, B.S., University of Maryland, 1942 .......... Maryland
SOLOMON, DAVID MILTON, University of Maryland. ............... Maryland
STONE, JOHN HOSKINS, B.S., University of Maryland. .......... Maryland
SUTTON, JULIAN THEOPHILUS, A.B., University of North Carolina, School of Medicine, September 1947 to June 1949 . .......... North Carolina
TOBIAS, RICHARD BOYD, B.S., Bucknell University, 1947 . .... Pennsylvania
TWIGG, HOMER LEE, JR., University of Maryland .............. Maryland
UEBEL, MELVIN, A.B., University of Maryland, 1947 .......... Maryland
VENROSE, ROBERT JAMES, A.B., University of Michigan, 1946 . .......... Ohio
WATSON, CHARLES POLK, JR., A.B., West Virginia University, 1947 ............. West Virginia
WEEKLEY, ROBERT DEAN, B.S., Heidelberg College, 1947 .... Ohio
WHEELIGHT, HARVEY PEARSE, Brigham Young University .......... Utah
WILLIAMS, CHARLES RAY, A.B., Gettysburg College, 1947 ............. Maryland
YORK, SHELLEY CLAYE, JR., B.S., Guilford College, 1947 .......... North Carolina
YORK, THOMAS LUTHER, A.B., University of North Carolina, School of Medicine Sept. 1947 to June 1949 .......... North Carolina
YOUNG, CALVIN LESSEY, A.B., Haverford College, 1947 .......... Maryland

JUNIOR CLASS, SEPTEMBER 21, 1950 TO JUNE 9, 1951

ADAMS, CHARLES BAIRD, JR., University of Maryland .......... Maryland
ADELSTEIN, BENJAMIN ALFRED, A.B., University of Pennsylvania, 1948 .......... Pennsylvania
ADKINS, CHARLES GLEN, West Virginia University .......... West Virginia
AHLUQUIST, RICHARD ELMER, JR., A.B., Stanford University, 1948 .......... Washington
ALDERMAN, GEORGE CARL, JR., B.S., Loyola College, 1949 .......... Maryland
ANDREWS, JAMES WILLIAM, B.S., Muskingum College, 1948 .......... Ohio
ATKINS, RAYMOND MELVIN, University of Maryland .......... Maryland
BAKAL, DANIEL B.S., Loyola College, 1948 .......... Maryland
BAKER, TIMOTHY DANFORD, A.B., Johns Hopkins University, 1948 .......... Maryland
BERGOFSKY, EDWARD HAROLD, University of Maryland .......... Maryland
BERRIOS, OSVALDO, University of Puerto Rico .......... Puerto Rico
BRIDGES, JACk ARTHUR, University of Maryland .......... Maryland
BRITAIN, LOWELL ELLIS, A.B., University of North Carolina, School of Medicine, September 1948 to June 1950 .......... North Carolina
BROOKS, JAMES BURCH, B.S., Loyola College, 1948 .......... Maryland
BROWN, WILLIAM MORRIS, JR., A.B., Mercer University, 1948 .......... Georgia
CARROLL, JOHN EDWARD, JR., Loyola College .......... Maryland
CARSON, JACK OLIVER, B.S., University of North Carolina, School of Medicine, September 1948 to June 1950 .......... North Carolina
CLYMAN, DANIEL, B.S., University of Maryland, 1948 .......... Maryland
COHEN, PHBN, Duke University .......... Maryland
CULPEPER, STUART PITNER, B.S., University of Georgia, 1948 .......... Florida
DEVLIN, ANDREW JOSEPH, B.S., Gonzaga University, 1948 .......... Washington
DIGGS, ANDREW MONROE, B.S., University of North Carolina, School of Medicine, September 1948 to June 1950 .......... North Carolina
DIGIOVANNI, ANTHONY JOHN, A.B., Johns Hopkins University, 1948 .......... Maryland
DOUGLAS, ROBERT ARNOLD, B.S., J. B. Stetson University, 1948 .......... Florida
DOUGLASS, ROBERT CORL, JR., B.S., University of Toledo, 1947 .......... Ohio
DUNFORD, WILLIAM STANLEY, JR., B.S., Brigham Young University, 1948 .......... Utah
EAKLE, BUFKE ELDREDGE, West Virginia University .......... West Virginia
ECKERT, HERBERT LEWIS, University of Maryland .......... Maryland
EGBERT, LAWRENCE DEEMS, JR., A.B., Johns Hopkins University, 1948 .......... Maryland
ELDIN, LEE WILLIAM, JR., University of Florida .......... Florida
ELLIOTT, CHARLES STANLEY, Emory University .......... Florida
FESK, JOSEPH PAUL, University of Pittsburgh .......... Pennsylvania
FINE, JACK, University of Maryland .......... Maryland
FOLEY, MICHAEL JOSEPH, West Virginia University .......... West Virginia
FRITZ, LOUIS ALBERT, B.S., Loyola College, 1948 .......... Maryland
GEBHARDT, ROBERT WILLIAM, University of Maryland .......... Maryland
GILLIAM, CHARLES FRANKLIN, A.B., University of North Carolina, School of Medicine, September 1948 to June 1950 .......... North Carolina
GISLASON, PAUL HAROLD, A.B., University of North Dakota, 1948 .......... North Dakota
GONZALEZ, LUIS FELIPE, University of Maryland .......... Puerto Rico
GORE, JAY CALVIN, A.B., Western Maryland College, 1948 .......... Maryland
GRABILL, JAMES RODNEY, Georgetown University, American University............. Maryland

GRAHAM, DAVID ERIC, B.S., University of North Carolina, Medical School, Sep-
tember 1948 to June 1950 ........................................ North Carolina

GRAYBEAL, CLARENCE EDWARD, University of Maryland...................................... Maryland

GRECO, WILLIAM RICHARD, University of Maryland........................................ Maryland

GRUBB, ROBERT ALVIN, University of Maryland........................................ Maryland

HANKOFF, LEON DUDLEY, University of Maryland........................................ Maryland

HARRIS, WILLIAM BENJAMINE, A.B., University of North Carolina, School of Medi-
cine, September 1948 to June 1950 ........................................ North Carolina

HEIMER, WILLIAM LENOX, B.S., University of Maryland, 1948...................... Maryland

HOLMES, CHARLES MARTIN, University of Miami........................................ Maryland

HOUCK, ROMULUS VANCE, Jr., University of Maryland...................................... Maryland

HUGDINS, WILLIAM BAIRD, A.B., Emory University, 1948................................ Georgia

HUNTER, DEWIT TALMADE, Jr., B.S., U. S. Naval Academy, 1945...................... Virginia

HUNTER, LAUREL MULLINS, A.B., Westhampton College, 1948...................... Maryland

HYATT, IRVIN B., University of Maryland........................................ Maryland

KELLER, FRANKLIN LLOYD, A.B., Gettysburg College, 1945...................... Maryland

KLINE, FRANK MENEFFEE, University of Maryland........................................ Maryland

KNELL, JOSEPH ANTHONY, Jr., A.B., Loyola College, 1948...................... Maryland

KRAGER, JOHN MARTIN, B.S., Loyola College, 1948...................................... Maryland

KRAMER, IRVIN, New York University........................................ Maryland

KRIEGER, MORTON MORRIS, University of Maryland...................................... Maryland

LAPP, HERBERT WALTER, Seton Hall College........................................ New Jersey

LIGHTBODY, CHARLES HARRY, A.B., Colby College, 1948...................... Maryland

LOVE, ROBERT GEORGE, B.S., Massachusetts State College, 1947...................... Massachusetts

MATHIES, WILLIAM ALLEN, Westminster College, A.B., Wittenberg College........ Ohio

McKAY, JOHN NELSON, Ohio Wesleyan University, Gettysburg College............ Maryland

Olsen, Richard Young, A.B., University of California, 1948....................... California

PERRY, BENTON BLOCH, B.S., University of Chicago, 1947...................... Maryland

PILLSBURY, WILLIAM ANDREW, Jr., University of Oregon, Loyola College...... Maryland

POTTER, VANCE EDWARD, University of Maryland........................................ Maryland

RABINOWICH, MALCOLM LEE, University of Maryland..................................... Maryland

RAMIREZ-SANTISTEBAN, GILBERTO, University of Puerto Rico....................... Puerto Rico

RAPPEPORT, JONAS RALPH, University of Maryland........................................ Maryland

RASMUSSEN-TAXDAL, DAVID SAMUEL, University of Maryland........................ Pennsylvania

REED, JULIAN WARD, B.S., University of Maryland..................................... Maryland

ROSSON, WILLIAM DANIEL, University of Maryland...................................... Maryland

SCHIMMEL, BELLA FAYE, B.S., University of Michigan, 1948..................... Maryland

SHARRETT, JOHN OLIVER, University of Virginia........................................ Maryland

SHOFF, MAHLON JAMES, A.B., University of Delaware, 1948..................... Delaware

SINDEE, RICHARD ARNOLD, A.B., Johns Hopkins University, 1948.............. Maryland

SLAGER, URSAULA TRAUGOTT, A.B., Wellesley College, 1948...................... Maryland

SMITH, BOLSTON DANDRIDGE, West Virginia University.............................. West Virginia

SMITH, GEORGE HERBERT, A.B., Clark University, 1948.............................. Maine

SMOOT, AUDREY CANNON, Jr., University of Delaware................................ Delaware

SPRITZ, NORTON, A.B., Johns Hopkins University, 1948.............................. Maryland

STAMBLER, ALVIN ABRAHAM, University of Maryland.................................. Maryland

STARLING, CHARLES KAY, B.S., University of North Carolina, School of Medicine, September 1948 to June 1950 ........................................ North Carolina

TRACE, ROBERT JAMES, University of Wisconsin........................................ Wisconsin

THROUTMAN, BELK CONNOR, University of North Carolina, School of Medicine, September 1948 to June 1950 ........................................ North Carolina

VICENS, CARLOS NATHANIEL, B.S., University of Puerto Rico, 1948........ Puerto Rico

WALLACE, SCOTT, PTPE, A.B., University of Utah, 1948................................ Utah

WALSH, HARRY MARTIN, B.S., Washington College, 1948.............................. Maryland

WARREN, BRYAN PEPPE, Jr., University of Maryland...................................... Maryland

WATTERS, JOHN LORD, A.B., University of North Carolina, School of Medicine, September 1948 to June 1950 ........................................ North Carolina

WEEKS, HOWARD NELSON, B.S., Franklin & Marshall, 1948...................... Maryland

WILDBERGER, ALBERT JOHN, A.B., Western Maryland College, 1948.............. Maryland

WILKINSON, JOHN ROSS, Jr., A.B., University of North Carolina, School of Medicine, September 1948 to June 1950 ........................................ North Carolina

WOLFE, DONALD ANTHONY, University of Maryland..................................... Maryland

WOLVERTON, WILLIAM ROGER, A.B., West Virginia University, 1948.............. West Virginia
SOPHOMORE CLASS, SEPTEMBER 21, 1950 TO JUNE 9, 1951

ARP, Louis Croft, Jr., A.B., State University of Iowa, 1949.  Illinois
Baldwin, Richard Moffett, B.S., Loyola College, 1949.  Maryland
Banks, James Leroy, Jr., B.S., Furman University, 1949.  South Carolina
Bastian, Grace Arlene, B.S., College of Notre Dame of Maryland, 1949.  Maryland
Beck, George Henry, A.B., Western Maryland College, 1949.  Maryland
Berkow, Robert, B.S., University of Maryland, 1949.  Maryland
Blemmer, John B., University of Maryland, 1949.  Maryland
Boggs, James Ernest, A.B., West Virginia University, 1949.  West Virginia
Bove, Joseph Richard, B.S., University of Maryland.  New Jersey
Brinkley, George Ross, Jr., A.B., West Virginia University, 1949.  West Virginia
Burkert, Thomas Joseph, B.S., Loyola College, 1949.  Ohio
Byerly, Walter Houch, A.B., Johns Hopkins University, 1949.  Maryland
Byrnes, Bernard Joseph, Jr., B.S., Loyola College, 1949.  Maryland
Carter, Donald Sweetser, Duke University.  Maryland
Clift, John Vinton, B.S., Hampden-Sydney College, 1949.  Maryland
Cohen, Jerome, B.S., University of Maryland, 1949.  Maryland
Colon-Lugo, Salomon, University of Puerto Rico.  Puerto Rico
Cook, Arthur John, A.B., Emory University, 1949.  Georgia
Doerner, Wyand Francis, Jr., B.S., Mt. St. Mary's College, 1949.  Maryland
Dowell, Rowland Judson, University of Utah.  Utah
Dumler, John Donald, B.S., University of Maryland.  Maryland
Edlow, Jules Bernard, B.S., University of Maryland.  Maryland
Fibor, Hugh Valentine, University of Georgia.  Georgia
Flax, Leonard Harold, B.S., University of Maryland.  Maryland
Freeman, Sylvan, B.S., University of Maryland, 1949.  Maryland
Garlock, Frederick Adams, B.S., University of Maryland, 1949.  Maryland
Garrison, Joseph Shermer, 3d, A.B., Western Maryland College, 1949.  Maryland
Gevas, George, B.S., University of Maryland, 1949.  Maryland
Gillotte, Joseph Patrick, B.S., University of Maryland.  Connecticut
Glick, Leonard Barry, B.S., University of Maryland.  Maryland
Goldstein, Robert Bruce, University of Maryland.  Maryland
Hartman, John McMaster, A.B., West Virginia University, 1949.  West Virginia
Heisse, John Wilbur, Jr., A.B., Johns Hopkins University, 1949.  Maryland
Henson, Kenneth Clifford, B.S., Salem College, 1949.  Maryland
Herbert, Thomas Franklyn, Johns Hopkins University.  Maryland
Himmelwright, George, B.S., University of Maryland.  Maryland
Holder, William Lewis, A.B., Emory University, 1949.  Georgia
Jones, Henry Albert, Jr., Johns Hopkins University.  Maryland
Jones, Thomas Lawson, B.S., University of Maryland.  Maryland
Judge, Walter Francis, B.S., University of Notre Dame, 1949.  New Jersey
Kaese, Werner Erich, B.S., Albright College, 1949.  Pennsylvania
Karn, William Nicholas, Jr., Alfred University.  Maryland
Kingsbury, Robert Coburn, B.S., University of Maryland.  Maryland
Kiser, William Sites, B.S., University of Maryland.  West Virginia
Knight, Arthur Clyde, University of Montana.  Montana
Lambert, Robert Young, A.B., Emory University, 1949.  South Carolina
Langrall, Harrison Morton, Jr., A.B., Johns Hopkins University, 1949.  Maryland
Lee, Benjamin Buck, A.B., Johns Hopkins University, 1949.  Maryland
Leighton, Herbert Houck, Western Maryland College.  Maryland
Levine, Robert Lee, B.S., University of Puerto Rico.  Maryland
Longo-Cordero, Rafael, University of Puerto Rico.  Puerto Rico
Madge, Gordon Evans, College of William and Mary.  Maryland
McCready, Don Meredith, B.S., Jr., University of Maryland.  Maryland
McFadden, Archibald Weems, B.S., University of Maryland.  Virginia
Mendelson, Ronald Edward, B.S., University of Maryland, 1949.  Maryland
Metcalf, John William, Jr., Kent State University.  Ohio
Middleton, Benjamin Martin, University of Maryland.  Maryland
MILES, Leslie Roy, Jr., A.B., West Virginia University, 1949. Pennsylvania
MILLER, George Henry, B.S., University of Maryland. Maryland
MILLER, Norman Louis, B.S., University of Maryland. Maryland
PALSANO, Joseph Frank, B.S., University of Maryland. Maryland
PECK, George Charles, A.B., Johns Hopkins University, 1949. Maryland
POWDER, James Richard, A.B., Johns Hopkins University, 1949. Maryland
READ, James Lamar, B.S., University of Maryland, 1949. Maryland
RICHARDSON, Joe Bernal, A.B., Emory University, 1949. Georgia
RICHMOND, Lewis Cass, Jr., Duke University. West Virginia
ROWE, James Earle, Jr., B.S., University of Maryland. Maryland
SCHINDLER, Richard Elias, B.S., University of Maryland. Maryland
SHUMAN, Joseph Ellyn, B.S., Washington College, 1949. Maryland
SINGLETON, Robert Tiffany, B.S., University of Maryland. Maryland
SKAGGS, Thomas Wayne, B.S., University of Miami, 1947. Florida
SLASMAN, William Howry, Jr., A.B., Johns Hopkins University, 1949. Maryland
SMITH, William Meredith, Jr., B.S., Mt. St. Mary's College, 1949. Maryland
SPUDIS, Edward Verhines, B.S., University of Maryland. Washington, D. C.
STAFFOFFER, John Craig, A.B., Princeton University, 1949. Maryland
TEMPLETON, William Pendleton, B.S., University of Maryland. Maryland
TREIBER, Martin William, M.A., University of Maryland, 1949. Maryland
TROXEL, James Roy, A.B., Johns Hopkins University, 1948. Maryland
VANCE, Arnold Leonard, B.S., University of Maryland. Maryland
WALTER, Herbert Guy, Jr., University of Nevada. Nevada
WATSON, Jack Thomas, B.S., U. S. Naval Academy, 1945. West Virginia
WEAVER, Karl Hanna, West Virginia University. West Virginia
WEBSTER, Joel Stoops, B.S., University of Maryland. Maryland
WEEKS, Harry Stephen, Jr., A.B., West Virginia University, 1949. West Virginia
WEINER, Israel Howard, A.B., Johns Hopkins University, 1949. Maryland

FRESHMAN CLASS, SEPTEMBER 21, 1950 TO JUNE 9, 1951

ABRAMS, Samuel Joseph, B.A., Johns Hopkins University, 1950. Maryland
AULT, Virginia Lee, B.S., University of Maryland, 1950. Maryland
BAITCH, Arthur, University of Maryland. Maryland
BAR, John William, B.C.S., University of Georgia, 1948. Maryland
BAUERNschub, George Marbury, Jr., B.S., Loyola College, 1950. Maryland
BEACH, Robert William, III, B.A., Yale University, 1950. Maryland
BECHTOLD, Jean Carol, University of Maryland. Maryland
BERCK, Beverly Jean, B.A., Asbury College, 1950. Maryland
BERNARDO, Anthony A., B.S., University of Maryland, 1950. Rhode Island
BERNSTON, Dale Rampton, B.A., University of Utah, 1949. Utah
Betz, Richard Norman, B.A., Johns Hopkins University, 1950. Maryland
BLUMER, Robert, University of Maryland. Maryland
BROWN, Stuart Morton, University of Maryland. Maryland
BULLOCK, Allen Culpepper, Jr., B.S., Bates College, 1950. Maine
CARNES, Mary Kathleen, B.A., College of Notre Dame, 1950. Maryland
COHEN, Earl, University of Maryland. Maryland
COYLE, Jean Marie, University of Maryland. Maryland
DEFENDINI, Efrain Antonio, University of Puerto Rico. Puerto Rico
DORAN, William Francis, B.S., Allegheny College, 1950. Pennsylvania
EDWARDS, Arthur George, Jr., University of Maryland. Maryland
ELLIN, Morton Jack, University of Maryland. Maryland
EPSTEIN, Yale, University of Maryland. Maryland
FIELDS, Ann, B.S., University of Maryland, 1947. Maryland
FITCH, Charles Thomas, B.S., George Washington University, 1950. Maryland
FORREST, Otto Norman, Jr., B.A., Duke University, 1949. Maryland
FRAMM, Daniel Herschel, University of Maryland. Maryland
FREED, Malcolm Felix, University of Maryland. Maryland
FRITZ, George Suppes, University of Maryland. Maryland
FUNKHOUSER, George Richard, B.S., Franklin and Marshall College, 1950. Maryland
GABLE, WALTER DELAY, University of Maryland.

G EWIG, JOHN MONROE, Jr., B.A., Johns Hopkins University, 1950. Maryland

GESSNER, JOHN EDWARD, B.S., Loyola College, 1950. Maryland

GLICK, LOUIS MICHAEL, Mt. St. Mary's College. Maryland

GOLDSMITH, RALPH SAMUEL, B.S., Franklin and Marshall College, 1950. Maryland

GUNNING, JEAN JACQUES, B.A., Loyola College, 1950. Maryland

HALI, ROBERT LEE, Washington College. Maryland

HAMMER, CHARLES JOHN, Jr., B.A., Western Maryland College, 1950. Maryland

HARTMAN, JOHN FRIDERIC, B.S., Loyola College, 1950. Maryland

HARVEY, HAROLD DEWEY, B.A., B.S., Southwest Missouri State Coll., 1950. Missouri

HATFIELD, WILLIAM HENRY, Jr., B.A., St. John's College, 1941. Maryland

HAYES, JAMES WESTCOTT, B.A., Johns Hopkins University, 1950. Maryland

HEADLEY, WILLIAM MCKENDDRE, B.A., University of Maryland, 1930. Maryland


HOPF, EDWARD WARREN, B.S., Loyola College, 1950. Maryland

HOUPT, WILLIAM PIERRE, B.A., Loyola College, 1950. Maryland

HUNT, THOMAS EDWARD, Jr., B.A., West Virginia University, 1950. West Virginia

JONES, RICHARD ARVIN, B.A., Bridgewater College, 1950. Maryland

JONES, ROSSELLA EDITH, B.A., Indiana University, 1949. Maryland

KAPLAN, IRVIN BERNARD, B.S., University of Maryland, 1949. Maryland

KEEFE, RAYMOND BERNARD, B.S., College of the Holy Cross, 1950. Connecticut

KIERST, THOMAS EDWARD, B.A., Willetberg College, 1950. Ohio

KLOHR, EDWARD SMITH, Jr., Western Maryland College.

KNOTT, BENJAMIN FRANKLIN, Jr., B.A., Duke University, 1950. Florida

LAVINE STANFORD A., B.S., University of Maryland, 1950. Pennsylvania

LEVIN, HERBERT JOSEPH, B.S., University of Maryland, 1950. Maryland

LEVINE, HILBERT MERRILL, B.A., Johns Hopkins University, 1950. Maryland

LEVY, DAVID ALFRED, University of Maryland.


Mawhinney, Charles, Jr., B.S., University of Pittsburgh, 1948. Pennsylvania


Moss, Irwin Harold, B.A., Johns Hopkins University, 1949. Maryland

Mueller, Charles Herbert, Jr., B.S., Wheaton College, 1940. Maryland

Mueller, Eugene Alexander, B.S., Mt. Union College, 1949. Ohio

Murphy, John Daily, B.A., Centre College, 1950. Illinois

Naffinger, Moses Leroy, B.S., Juniata College, 1950. Maryland

NANGLE, GERALD FRANKIS, B.A., Ohio State University, 1948. Maryland

NOYA, JOSEPH, B.S., Franklin and Marshall College.

OWENS, DAVID, B.S., Loyola College, 1950.

Packard, Albert Gibson, Jr., B.A., Johns Hopkins University, 1950. Maryland

Pats, Albert, B.S., University of Maryland, 1950. Maryland

PATTEN, DAVID HALE, B.A., Western Maryland College, 1950. Maryland

Perez Arzola, Miguel, University of Puerto Rico. Puerto Rico

RAAB, HELLUM, Florida Southern College.

RAINESS, MORRIS, B.A., Johns Hopkins University, 1950. Maryland

ROBERTS, ROBERT REUEL RICHARD, B.S., University of Maryland, 1950. Maryland

Schlenoff, Milton, B.S., University of Maryland, 1950. Maryland

Shamer, Margaret Gillette, B.A., Woman's College of the University of North Carolina, 1948. Maryland

Shapiro, Jerome Edwin, B.A., Johns Hopkins University, 1949. Maryland

Shochet, Bernard Richard, University of Maryland.

SIMPSON, MARSHALL ALBERT, Western Maryland College. Delaware

SMITH, JOSEPH RAYMOND, B.A., Union College, 1950. Pennsylvania

SMYTH, JAMES WALTER, B.A., Loyola College, 1950. Maryland

SOLON, THOMAS JOHN, University of Maryland.

TEETER, JAMES HERRING, B.A., Gettysburg College, 1950. Maryland

Thames, Rufus, B.S., University of Florida, 1950. Florida

Tracy, Harold William, Jr., B.S., University of Maryland, 1950. Maryland

Trappnell, Henry Rogers, University of Virginia. Maryland

Tublin, Ira Nathan, B.S., University of Maryland, 1950. Maryland

Wall, George Henry, B.S., University of Maryland, 1950. Maryland

Weiss, Harold Robert, University of Maryland.

Welliver, Daniel Irvin, B.A., Western Maryland College, 1950. Maryland

Welton, William Arch, Jr., B.A., Harvard University, 1950. West Virginia
INTRAMURAL POSTGRADUATE STUDENTS
July 1, 1950 to June 30, 1951

SURGICAL ANATOMY

BARNETT, WILLIAM O., M.D. Tuscola, Miss. University of Tennessee

BLOXOM, JOHN MADISON, JR., M.D. Mappsville, Va. University of Maryland

BONZELAAR, ALVIN, M.D. Holland, Michigan University of Michigan

CHARBONNEAU, AUBIN, M.D. Chicoutimi, Quebec, Can. Laval University, Quebec

CUNNICK, PAUL C., M.D. Baltimore, Maryland University of Iowa

FARAINO, FRANK ANTHONY, M.D. Baltimore, Maryland University of Maryland

GRAVES, JOSEPH W., M.D. Baltimore, Maryland Vanderbilt University

GRAY, DAVID B., M.D. Baltimore, Maryland University of Maryland

JENSEN, MEREDITH N., M.D. Baltimore, Maryland Baylor College of Medicine

KUNTZ, DAVID H., M.D. Los Angeles, Calif. University of Iowa State

LEVINE, LEON, M.D. Schenectady, New York Albany Medical College

PARROTT, FRANK S., M.D. Goldsboro, N. C. University of Maryland

PENTON, ROBERT S., M.D. Wetumpka, Alabama John Hopkins Medical School

POOLE, FRANK, M.D. Clay, W. Va. Duke University

ISON, ALFREDO, M.D. Manila, Philippines Un. of Philippines, Manila, John Hopkins School of Hygiene and Public Health

TANSEY, JOHN J., M.D. Catonsville, Maryland University of Maryland

VELEZ, BALTASAR B., M.D. Havana, Cuba University of Havana

VERRONE, ANTHONY C., M.D. Providence, Rhode Island Tufts College of Medicine

WATT, FRANCIS H., M.D. Thomasville, Ga. Johns Hopkins Medical School

WEBER, HARRY, M.D. Baltimore, Maryland College of Medical Evangelists

EXPERIMENTAL SURGERY

From Baltimore City Hospitals

BLAIR, EMIL, M.D. Savannah, Ga. Univ. of Georgia

GRAVES, JOSEPH W., M.D. Baltimore, Md. Vanderbilt Univ.

PENTON, ROBERT S., M.D. Wetumpka, Ala. Johns Hopkins Med. School

From Mercy Hospital

THIERSKAUF, FRANK J., JR., M.D. Erie, Pennsylvania University of Maryland

From South Baltimore General Hospital

ADAMSON, JOHN A., M.D. Baltimore, Md. Nebraska Medical College

BLACK, DANIEL J., M.D. Fort Worth, Texas University of Chicago

PARENT CHARLES-HENRI, M.D. Quebec, Canada Laval University, Quebec

From University Hospital

J. CARLTON GODLOVE, M.D. Hagerstown, Md. University of Md.

ERWIN R. JENNINGS, M.D. Mil ledgeville, Ga. University of Md.

EDW. F. SMITH, JR., M.D. Baltimore, Maryland University of Md.

JOSEPH H. ALLEN, JR., M.D. Baltimore, Maryland University of Md.

From St. Joseph's Hospital

BAL TASAR B. VELEZ, M.D. Havana, Cuba University of Havana
<table>
<thead>
<tr>
<th>Name</th>
<th>City</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell, Royal A., M.D.</td>
<td>Hagerstown, Md.</td>
<td>University of Md.</td>
</tr>
<tr>
<td>Brewer, David R., M.D.</td>
<td>Hagerstown, Md.</td>
<td>Jefferson Med. College</td>
</tr>
<tr>
<td>Campbell, Robert Van L., M.D.</td>
<td>Hagerstown, Md.</td>
<td>Duke University</td>
</tr>
<tr>
<td>Dwyer, James R., M.D.</td>
<td>Hagerstown, Md.</td>
<td>University of Md.</td>
</tr>
<tr>
<td>Hirshman, Philip J., M.D.</td>
<td>Hagerstown, Md.</td>
<td>University of Virginia</td>
</tr>
<tr>
<td>Hoffman, Lloyd A., M.D.</td>
<td>Hagerstown, Md.</td>
<td>Johns Hopkins Med. School</td>
</tr>
<tr>
<td>Hornbaker, John H., M.D.</td>
<td>Hagerstown, Md.</td>
<td>University of Md.</td>
</tr>
<tr>
<td>Keadle, Robert F., M.D.</td>
<td>Hagerstown, Md.</td>
<td>University of Pa.</td>
</tr>
<tr>
<td>Kneisley, Bender, B., M.D.</td>
<td>Smithsburg, Md.</td>
<td>University of Md.</td>
</tr>
<tr>
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Physicians Attending Postgraduate Seminar Given for the Maryland Academy of General Practice at University Hospital

December 7, 1950

Edward J. Alessi, M.D., Baltimore, Md.
Walter A. Anderson, M.D., Baltimore, Md.
Philibert Artigliani, M.D., Baltimore, Md.
Irene Barrett, M.D., Bethesda, Md.
Eugene I. Baumgartner, M.D., Oakland, Md.
M. Virginia Beyer, M.D., Sykesville, Md.
J. L. Billingslea, M.D., Westminster, Md.
Melvin N. Bordem, M.D., Baltimore, Md.
John D. Bert, M.D., Baltimore, Md.
Mary S. Bulkeley, M.D., Towson, Md.
W. B. Culvell, M.D., Mt. Airy, Md.
Louis Dalmus, M.D., Pikesville, Md.
Robert E. Farber, M.D., Sparrows Point, Md.
W. H. Foard, M.D., Manchester, Md.
Charles R. Foul, M.D., Westminster, Md.
James Frenkel, M.D., Baltimore, Md.
Joseph Friedman, M.D., Baltimore, Md.
Leonard H. Golombeck, M.D., Baltimore, Md.
Benjamin Hightstein, M.D., Baltimore, Md.
Irene L. Hitchman, M.D., Sykesville, Md.
Willard P. Hudson, M.D., Forest Hill, Md.
A. B. Hughes, M.D., Baltimore, Md.
Launston L. Keown, M.D., Baltimore, Md.
B. S. Kleiman, M.D., Baltimore, Md.
B. B. Kneisley, M.D., Hagerstown, Md.
George A. Knipp, M.D., Baltimore, Md.
Lester N. Kolman, M.D., Baltimore, Md.
K. K. Krulevitz, M.D., Baltimore, Md.
Louis T. Lavy, M.D., Baltimore, Md.
Byruth Lenson-Lambros, M.D., Baltimore, Md.
Gerald W. LeVan, M.D., Boonsboro, Md.
Stephen L. Magnness, M.D., Catonsville, Md.
James T. Marsh, M.D., Westminster, Md.
Lawrence Maryanov, M.D., Cambridge, Md.
Louis R. Masel, M.D., Baltimore, Md.
Stephen C. Mockowitch, M.D., Baltimore, Md.
G. Allen Moulton, M.D., Westminster, Md.
B. A. Moyness, M.D., Chevy Chase, Md.
Joseph R. Myerowitz, M.D., Baltimore, Md.
N. E. Needle, M.D., Baltimore, Md.
Norbert C. Nitsch, M.D., Baltimore, Md.
Charles F. O'Donnell, M.D., Towson, Md.
Harold B. Plummer, M.D., Preston, Md.
M. C. Porterfield, M.D., Hampstead, Md.
Louis J. Pratt, M.D., Baltimore, Md.
John C. Rawlins, M.D., Federalsburg, Md.
H. O. Robbins, M.D., Berlin, Md.
N. E. Sartorius, M.D., Pocomoke City, Md.
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(Term beginning July 1, 1951 and ending June 30, 1952)

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To Endowment Fund

I give, devise and bequeath to the Trustees of the Endowment Fund of the University of Maryland, a corporation incorporated under the laws of the State of Maryland, for the benefit of the Faculty of Medicine.................................................................

(Here state amount or describe property)

To School of Medicine

I give, devise and bequeath to the Regents of the University of Maryland, a corporation incorporated under the laws of the State of Maryland, for the benefit of the Faculty of Medicine.................................................................

(Here state amount or describe property)
THE UNIVERSITY OF MARYLAND SCHOOL OF NURSING

The University of Maryland School for Nurses was established in the year 1889. Since that time it has been an integral part of the University of Maryland, coming under the same government. It is a non-sectarian school, the only religious services being morning prayers.

The University Hospital is a general hospital containing about 435 beds. It is equipped to give young women a thorough course of instruction and practice in all phases of nursing.

Programs offered: The programs of study of the school are planned for two groups of students: (a) the five-year group, (b) the 36-month group.

The requirements for admission to the five-year program of the School of Nursing are the same as for other colleges of the University. The completion of this course entitles the student to the degree of Bachelor of Science from the University of Maryland and to the diploma of the University Hospital School of Nursing.

The requirements for admission to the 36-month program are the satisfactory completion of an academic course in an approved high school. The completion of this course entitles the student to the diploma of the University of Maryland School of Nursing.

Applications and catalogues may be obtained from the Director of the School of Nursing, University Hospital, Baltimore 1, Md.

MERCY HOSPITAL SCHOOL OF NURSING

The Mercy Hospital School of Nursing was established 1899 and incorporated on December 23, 1901. It is an integral part of Mercy Hospital and is under the same government. It is accredited by the Maryland State Board of Examiners of Nurses and the National Nursing Accrediting Service.

The University of Maryland, and Mount Saint Agnes College, in affiliation with the Mercy Hospital School of Nursing, offer a five year combined academic and nursing program. The completion of this course entitles the student to the degree of Bachelor of Science from the University of Maryland and Mount Saint Agnes College, and to the diploma of the Mercy Hospital School of Nursing.

Mercy Hospital affords exceptional advantages for the education of nurses. It is a general hospital containing 348 beds, and offers opportunities for a thorough and varied experience. By its institutional affiliation with the University of Maryland it secures professors who give to the student the results of their training and experience in the fields of the medical and related sciences.
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