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• The Reaction of the Peritoneum
  (First Annual Seelig Lecture)

• The Changing Order in Medicine

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The Reaction of the Peritoneum*

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To have been given the privilege of delivering the first Major G. Seelig lecture is an honor which cannot be too greatly appreciated, particularly by one who for many years has looked on Dr. Seelig as friend and valued mentor. Since this is the first lecture of this foundation and since aptly it is given in association with the celebration of his seventy-fifth birthday, to present a brief summary of his career and of his contributions to surgery is an obligation the pleasant quality of which you will understand.

After his graduation from Columbia University Medical School in 1900, Dr. Seelig indulged himself in four years of surgical training, three at the Mt. Sinai Hospital and one at the University of Berlin. This long period of preparation was unusual in those days, although now so common. It was beginning to be recognized that a prolongation of the surgeon’s chrysalis stage of development will result in brighter wings and broader flight, a truth evidenced in Dr. Seelig’s later career as a surgeon, as a teacher, and as a seeker of new facts. A year after his start in surgical practice, Dr. Seelig was made Professor of Surgery at St. Louis University, in which capacity he served for eleven years. In 1920 he became Professor of Clinical Surgery at Washington University School of Medicine and later Director of Pathology at the Barnard Free Skin and Cancer Hospital. He served in the first World War, entering as major and discharged as lieutenant colonel.

His contributions to medicine include both the consideration of clinical problems and the laboratory investigation of fundamental processes. His interests have largely been pathological in nature. In everything he has written he evidences an extensive knowledge of medical literature and profound and searching critical judgment. As a laboratory investigator his experimental approaches are ingenious and his controls complete. In addition to these standards of a true scientist, he presents his results in writing marked by a superbly

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felicitous use of the English language. The experience of reviewing his contributions is a rewarding experience which I commend to you all.

Dr. Seelig's fundamental experimental demonstration of the uncertainty of healing between muscle and fascia has been since its presentation an important factor in surgical thought concerning the repair of hernia. His later series of studies in experimental cancer both in relation to tar, light, irradiation, and other possible influences in carcinogenesis, and to the behavior of experimentally induced tumors are sound and clear-cut contributions to this difficult subject. In 1927 he delivered the oration on surgery of the Southern Medical Association entitled "Factors of Safety in Surgery." Although the appearance of much new physiological knowledge in the last twenty years would require additions to the essay, yet even today it remains a classic that every young surgeon should read. It presents a rare combination of science, wide general scholarship, and literary grace. Finally, one of the contributions for which he will always be remembered is his attack upon talc glove powder as a surgical hazard. He has always been interested in those things which protect the patient; and his highly important demonstration of the danger of introducing talc into the peritoneal cavity and his iteration and reiteration of this danger have been a natural development of his surgical thought. It is largely through his efforts that the use of talc in surgical gloves is now widely recognized as more than a surgical misdemeanor. In his studies of this subject he was the first to mention the substitution of a starch powder of which more will be said later.

Since this interest of Dr. Seelig's, namely, the behavior of the peritoneum, has been one of my interests for many years, it seems altogether fitting that I should choose this title for the first Seelig lecture. I bring presently nothing new to the subject. I will attempt only to summarize what we know about the reaction of the peritoneum, based in small part upon work done by my associates and myself not only in the University of Virginia Department of Medicine but also in the surgical laboratories of Washington University. The portion of this work dealing with glove powders stems directly, of course, from Dr. Seelig's contribution.

The reaction of the peritoneum to infection and trauma can be divided for the purpose of discussion into three phases. In speaking of these three phases I shall be guilty of ignoring what is perhaps a somewhat academic differentiation between inflammation and repair. In so far as the histologic changes are concerned the distinction is unimportant. Inflammation and repair are viewed as the total response of the peritoneum to injury, whether it be from bacterial toxins, from mechanical trauma, or from foreign material. The first phase is the early inflammatory response with beginning organization, the second phase is a period of either progressive organization or regression of the process, and the third phase is the period of scar. Each of these I shall discuss separately. Much of what is to be said is basically elementary, and for this you have my apology.
Figure I. Photomicrograph illustrating earliest serosal reaction to infection. It shows hyperemia, edema, and cellular infiltration of the subserosa together with coagulated exudate (fibrin) on the surface. In places the serosal cells are still preserved. (This section is actually from the pericardium rather than the peritoneum. It accurately illustrates, however, the same process as it occurs in the latter.)

Figure II. Slightly later stage than that shown in Figure I. The fibrin coat is thicker and infiltrated with inflammatory cells. Beneath it organization with young blood vessels and fibroblasts is beginning. This figure and Figure III are both from the peritoneum.

Figure III. A still later stage than that shown in Figure II. Here definite granulation tissue is seen with young blood vessels two of which are shown in longitudinal section. In this photomicrograph the surface of the fibrinous coat is not shown.
The immediate response of the peritoneum to injury, either mechanical or bacterial in origin, is an acute inflammatory reaction in the subserosa evidenced by the usual histologic picture of acute inflammation, namely, hyperemia, edema, and cellular infiltration. The edema is a result of the loss of integrity of injured capillaries with the escape of plasma from these vessels into the intracellular space. The edema fluid seeps out upon the surface of the serosa where it coagulates to form the gross plaques of fibrin familiar to every surgeon. This mechanism is entirely a conservative process. It is the mechanism by which in many instances the spread of bacterial contamination and of resulting infection is limited to the area of its source. The surgeon who has performed multiple sutures of the intestine is aware of the fact that the inspection of a suture line fifteen or twenty minutes after it has been completed will reveal a visible plug of fibrin which already has created a watertight seal. The pathology of this process is shown in Figure I, which illustrates the processes described beneath the serosa together with the irregular fibrin coagulum on its surface. Although this particular section is from the pericardium, it so well illustrates the formation of fibrin that it has seemed permissible to use it, since the process in peritoneum and pericardium is the same. The fibrinous coat on the peritoneum is sticky and will cling to neighboring similarly inflamed areas, creating the primary adhesions which wall off the area of danger.

Following the fibrinous stage of the peritoneal reaction, if injury is still active, organization begins. Figure II shows the early stage of organization with the beginning invasion by young vessels and fibroblasts of a thick, fibrinous coat into which inflammatory cells have passed. Figure III shows a slightly later phase of this organization with a thicker layer of granulation tissue.

One cannot speak of the early process of agglutination of serosal surfaces without mentioning the role of the omentum. The part played by this additional large surface area of peritoneum in helping to isolate dangerous points is often observed in acute inflammatory processes within the abdomen such as acute appendicitis and acute cholecystitis. Its importance is easily shown in the laboratory. If one ligates the appendix of the cat, including both mesentery and lumen, the appendix becomes gangrenous and peritonitis is initiated. If this operation is carried out in animals in which the omentum has previously been amputated, the resulting peritonitis is invariably general and results regularly in death, whereas, of cats with intact omentum, a considerable number survive. In these the postmortem examination shows that the omentum has taken a large part in walling off the gangrenous area.

For many years there has been debate about the factors which result in omental participation in the walling off process, no matter where in the abdomen the lesion may lie. The reaction at times seems to be guided by a mechanism almost purposive. Probably the most satisfactory explanation for the ability of the omentum to find its way to a
point of threat is that proposed by Schutz in 1930. He pointed out the fact that the blood vessels in what might be called the resting omentum are tortuous. Under the influence of focal inflammation, reflex hyperemia of the omentum occurs with straightening of its blood vessels and consequent increase in its size both in length and breadth. This spreading out of the organ obviously increases the chance of agglutination of the omentum to any surface within the peritoneal sac. The behavior of the omentum under conditions of hyperemia Schutz confirmed by experimental studies. These observations make it unnecessary to place too much weight upon Hertzler’s older unproven hypothesis that chemotaxis is concerned with the process.

In recent months a new conception of factors influencing the fibrinous reaction of the peritoneum in the early stages of peritonitis is suggested by the important observations of Kay and Lockwood. In experimental peritonitis in the dog created in the same manner as that just described in the cat, the mortality seemed to vary with the fibrinolytic and antifibrinolytic factors in the blood stream. Kay and Lockwood state: “Animals which happen to possess a sufficiently high titre of antifibrinolytic factors in the blood or in which this titre is raised by preliminary administration of trypsin appear to be best prepared to withstand the deleterious effects of appendical gangrene or of peritonitis. The evidence further suggests a correlation between the fibrinolytic-antifibrinolytic equilibrium and the phenomena of erythrocyte sedimentation, intravascular hemolysis, intravascular fibrinolysis, and reduced activity of prothrombin.” They have concerned themselves in these studies with peritonitis as a general rather than as a local disease. Although not proven, it may well be true, however, that the imbalance described in the blood stream is expressed also in alterations in the exudate which derives from the blood stream. In other words, a decrease in antifibrinolytic factor in the exudate resulting in an increase in fibrinolysis may result in failure of the formation of tough, sticky fibrin on the peritoneal surface and thereby may prevent the agglutination of serosal surfaces. In turn this failure may result in a larger area of involvement of the peritoneum and a higher mortality. These fundamental observations of Kay and Lockwood may develop to a point of great practical importance in the clinical handling of threatened or early peritonitis. Surgeons must be alert to the further prosecution of these studies.

Before leaving the first phase of the peritoneal reaction I may be permitted to mention a concept which we have employed in considering early peritoneal inflammation resulting from bacterial invasion. In classifying peritonitis clinically most observers consider that the process is indivisible. For instance, any case of appendicitis which on operative exposure reveals performation, cloudy fluid, and deposits of fibrin is considered by them to be accompanied by peritonitis and is so classified. This definition is, of course, completely true in the pathologic sense: that is, a histologic section would show all the changes of
acute inflammation. We have felt, however, that in the biologic sense it is not necessarily true. In one case of appendicitis showing these changes there may develop, after removal of the appendix, an abscess in the pelvis or in the lateral gutter or even general suppuration throughout the peritoneum. In an apparently exactly similar case, removal of the appendix may be followed by just as smooth uncomplicated a course as is seen after removal of an appendix in which the inflammation is limited to the appendix itself. Since true peritonitis is a disease of unpredictable course and severity, it seems illogical to classify cases of the latter sort in the same group with those that present some of the difficult problems of peritonitis. For that reason we classify clinically recognizable early peritonitis into two groups corresponding exactly to the classification of surface wounds, namely, the contaminated peritoneum and the infected peritoneum. It is impossible on opening the abdominal cavity to determine by inspection which phase is present, and one must await the outcome of the postoperative period before the classification can be made. The usefulness of this conception becomes apparent when one tries to measure the success of one's treatment of true peritonitis. The mortality of appendical peritonitis is not measured accurately when the results are diluted by cases which represent only a contaminated peritoneum, the organisms associated with which the host readily destroys.

The lack of logic in classifying all cases of perforation and peritoneal inflammation as peritonitis may be made clearer by a hypothetical mortality table (Figure IV) in which the magnitudes of the mortalities chosen are not far from common figures recorded before the introduction of chemotherapy and antibiotics. In the first set of percentages with a total mortality of 4.2% for 1000 consecutive cases, the mortality of simple appendicitis is nominal (0.33%), being approximately the risk of laparotomy alone. For appendicitis with peritonitis let us assume the mortality to be 10% for 400 cases. In this group are included all cases not only of abscess, inflammatory mass, and generalized suppuration but also all cases
of recent perforation showing an acute inflammatory reaction in the peritoneum. A proportion of these will have a smooth recovery following appendectomy and can then be classified in the group of the contaminated peritoneum. Let us further assume that half of them, 200, follow this latter course. The second set of percentages reveals the effect of reclassification on the mortalities. Since by definition all these cases get well without complications, they can be logically included under the heading of "simple appendicitis." The mortality rate for this group is then negligibly decreased. However, when the number of cases of appendicitis with peritonitis is cut in half, the number of deaths being unaltered, the mortality is doubled. We feel that this is a truer picture of the problems presented by peritonitis, and that with this conception we are in a better position to measure the effects of treatment.

With the employment of chemotherapeutic and antibiotic substances, it is probable that a much larger percentage of cases of pathologic peritonitis from appendicitis follow the course of the contaminated peritoneum, even though without those aids a number might have developed independent peritonitis. This probability does not invalidate the conception since the latter is directed solely to obtaining a true picture of the results of the treatment of peritonitis with modalities currently available. We are at the present time studying our appendicitis material with a view to determining this point by comparing recent experience with an extended study completed before effective chemotherapy. In any event the distinction, if valid in a surface wound, should be equally valid in the peritoneum. Certainly the pathologic reaction seen in contaminated wounds that will ultimately heal without infection differs in essence not at all from the pathologic reaction seen in contaminated wounds in which infection later becomes established.

Just where to draw the line between what I have called the first phase of the peritoneal reaction and the second phase is not too clear-cut. The second phase is the period in which the fate of the granulation tissue is decided. As already mentioned, the process of organization may show varying degrees of regression or progression after the original insult ceases.

The second phase is fundamentally largely an unexplored field. It is known that some clinical cases pass into the scar stage with little apparent tendency for regression, whereas others show marked regression. In general it seems from clinical observation that the tendency towards regression is real. Every surgeon has had the experience of draining extensive abscesses in the peritoneum at an interval following the original infection long enough to suggest the presence of old organization of the abscess wall, only to find on later exploration for intestinal obstruction or other cause that the record of the former inflammatory process is represented by only one or two string-like adhesions or perhaps in some cases by no adhesions whatever. In two laboratory studies of intestinal adhesion, the first of which will be summarized later, this phenomenon was not demonstrated. Two series
of animals were subjected to identical procedures of scarification of the peritoneum for the production of adhesions. The resulting number of adhesions averaged 5.0 in a series of 51 dogs read at six weeks and 4.9 in a series of 31 dogs read at six months. The later study is part of work by A. M. Smith still under way, and I am indebted to him for the data.

The pathologic mechanism of diminution or disappearance of inflammatory tissue in the peritoneum and the factors which favor one or the other are not known. The contraction of collagen with consequent pulling away of attachments to segments of bowel or omentum during the subacute phase of the process may play a part. This, however, does not explain those instances of diminution of adhesions in a late stage after one must assume that there had been firm collagenous union between the areas of the subserosa involved.

The conservative early process of agglutination of bowel, therefore, in some instances is followed by an equally conservative regression of the protective mechanism. Certain factors which tend to diminish the degree of this regressive process or even to result in progressive increase are known, such as continued infection and the presence of foreign bodies intolerable to tissue. These include drains, heavy suture material, and glove dusting powders, to the last of which Dr. Seelig has devoted so much of his interest. Those patients in whom regression does not occur and for whom multiple laparotomies may have to be performed for repeated intestinal obstruction have been called "adhesion makers." An attempt has been made to ascribe such cases to an abnormal general body background which has been named the "fibroplastic diathesis." This term may conceivably have validity, although I know of no direct evidence of such an abnormal state. Certainly many cases of this sort can be ascribed to surgical error such as the introduction of lycopodium or talc into the peritoneum. The latter as a clinical occurrence has recently been demonstrated from several sources, including a study by Eiseman, Seelig, and Womack on thirty-seven cases in the records of Barnes Hospital. These authors established four criteria for ascribing the persistence of peritoneal adhesions, sinuses, and fistulae (as well as excessive superficial scar) to the presence of talc, namely: (1) the finding of doubly refractile crystals in the tissue, (2) which must have the morphology of talc, (3) be surrounded by a foreign body reaction, and (4) have been preceded by operation.

Although there is no need to belabor this well-proven point, I should like to present one such case from our own recent records. This patient had had appendectomy and right salpingectomy and oophorectomy before admission to the University of Virginia Hospital. At exploration under a tentative diagnosis of endometriosis, a hysterectomy and left salpingo-oophorectomy was performed on the gynecological service. At this operation no free peritoneal cavity was uncovered. About a week after operation the patient developed evidences of partial intestinal obstruction. Five days later she was seen by the surgical service and continued non-operative treat-
ment was advised, controlled by repeated x-ray study of the abdomen. At the end of 48 hours a single loop previously noted was seen to be further distended and operation was carried out. Again no peritoneal surface could be seen. Freeing of the viscera and identification of the point of obstruction required about four hours. It was then found that a considerable length of the terminal ileum was beyond salvage. Resection was performed with end-to-end anastomosis. The patient made a smooth postoperative recovery. Figures V, VI, and VII show the pathology of the inflammatory tissue in an adhesion, including the presence of unmistakable talc crystals.

Insofar as progressive formation of granulation tissue in the peritoneum depends upon the introduction of an intolerable foreign substance such as talc, the problem may be close to solution. Dr. Seelig, in addition to emphasizing the danger of talc, attempted to find a powder which would be useful mechanically and yet would not have the dangers of talc. In an extensive series of studies he investigated the properties of about thirty-five different powder-like materials. As a result of this survey he suggested the use of potassium bitartrate which fulfills the criteria of a satisfactory glove powder to some degree. Although it creates no tissue reaction, it has the disadvantages of requiring carefully controlled sterilization in order to retain its physical properties and of possibly shortening the life of gloves. He realized that these difficulties made potassium bitartrate not the ideal substance and suggested the use of starch so treated as to prevent the formation of a gel when sterilized. Such a powder was developed by a commercial organization and we as well as others obtained samples for study.

In the dog, Lee and Lehman, re-demonstrated the harmful effects of talc and showed a complete absence of adhesions with the use of this powder. Since the product used was prepared experimentally in small quantity, it was felt wise to confirm these observations with the powder when commercially prepared in large quantity (Biosorb, Johnson and Johnson). Alrich, Lee, and Lehman found a corresponding almost complete absence of adhesions following the use of the later product. These observations have been further confirmed from other laboratories, including the work of Postlethwait, Howard, and Schanher and of Naffziger, Ledwich, Marchi and McCorkle.

From the evidence presented one can say with fair assurance that the influence of glove powder in the production of excess granulation tissue following the acute stage of the peritoneal reaction is close to control. The starch powder is slightly more difficult to handle in the operating room than talc but not prohibitively so. Whether or not the particular modification of starch used in the preparation of the present commercial product is the best that can be used must for the time being remain an open question. The manufacturers are interesting themselves in improving the product.

One must keep in mind that there are probably other causes for the progression of adhesion production and one
Figure V. Photomicrograph from adhesion in clinical case of intestinal obstruction briefly reviewed in the text, showing foreign-body reaction with giant cells.

Figure VI. Same field as figure V, with prism of polarizing microscope partially rotated, showing talc crystals.

Figure VII. Same field as Figure V, with prism of polarizing microscope completely rotated. All light has been excluded except that from the doubly-refractile talc crystals.
must not forget the general surgical principles of bacterial cleanliness and gentle handling of tissues, as well as the avoidance when possible of other foreign bodies such as drains.

The known tendency toward regression of the adhesive process following its initiation should condition one’s attitude toward postoperative intestinal obstruction. It is the practice at the University of Virginia Hospital to divide obstructions when first seen into two categories, reversible and irreversible obstructions. In the former one may with effective non-operative treatment depend upon the regressive process for spontaneous relief of the obstruction and in the latter one should not depend upon this phenomenon. The former obviously includes those cases of recent insult to the peritoneum by operation or infection and the latter those in which the insult was so far in the past that the scar can probably be considered permanent. As a practical working definition, we class as probably reversible those cases which occur within ten days to two weeks of the insult. It is our practice to employ non-operative treatment including demonstrably effective tube decompression in all cases of presumed reversible obstruction. Conversely, we plan operation after pre-operative preparation as soon as the patient’s conditions will permit in all cases of irreversible obstruction, particularly those presumed to be due to adhesions long after infection or operation. On account of the impossibility of diagnosing impending perforation of the bowel from small pressure points caused by adhesions, we consider the non-operative treatment of such cases to be unjustified. This point of view is contrary to the conclusions of a considerable group of surgeons. Certainly in our experience this classification has proved useful both in the practical handling of patients and in the teaching of intestinal obstruction.

The third stage of the peritoneal reaction is scar, expressed as deformities in viscera and as adhesions. The symptomatic importance of adhesions is, of course, now recognized as limited to the actual occurrence of obstruction. The opinion that vague abdominal pain may come from the presence of adhesions has been an unfortunate development in medical thought. Not only has it been a feeble crutch for the puzzled family doctor, but also it has done its share to perpetuate psychoneurotic states by offering a false concept for the unfortunate sufferer to put into his bag of heterogeneous psychic tricks. Operation for abdominal pain ascribed to adhesions, in the absence of obstruction, has resulted in many of the distressing cases of so-called abdominal invalids and operation addicts. After each laparotomy it is clear to the patient that he now has a new set of adhesions to give him more pain. The surgeon is well advised to limit his thought of the deleterious effects of adhesions to the dramatic disease of intestinal obstruction.

Obviously no one desires to prevent the primary conservative acute adhesive reaction which protects the patient from spreading peritonitis. When, however, peritoneal scar results in intestinal obstruction, every conservative quality of the peritoneal reaction has ended. The
desire to prevent peritoneal scar is therefore confined to the need for prevention after the release of adhesions that are causing repeated obstruction and then only if at operation there occurs no further bacterial contamination. This particular problem is one in which we have been interested over many years and for which we have proposed a solution with apparently adequate experimental support. It seems apt to summarize this work although it has been previously presented in this city.

The history of attempts to prevent peritoneal adhesions is a long one and many quite illogical and unsuccessful approaches have been made. Fundamentally, of course, the factors of general surgical importance such as asepsis, gentleness, and the avoidance of foreign materials, including talc, must be considered of primary importance. This has been already emphasized. Secondary measures can be classified into various categories as proposed by Boys. There are the mechanical methods suggested by some authors which attempt to separate peritoneal surfaces by oils, membranes, air, or posture. Since primary agglutination occurs by the sticking together of fibrin-covered surfaces, an attempt has been made by others to destroy this fibrin by supposedly logical means such as the use of amniotic fluid and papain. The former is supposed to operate by producing a large influx of leukocytes the enzymes of which are supposed to be effective in destroying fibrin. The second represents the introduction of a proteolytic enzyme of vegetable origin. The prevention of the formation of fibrin by anticoagulant substances such as hirudin, citrate, or oxalate solutions, and heparin is another type of attack. The last of these will be presented in some detail.

The postulated mechanism of the action of heparin in any inflammatory process may be elaborated. As discussed earlier, with the increase of capillary permeability there occurs an exudate of plasma which ultimately coagulates as fibrin. This, to repeat, is followed by the organization of the fibrinous exudate. If heparin as it prevents coagulation of blood will prevent coagulation of a fluid exudate deriving from the blood there will be no fibrin which fibroblasts or young blood vessels can invade. Where there is no fibrin there should be no organization and hence ultimate scar should be prevented or at least diminished. That this result actually occurs when heparin is introduced into the peritoneum was shown by Lehman and Boys. In the experiments adhesions were formed by mechanical damage to the peritoneum. The animals were explored six weeks later. The adhesions were recorded both by number and by extent and were then divided. Six weeks later, at a third laparotomy, the adhesions were again counted. The control animals and those treated by presumably logical methods such as amniotic fluid and papain showed more adhesions at the third operation than there were at the second, whereas with heparin the number was reduced by about two-thirds. Repeated division on successive occasions resulted in progressive diminution of the number of adhe-
sions in animals under treatment with intraperitoneal heparin as compared with an increasing number in the controls.

I have recently had the opportunity to review a manuscript presenting a careful experimental study by Van Dyk of the formation of peritoneal adhesions as affected by the intraperitoneal administration of heparin. In this study the primary formation of adhesions after scarification and chemical injury was the point of attack. Van Dyk found that of twenty-one control dogs subjected to the instillation of no solution or normal saline, 18 animals developed adhesions, in 16 of which the adhesions were moderate to extensive. In 16 dogs subjected to the installation of heparin solution, only one small adhesion developed in one animal. This is the first experimental attempt of which I am aware to prove or disprove the results obtained in the earlier studies. It appears to be thoroughly confirmatory.

If this fundamental effect of heparin on repair is demonstrable in the peritoneum, it should be demonstrable on repair in other parts of the body. With this in view Alrich and Lehman studied the effect of general heparinization on the healing of experimental abdominal and gastric wounds. They observed a slight but statistically significant delay in the regaining of tensile strength in wounds in heparinized animals. This work is referred to simply to demonstrate further evidence of the validity of the general conception of the effect of heparin on the process of repair.

The effectiveness of heparin in preventing the formation and reformation of adhesions in the peritoneum of dogs seems to be definite. It will take many years of observation and many hundred cases of the intraperitoneal use of heparin in the human being to furnish a demonstration of equal definiteness. However, we have felt that in occasional cases in which repeated intestinal obstruction is a major influence in the patient’s life, the application of the method to the human being is justified provided proper precautions are observed. The method of application, based on the original experimental work, was outlined by Lehman and Boys.

During the early phase of this study we used heparin intraperitoneally in a number of cases in which on later thought such use was probably not justified, particularly in cases in which after the division of adhesions there was oozing in the peritoneal cavity. One of these cases died from intra-abdominal hemorrhage. This case was inadequately observed and could probably have been saved if hemorrhage had been diagnosed. This is the only serious complication that has occurred in the cases treated. As our experience has continued with this method, we have used it more and more infrequently, reserving it entirely for cases with multiple operations for obstruction. We still feel, however, that it is justified in such cases and do not hesitate to employ it provided the peritoneum is dry.

In conclusion, an attempt has been made to present not only the fundamental pathologic behavior of the peritoneum but also some of the newer at-
tempts to explain it and to modify it. There is still much work to be done, particularly in the field of defining the reasons for progression or regression of the inflammatory process in what we have called the second phase of the process. There is also needed a repetition of much earlier experimental work with the newer knowledge of reaction to talc in mind. Parenthetically it might be remarked that the experiments with heparin here summarized were carried out with the wet-glove technique employing tap water. Certainly any experiments on peritoneal adhesions in which talc has been used during the operation are subject to question.

It is still a fascinating field for the surgical investigator and one in which marked progress can be expected. Progress in the immediate past has been encouraging. Certainly the contributions of the man whom we honor tonight are an important part of that progress.

Bibliography


The Changing Order in Medicine

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By extraordinary coincidence, April 8th marks the 25th anniversary of the day when, at the behest of Dean McKim Marriott, I first came to St. Louis to consider the position of Professor of Medicine at Washington University and Physician-in-Chief of Barnes Hospital. Thoughts of the state of medicine at that time suggested the title of tonight's address, "The Changing Order in Medicine," and an effort to compare conditions in 1924 and 1949 and to make some estimate of their significance. I have reason to fear that the title may have been unfortunate and may have caused anxiety in certain quarters. If one speaks of change in medicine, he might mean economic change; if he speaks of economic change he might be heretic or even believe in Bill S5. It is a pleasure for me to say that I am not in favor of Bill S5, of compulsory insurance or of governmental control of medicine. In order to have the record clear, however, I should add hastily and without apology that this statement does not mean that I believe medical service is now optimal or that optimal medical service can now be obtained or afforded by a large part of the population. It does not mean that I think governmental subsidy is unnecessary for optimal service or that the medical profession has exerted itself sufficiently in the formulation of plans for improvement.

But this anticipates — what is the changing order in medicine? What changes have the last 25 years brought? Obviously these are too numerous even to tabulate and I must content myself in talking around only three.

1. Medical care has become enormously more effective in the last quarter of a century, so effective indeed that for the first time there is popular demand that it be made available in optimal form to all the people.

2. Definition of the role of the physician, so long that of curing disease, is being extended to include the concept of continuing comprehensive care for the preservation of health.

3. Medical care has become so complex and expensive that a large part of the population cannot afford to pay its full cost.

Some elaboration is permissible on the advance and effectiveness of medical care. About a quarter of a century ago Richard Cabot, whose case reports were already famous, compared clinical and pathological diagnosis. He came to the unflattering conclusion that in Boston clinicians were not right in more than twenty per cent of their diagnoses. At present, due to the enormous aids in visualization with x-ray and to chemical and physical tests, the conditions are reversed, and the best clinicians may expect to be right in approximately eighty per cent of their diagnoses. During the
past 25 years infant mortality has been reduced to less than half of that of '24, maternal mortality is reduced to less than one quarter. The life expectancy of the population is greatly increased.

Management of acute infections has been completely transformed. If one includes the probable benefits of the new drugs aureomycin and chloromycetin it may be stated that there is effective control of most of the coccal and bacillary disease, including typhoid and undulant fever, all of the rickettsial diseases and some conditions previously considered viral in origin such as psittacosis, ornithosis and atypical pneumonia. Even the white plague, tuberculosis, may be modified by chemotherapeutic agents.

In 1924 we were jubilant over the conquest of one chronic disease,—the discovery of insulin by Banting brought bright, new hope. During 25 years the control of chronic diseases has been enormously extended to pernicious anemia, Addison's disease, parathyroid tetany, pellagra, congenital heart disease, hemophilia, the menopause and many thromboses. The list is partial and highly selective. It takes no account of the studies of proteins and electrolytes, in the developments in anesthesia or in chest, brain and orthopedic surgery.

With these enormous advances the public has become avidly interested in medicine and medical science. The suspicions and slurs of the 19th century and of the first few years of the 20th have been exchanged for admiration and respect for the accomplishments and potential benefits of medical science. There is eager curiosity for all that medical science can offer as is instanced by the columns in many of our daily newspapers and weekly and monthly periodicals. Medicine has immense benefits to confer and the question arises whether these are to be conferred or whether they constitute a civic right. Allan Gregg, the brilliant almoner of the Rockefeller Foundation, has said "Medical care is changing from the status of a private luxury or a blessed benevolence to the status of a civil right."

One of the most outstanding developments in the last quarter of a century has been the more complete understanding of preventive medicine. In 1924 one could laugh at the Chinese who amusingly were said to pay their doctors to keep them well. This was a laugh for all who knew that our own more enlightened method was to treat the sick. It is difficult to know when this ceased to be funny and when it was realized in the word of General Simmons that the function of the physician includes all those services required to prevent disease and to keep well people well.

Another feature has become evident in the last quarter of a century. In the midst of emphasis on chemistry and physics, pharmacology and anatomy, the organic signs and symptoms of disease; it has been discovered again that the causes of disease are multiple, that disease itself is a group of conditions in an individual in a life situation or environment, that physical and chemical methods so effective in something less than half the diseases which affect mankind are unavailing in the rest. It has been realized that scientific methods of physics and chemistry which can provide freedom from infection, good nutri-
tion, alleviation of pain, and prolongation of life, cannot control fear or shame or grief, cannot establish purpose or dedication either for well or suffering human beings, cannot instill faith, hope, love, equanimity or other values to make life worth living. The deplorable fact that this concept is called psychosomatic medicine does not detract from its significance nor diminish the effect which it should exert and is beginning to exert in clinical thought and medical service.

From a combination of the newer views of diagnosis and curative medicine, preventive medicine and psychosomatic relationships, has come the pervasive and increasingly insistent idea that medical service to be adequate should be comprehensive, and continuous instead of segmental and intermittent; that it should include prevention as well as cure with consideration of both physical and emotional factors and the relation of man and woman, both sick and well to environment and life situations; finally that there should be health centers instead of medical centers as representations of the ideal of modern medical service.

These ideas have had certain important correlations. It has become apparent that no one man can encompass the entire range of medical care which must depend upon a variety of skills; that groups and organization of service are necessary both for efficiency and economy; that modern hospitals are necessary both for efficiency and economy; that modern hospitals are the most appropriate places not only for diagnosis and cure, but also for prevention and continuous comprehensive care. In other words, hospitals should be health centers.

Lastly the past quarter of a century has brought to sharp focus the fact that medical service is embarrassingly complicated and expensive. If in four weeks of hospitalization for a wife who needs a serious operation, an assistant professor of history with a salary of $6,000 is forced to commit one-third of his annual income, the problem deserves attention. It is notable in such instances of catastrophic illness that the hospital has made no money, that the nurses have been paid wages a stone mason would spurn, and that the physicians and surgeons may have charged less than their just and customary fees because of consideration and pity for the patient. The case, however, represents a dilemma. Medicine is now in a position to offer great benefits; at the same time it has become very expensive and intrinsically and necessarily so. Benefits of modern medicine in all aspects of prevention and cure, of physical and emotional illness, should be available to everyone in the country. With tax-ridden incomes and without insurance or other methods of budgeting, only a small part of the total population can afford to pay the full cost of the preservation of health or the care of illness.

When the situation is as clearcut as this, solutions will be forthcoming and they may be numerous and various. The legislators’ solution may be represented by Bill S5. Let a law be passed for compulsory insurance, for provision of completely adequate, continuous, comprehensive medical care. Let the doctors
who in the last analysis are the servants of the state provide the care according to government regulations and with the benefit of government subsidy.

The medical profession cannot escape the conviction that better distribution of medical care is necessary, but they oppose almost unanimously such bills as S5. Some oppose them on the grounds they are invasions of private initiative and that they represent a totalitarian trend. Some visualize the impairment of the quality and spirit of medical care which they would bring about and believe that they would result only in wider distribution of inferior service. Some emphasize the very obvious unpreparedness both of the profession and the public for so revolutionary a change. Many of these objections are, in my belief, well founded. They do not absolve, however, the medical profession from responsibility in facing the issues. Constructive thought for reform and improvement should not be limited to legislators or to social service agencies.

Consideration should be given to the hospital as a health center, to organization and grouping of physicians for better team work, for better utilization of facilities, for more complete and less expensive service. Examination should be made of insurance and other plans for budgeting health expense. The need for subsidies from federal and state governments should be carefully examined. Extension of the role of the physician to include comprehensive continuous service should be considered. These thoughts and ideas deserve more than respectful attention on the part of our profession. They demand constructive planning, experiment, and research.

In such consideration there must be careful distinction between the essentials and the non-essentials of good medical care. Medicine has undergone many changes of form and structure. Throughout the ages, however, the physician has been steadfast in his devotion to the unfortunate, in his discretion, and his honor. He has held to the need of observation at the bedside and in the laboratory, and has emphasized the scientific methods of diagnosis and appraisal. These are the essentials of medicine and no change, revolutionary or evolutionary, must alter or impair them. At the same time one may ask whether there is anything more essential about the individual private office of today, with its ruinous overhead and often incomplete equipment, than about the dispensary of our grandfathers, the alchemist's shop of Paracelsus or the temples of the Aesculapiades. Also one may inquire whether the exact method of payment is essential to the patient-physician relationship, whether capitation is necessarily more wicked than fee for service.

Above all we as physicians ought not to present the defense that in this country we now offer the best medical service the world has ever known. Even though this might be true it would appear irrelevant to any outside critic. The question is not whether we are good, but whether we are as good as we could be.

The present dilemma in medicine is real. It cannot be dismissed by propaganda or denial. For its solution it needs from us and the medical profession the
same sort of calm, dispassionate inquiry and scrutiny which we pride ourselves in using in diagnosis and treatment of our patients.

Shown above is part of the crowd which watched surgical operations and medical clinics on television screen at Kiel Auditorium during the A. M. A. Interim Session in St. Louis last December. In the background may be seen the large projection screen, while groups seated in the left and right foreground are watching the proceedings over small direct-view sets. A two-day program for the A. M. A. television audience was presented by staff members of the School of Medicine.
Clinical Reunion Attracts 475 Alumni to Medical School

The Clinical Reunion held at the School of Medicine on Friday and Saturday, April 8 and 9, and the annual Alumni Banquet at the Sheraton Hotel on Friday evening attracted 475 Medical School graduates back to their alma mater for one of the most successful reunions that has ever been held here.

Dr. David P. Barr, professor of medicine at Cornell University School of Medicine and former professor of medicine at Washington University, was the featured speaker at the Banquet Friday evening. His address, "The Changing Order in Medicine," is printed in this issue of the Quarterly for all alumni to read. In his talk, Dr. Barr emphasized the fact that the medical profession must constantly work to improve its abilities and to provide more service for a greater number of people.

Guests of the Alumni at the Banquet in addition to 93 graduating seniors, were Chancellor Arthur H. Compton; Dr. Robert A. Moore, Dean; members of the Executive Faculty of the Medical School; Mr. W. B. Parker, registrar; representatives of the Dental, Nursing, Law, and Liberal Arts Alumni Associations; representatives of the Corporation of the University, including Mr. Harry B. Wallace, president; Dr. Otto Brandhorst, dean of the School of Dentistry; Miss Louise Knapp, head of the Nursing School; emeritus professors of the Medical School, and Dr. J. W. Thompson, president of the St. Louis Medical Society. The emeritus professors present were Dr. Robert J. Terry, Dr. Joseph Erlanger, Dr. Frederick E. Woodruff, Dr. Ernest Sachs, and Dr. Harry Lyman.

Entertainment for the Banquet was provided by members of the Senior Class, who presented a skit depicting a typical patient on first examination in the clinic. New officers were elected during a brief business session.

Four alumni served as guest speakers for the general sessions held all day Friday, April 8. They were Dr. William Dieckmann '22, professor of obstetrics and gynecology at the University of Chicago; Dr. Brian B. Blades '32, professor of surgery at George Washington University; Dr. Warren H. Cole '20, professor of surgery at the University of Illinois; and Dr. Paul C. Hodges '18, professor of roentgenology at the University of Chicago. Dr. Hodges substituted for Dr. Hugh M. Wilson '27 of Yale University, who was unable to attend because of illness.

Other speakers during the day were Dr. Robert A. Moore, Dean, Dr. Carl F. Cori, Dr. Alexis F. Hartmann '21, Dr. W. Barry Wood, Jr., Dr. Oliver H. Lowry, Dr. Willard M. Allen and Dr. Evarts A. Graham of the staff.

On Saturday morning, the departments of medicine, surgery, pediatrics, and obstetrics and gynecology presented separate programs for the alumni, with the members of those departments giving papers. The Reunion was closed with a noon clinic conducted by Dr. David Barr on Saturday.
Dr. D. K. Rose Elected President

The new officers of the Medical Alumni Association, elected during the annual Alumni Banquet at the Sheraton Hotel on April 8, are Dr. Dalton K. Rose '15, president; Dr. James Barrett Brown '23, first vice-president; and Dr. A. N. Arneson '28, second vice-president. Dr. George W. Ittner '37, is serving his third term as secretary-treasurer. Elected to the Executive Committee of the Alumni Association were the following graduates, whose terms will expire in 1952: Dr. Walter Baumgarten, Jr. '39; Dr. Joseph C. Jaudon '33; Dr. David N. Kerr '40; and Dr. A. Victor Reese '28.

Dr. Frederick E. Woodruff '97, was elected to be Alumni Representative for the Medical Alumni on the Corporation of Washington University.

Institute on Aging
Sponsored at W. U.

Well-known medical, social, and economic experts on the problems of aging conducted a two-day institute on the subject at Washington University on April 11 and 12, under the joint sponsorship of the School of Medicine, the School of Social Work, and the University College, with 500 persons from various parts of the country attending.

Among the featured speakers were Dr. Vladimir Korenchevsky, head of the Gerontological Research Unit at Oxford University in England; Dr. Edward J. Stieglitz, special lecturer on old age problems at New York University and Bellevue Hospital; and Ewan Clague, Ph.D., commissioner of labor statistics in the United State Department of Labor.

Participating from the School of Medicine were Dr. Edumund V. Cowdry, professor of anatomy, and Dr. William B. Kountz, assistant professor of clinical medicine. Dr. Kountz and his staff presented physiological demonstrations of the aging process.

Dr. Grant to Head Dormitory Campaign

Dr. Samuel B. Grant '20, former president of the Medical Alumni Association, has been appointed chairman of the campaign to obtain one and a half million dollars for the proposed Medical Student Center and Dormitory to be built immediately east of the Medical School.

In this capacity, Dr. Grant will continue the work which was begun early this year under his term of office. He reports that the campaign, though still in its early stages, is progressing and will continue actively with the aid of the alumni. A brochure showing an artist's picture of the proposed quadrangle-form dormitory and a special report by the Dean of the School of Medicine have been mailed to all alumni, along with pledge cards, to start off the campaign. The proposed student center will offer convenient living quarters for single students, both men and women; efficiency apartments for married students, dining facilities; recreation rooms and library; the guidance of faculty members living there, and surroundings conducive to concentration.
Anatomy

Dr. Edmund V. Cowdry, professor of anatomy, will be in Europe for two months this summer attending cancer research meetings and visiting research centers on the continent. The Pontifical Academy of Sciences which meets in the Vatican City, Rome, from June 6 to 13, has invited Dr. Cowdry to be one of two representatives from the United States. Nine persons from seven nations will meet to discuss the various opinions and theories regarding cancer. Following the Vatican meeting, Dr. Cowdry, with his wife and daughter, will visit various cancer research centers, and from July 18 to 22 he will attend the meeting of the International Cancer Research Commission in Paris as United States representative.

Dr. M. H. Toosy, professor of anatomy at the medical school in Karachi, Pakistan, arrived in the department in April for an 18-month period of study. He was sent here by the government of Pakistan.

Bacteriology

Dr. Samuel J. Ajl has been appointed assistant professor of bacteriology, effective July 1. He is a native of Poland, where he received his secondary education, and gained his A.B. degree at Brooklyn College in 1945. Dr. Ajl will receive his Ph.D. from Iowa State College in June, and will teach bacterial physiology and metabolism on the graduate level here.

Biochemistry

Dr. Otto Walaas of Oslo, Norway, arrived in St. Louis early in April for a year’s study in the Department. His wife and three children accompanied him.

Dr. Paul W. Preisler, assistant professor of biological chemistry, spoke at the meeting of the American Chemical Society in San Francisco during April on “Oxidation-Reduction Potentials of Thioureas.” He is secretary-treasurer of the biochemical division of the Society.

Dr. Carl F. Cori, professor of biological chemistry, was elected president of the American Society of Biological Chemists, Inc., during the annual meeting of the Federation of American Societies for Experimental Biology in Detroit in April. He will take office in July.

Medicine

The Henry Ford Hospital Medical Society in Detroit heard Dr. W. Barry Wood, Jr., professor of medicine, speak on “Defense Mechanisms of the Host Factors in the Chemotherapy of Acute Bacterial Infection” during April. In March, Dr. Wood gave the Wyckoff Lectures at New York University College of Medicine.

Dr. Carl V. Moore, professor of medicine, recently was appointed a member of the Blood and Blood Substitutes Committee of the National Research Council, and of the same committee for the National Red Cross.
Dr. Henry A. Schroeder, associate professor of medicine, addressed the staff of Abington Memorial Hospital in Abington, Pa., during March on “Disturbances of Electrolyte Concentrations in Disease,” and spoke to the American Chemical Society in San Francisco on “Humoral Pressor Substances in Hypertension” at a symposium on hypertension.

Neuropsychiatry
Dr. Robert I. Watson, associate professor of medical psychology, has been appointed Consultant to the Office of the Air Surgeon. His first duties will be related with the establishment of the clinical psychology section of the School of Aviation Medicine at Randolph Field, Texas.

During April, Dr. Edwin F. Gildea, professor of psychiatry, met with the subcommittee on psychiatry of the National Research Council in Washington, D. C., and with the Group for Advancement of Psychiatry at Asbury Park, N. J.

Obstetrics - Gynecology
Dr. Dudley R. Smith, assistant professor of clinical obstetrics and gynecology, was gone for six weeks during March and April to act as civilian consultant for the Office of the Surgeon General to U. S. Army Hospitals in the Far East Command. He visited army hospitals in the Pacific area, including Japan, and gave informal lectures on obstetrics and gynecology.

Dr. T. K. Brown, professor of clinical obstetrics and gynecology, was guest speaker for the Montana Obstetrical and Gynecological Society in Butte, on February 12. He spoke on “Prevention and Treatment of Puerperal Infection.”

Dr. Robert J. Crossen, assistant professor of clinical obstetrics and gynecology, gave three lectures at the State University of Iowa conference held late in March.

Ophthalmology
The annual Leslie Dana Gold Medal for service in the prevention of blindness was awarded to Dr. Lawrence T. Post, professor of clinical ophthalmology and head of the department, on March 25 at a dinner at the Chase Hotel. The award was conferred for Dr. Post’s achievements in 34 years on the staff at Washington University and the affiliated hospitals and clinics. Presentation of the medal was made by Dr. Franklin M. Foote of New York, executive director of the National Society for the Prevention of Blindness. This Society and the Association for Research in Ophthalmology jointly select the recipient of the annual medal. Mr. Leslie Dana of Clayton, Mo., sponsors the award through the St. Louis Society for the Blind. Dr. William H. Luedde, a graduate of the Medical School in 1900, is the only other St. Louisan to have received the Dana Medal.

Dr. Donald J. Lyle of the University of Cincinnati gave a two-day series of lectures on February 24 and 25 on the subject of neuro-ophthalmology to members in the Department.

Otolaryngology
Dr. James B. Costen, associate professor of clinical otolaryngology, was guest speaker before the Kansas City
Society of Otolaryngology on February 17, speaking on "The Factor of Trismus in Mandibular Joint Disease" and "Morphology of Laryngeal Tumors." On the following day, he addressed the Colorado State Society of Otolaryngology in a combined meeting with the Denver Dental Society on the same subjects.

Dr. Cesar Fernandez of Concepcion, Chile, has been appointed Kellogg Foundation Fellow in Otolaryngology and will study there for the next year.

**Pathology**

Dr. Parker Beamer, assistant professor of pathology, has been appointed professor of microbiology and immunology and director of the department at Bowman-Gray School of Medicine, Wake Forest College, in Winston-Salem, N. C. He will be also associate professor of pathology, as well as director of clinical laboratories in bacteriology and serology and associate pathologist to North Carolina Baptist Hospital. Dr. Beamer came to Washington University after receiving his Ph.D. at the University of Illinois in 1939. He was on the staff here while working toward his M.D. degree, which was conferred in March, 1943. In 1943, he joined the Army and was commanding officer of the Antilles Department Medical Laboratory in San Juan, Puerto Rico, for 16 months. He was discharged as a major in 1946 and returned to the Medical School staff.

Dr. Gustave J. Dammin, assistant professor of medicine and of pathology, was a guest speaker at the tenth annual Careers Conference at the University of Missouri in Columbia on February 24 and 25. He gave two lectures explaining the opportunities in the field of medical technology for college-trained women.

Dr. Robert A. Moore, Dean and professor of pathology, has been elected to the National Board of Medical Examiners as a representative of the Association of American Medical Colleges, to serve until 1954.

**Pediatrics**

Three different groups recently heard members of the Department of Pediatrics present an exhibit and paper on diagnosis and treatment of congenital heart disease. Dr. Merl J. Carson, with Dr. Thomas H. Burford presented the program for the staff at St. Luke's Hospital in April, and Dr. Wendell G. Scott joined them in a program before the St. Louis Medical Society a few days later. Dr. Carson spoke to the Boone County Medical Society in Columbia, Mo., on the same subject recently.

Dr. Alexis F. Hartmann, professor of pediatrics, gave two talks at the Southern American Academy of Pediatrics meeting in Atlanta, Ga., in April. His topics were renal function and diabetes and hypoglycemia. Following these meetings, he participated in a postgraduate course at Baylor University College of Medicine in Houston, Texas.

Dr. Gilbert Forbes, assistant professor of pediatrics, spoke on convulsions in childhood to the Terre Haute Academy of Medicine on March 4. He gave two talks during the Southern Academy of Pediatrics meeting in Atlanta in April.
Physiology

Dr. Joseph Erlanger, professor emeritus of physiology, recently received notice that the Council of the Free University of Brussels has conferred on him the title of Doctor Honoris Causa of the faculty of medicine and pharmacy. This honor is in recognition of Dr. Erlanger's services to science and to the University at Brussels.

Dr. Adolph Surtshin joined the staffs of the Department of Physiology and the Division of Gerontology on February 1 for work supported by the Urbauer Fund on physiological problems related to aging.

Preventive Medicine

The Department of Preventive Medicine has announced, with regret, the resignations of two staff members on July 1 to accept positions in industrial medicine. Dr. Virgil Scott, assistant professor of preventive medicine and of medicine, recently was appointed to the medical staff of the United Fruit Company. He will be director of the medical service of the company's hospital in Tela, Honduras. Dr. Leo J. Wade, assistant professor of medicine and of preventive medicine and physician-in-charge of the Student Health Service, will take up his duties July 1 with the medical division of the Standard Oil Company of New Jersey. His work will be in planning health services for company employees.

Dr. Robert E. Shank, professor of preventive medicine, participated in the Conference on Recent Nutrition Surveys in Newfoundland at New York on April 3 and 4. He discussed results of chemical analyses for certain of the nutritional essentials in blood and in urine obtained from samples of the population in 1944 and 1948.

Radiology

Dr. Wendell G. Scott, associate professor of clinical radiology, was one of the guest speakers for the annual Clinical Conference of the Chicago Medical Society in March, and spoke on "Diagnosis of Congenital Heart Disease by Angiography and Aortography."

Dr. Hessaby, chief of radiology at the University of Teheran and also chief of the Iranian Red Cross, spent two weeks visiting the Mallinckrodt Institute of Radiology during April.

Surgery

Dr. Robert W. Bartlett, assistant professor of clinical surgery, delivered the annual lecture of the Memphis Surgical Society following its banquet in Memphis on March 12. His subject was "The Diagnosis and Management of Surgical Lesions of the Colon and Rectum."

Dr. Evarts A. Graham, professor of surgery, and Dr. Thomas H. Burford, associate professor of surgery, attended the meeting of the American Association for Thoracic Surgery in New Orleans in March.

Dr. Frederick A. Jostes, associate professor of clinical surgery, gave a lantern slide talk on aspects of diagnosis and treatment of low back pain before the postgraduate conference, eighth councilor district of the Illinois State Medical Society in Danville, Ill., in April.

Dr. Peter Heinbecker, professor of
clinical surgery, visited the University of Colorado during March to participate in three clinics and give a lecture on the pathogenesis of diastolic hypertension.

**Miscellaneous**

Five members of the School of Medicine faculty participated in a symposium on convulsive disorders in childhood which was held in Elliott Auditorium in February and sponsored by the St. Louis Society of Neurology and Psychiatry. Dr. Alexis Hartmann, professor of pediatrics; Dr. Irwin Levy, assistant professor of clinical neurology; Dr. James L. O’Leary, professor of neurology; Dr. Samuel R. Warson, assistant professor of psychiatry; and Dr. Gilbert B. Forbes, assistant professor of pediatrics, were the speakers.

Early in February, Dr. Robert A. Moore, Dean and professor of pathology, visited groups of Medical School alumni living in or near the cities of Spokane, Wash.; Seattle, Wash.; Portland, Ore.; and San Francisco. At each of these gatherings, Dr. Moore told of recent developments, present conditions, and plans for the future of the school. There were from six to 31 alumni present at these informal meetings.

Washington University has received a check for $2,418.72 from the estate of Dr. Joseph H. Scharf for the establishment of an endowment fund for scholarships in the School of Medicine. Dr. Scharf, who died June 22, 1946, practiced medicine for many years in North St. Louis. He was a graduate of Maryland Medical College in 1900.
Publications of the Faculty
January — April, 1949


Alumni News

1879
The oldest graduate present at the Alumni Reunion Banquet at the Sheraton Hotel on April 8 was Joseph Grindon, Sr., who makes his home at 5000 Waterman Ave., in St. Louis.

1881
James A. Dickson of St. Louis celebrated a double anniversary on March 2 this year. It was his 89th birthday and the 68th anniversary of his graduation from the old St. Louis Medical College. Dr. Willis Hall, also of St. Louis, is the only other living member of the class.

1885
W. T. Porter of Dover, Massachusetts, passed away at his home on February 16.

1889
Frank G. Mcfong, who lives at Maplewood Farm, Columbia, Mo., traveled to St. Louis to attend the Alumni Reunion and Banquet and celebrate his 60th anniversary of graduation.

1890
Charles S. Huffman of Columbus, Kansas, was voted the "Kansas Doctor of 1948" by the Kansas Medical Society. The Kansas City Star carried a half-page article about Dr. Huffman on January 9, in which it was said: "The Kansas Medical Society praised him as a good example of a 'pioneer doctor' in his community, but more, a planner of medical improvements needed by the state and which he helped bring about as a legislator. In addition to being doctor and banker, Dr. Huffman has been a state senator, lieutenant-governor, adjutant general, and chairman of the former state board of administration. He has been a wise politician elected by the people, and also the medical profession's servant, long secretary of the state society, and past president." At the age of 83 years, he still makes occasional bedside calls, and believes that the family doctor still has the best chance to find the real clinical picture of his patients, but at the same time he approves progress in medical specialties. Dr. Huffman, who was elected to the Kansas Senate in 1904 and won re-election four times, has been a director of the Columbus State Bank for 52 years and has served as president for several years. In his opinion, the advent of diphtheria toxins, typhoid preventives and sulfa and penicillin drugs which reduce the danger of pneumonia are the advances of greatest importance to the general practitioner.

1892
John B. Anderson of Warrensburg, Mo., died on February 22 at Warrensburg.

1893
R. Clarence Stephens of Plymouth, Indiana, wrote a note to let us know that he is still in active practice.

1894
Horace W. Soper, George B. Tuttle and A. G. Schlossstein, all of St. Louis, represented their class on the 55th anniversary of their graduation.

1895
Robert J. Terry of St. Louis and Sandor Horwitz of Peoria, Ill., attended the Alumni Reunion and Banquet in St. Louis on April 8.

1896
Eugene W. Shrader, Moberly, Mo., died January 14 at the age of 76.

1897
William Sauer of St. Louis was the only representative of his class attending the reunion.

1898
Six members of the class gathered in St. Louis for the Reunion on April 8 and 9. They were: O. E. Lademan of Milwaukee, Wis., Carl A. W. Zimmermann of Cape Girardeau, Mo., Robert W. Binney of Granite City, Ill., and Theodore Greiner, Harry H. Meyer and Frederick E. Woodruff from St. Louis.
According to a note from his wife, William L. Peters has moved to 1527 Ridgewood Blvd., in Hendersonville, N. C. Dr. Peters retired from practice in 1945 and was 82 years old last July. She expressed his regret at being unable to attend the reunion.

Herman Le Saulnier of Red Bud, Ill., attended the Reunion and Banquet.

John Green, widely-known St. Louis ophthalmologist in St. Louis for 51 years, died April 7 after suffering a heart attack three days earlier in his office. Dr. Green was on the Medical School staff from 1912 to 1919, and later joined the staff of St. Louis University, where he was full professor from 1927 to 1949. Dr. Green was president of the American Ophthalmological Society in 1944 and chairman of the A.M.A. Section on Ophthalmology in 1936. He was a member of the American Board of Ophthalmology from 1933 to 1943 and was chairman in 1944. Surviving are his widow, three daughters, and two sons.

On the occasion of his retirement as president of the Jewish Social Services of Indianapolis last January, Alfred S. Jaeger was presented with a tribute and a doctor's wrist watch from the Board of Directors of the organization. The testimonial recounted that Dr. Jaeger, in more than 50 years of medical service, has been president of the Indianapolis Medical Society and of the Seventh Indiana District Medical Association; chairman of the Surgical Section of the Indiana State Medical Association; and president of the Indianapolis General Hospital staff. He is a member of the American College of Surgeons and of the Indianapolis Obstetric and Gynecological Society. He has served as officer and board member for several Indianapolis community service organizations.

L. G. Wolff of Okarche, Okla., and C. O. C. Max of St. Louis attended the Reunion and Banquet.

J. R. Lionberger of South Bend, Ind., and Walter Kirchner of St. Louis represented their class at the Reunion.

Three members of the class attended the Reunion: H. O. Walker from Newport, Ark.; H. E. Miller from St. Louis; and J. H. Deichmann from Springfield, Ill.

Charles O. George of Springfield, Mo., passed on last November 19.

Six members gathered to celebrate the 45th anniversary of their graduation during the Reunion. They were: John L. Evans, Wichita, Kan.; Cleo C. Ball, R funden, Ark.; Paul Baldwin, Kennett, Mo.; and Roy P. Scholz, W. E. Shahan, and G. B. Kroeger of St. Louis.

Walter Fischel, C. L. Kienk, and Sherwood Moore, all of St. Louis, attended the Reunion and Banquet.

S. P. Martin of East Prairie, Mo., joined Arthur Gundelach of St. Louis for the Reunion Banquet.

G. D. Eoyston, professor of clinical ob. gyn. at the Medical School, spoke on "The Management of Hemorrhage Occurring in the Last Trimester of Pregnancy" during the Alumni Program on April 9.

Attending the Reunions were C. A. Gundelach and Charles A. Stone of St. Louis.

John R. Vaughn is living at 8025 Watkins Dr., in Clayton, Mo. H. P. Reuss of Granite City, Ill., came to St. Louis for the Reunion.

Benjamin C. Schnell of Pecatonica, Ill., attended the Reunion and Banquet.

Leith H. Slocumb died of heart disease
at his home in Los Angeles in March at 65 years of age. He had lived in St. Louis until about ten years ago.

William F. Wagenbach and Joseph Larimore of St. Louis represented the class at the Reunion.

1915
Bu ford H. Colby can be reached at Route 3, Hale, Mo.

W. T. Wilkening of Fort Scott, Kan., and D. K. Rose attended the Reunion. Dr. Rose, who lives and practices in St. Louis, is the newly elected president of the Medical Association.

1917
Attending the Reunion were Frank P. McNalley and Otto J. Wilhelmi of St. Louis, and Henry St. C. O'Donnell of Ellisworth, Kansas.

Harry W. Schumacher of Altamont, Ill., passed away on February 17 after suffering a sudden heart attack. He was in active practice until the day of his death.

1918
Elmer N. Liljedahl's new address is in the Equitable Building, 6253 Hollywood Blvd. at Vine in Hollywood, Calif.

William E. Stone of Boonville, Mo.; Paul C. Hodges of Chicago, Ill.; J. A. Tesson of Kansas City, Mo.; and Glover H. Copher of St. Louis were present at the Alumni Banquet. Dr. Hodges, who is chief of roentgenology at the University of Chicago, spoke on x-ray of the stomach and duodenum during the general session on April 8 at the Reunion.

1919
Celebrating their 30th year out of medical school at the Reunion were: Duff S. Allen, St. Louis; U. J. Busiek, Springfield, Mo.; Anthony B. Day, St. Louis; Howard H. Houston, Boulder, Colo.; E. H. Munro, Grand Junction, Colo.; and A. L. Walter, Sedalia, Mo.

1920
Warren H. Cole acted as editor for the new book, "Operative Technic in General Surgery" and contributed sections on the gall bladder, bile ducts and spleen. Other Washington University alumni who are contributing to the work are: James Barrett Brown '23 and Frank Mc Dowell '36, who contribute material on the face, mouth and jaws; Nathan Womack, '24, who wrote a section on portal hypertension; Alton Ochsner '20, who writes on the liver and subphrenic space; and Frank Glenn '27, who contributes on the skin and subcutaneous tissue.

At the alumni Banquet were Samuel B. Grant, Alired Goldman and Harvey L. White of St. Louis; John B. Carlisle, Sedalia, Mo.; M. G. Peterman, Milwaukee, Wis.; L. J. Owen, Lincoln, Neb.; P. H. Kennedy, Youngstown, Ohio; and Warren H. Cole, Chicago, Ill., who was one of the guest speakers on April 8.

1921
Those from the 1921 class at the Reunion were: C. H. Haddock, Pawnee, Okla.; William A. Michael, Peoria, Ill.; and Richard Paddock, Eugene A. Vogel, Oscar C. Zink, Alexis F. Hartmann and Archie D. Carr from St. Louis.

1922
Lee D. Cady has a new address: Veterans Administration Hospital, 2002 Holcombe Blvd., in Houston, Texas.

William J. Dieckmann, professor of ob.-gyn. at the University of Chicago, was one of the guest speakers at the Alumni Reunion. He spoke at the general meeting April 8 on "Recent Observations in Preeclampsia."

Leon G. Campbell, Pasadena, Calif.; Theodore Hansen, St. Louis; G. L. Chamberlain, New Franklin, Mo.; James B. Costen, St. Louis, and W. B. Hoover, Boston, Mass.; attended the Alumni Reunion.

1923
Attending the Reunion from the class were P. D. Stahl, St. Louis; Oliver Abel, Jr., St. Louis; J. W. Thompson, St. Louis; Ben M. Bull, Ironton, Mo.; J. H. Harris, Harrisburg, Pa.; Thomas L. Hawkins and David T. Berg, both from Helena, Mont.

1924
Fourteen members of the class gathered
100

WASHINGTON UNIVERSITY


Leo C. Murray now lives at 907 W. Manchester Ave., in Los Angeles.

1925

Robert J. Crossen, St. Louis; Charles H. Beasley, St. Louis; Jerome S. Levy, Little Rock; George P. Bailey, Lakewood, Colo.; Melvin A. Roblee, St. Louis; James Donohue, E. St. Louis, Ill.; and Adolph L. Gallant, St. Louis, attended the Reunion.

Lt. Col. George S. Littell is manager of the Veterans Administration Hospital in Amarillo, Texas.


Bernard Rand has moved to 3221 Henry Hudson Parkway, Bronx, N. Y.

Elmer Schluer now lives in Clayton, Mo., and can be reached at Box 322, Route 1.

1927

Moyt Kerr has offices in the Medical-Dental Building in Portland, Ore.

George S. Wilson is with the General Hospital Foundation Clinic in Enid, Okla.

Class members at the Reunion were C. H. Leslie, Lee B. Harrison, John E. Hobbs, Louis L. Tureen, all from St. Louis; Willard C. Schwartz from Manhattan Kan.; John A. Merideth from Cobden, Ill.; and W. H. Behrens from Mascoutah, Ill.

1928

Ern G. Anderson has moved from St. Louis to 2705 Rural St., in Rockford, Ill.


Lee N. Hamm now lives at 325 Eleventh St. in Lincoln, Ill.


1930


1931

Present at the Reunion were Karl Koenig and Delevan Calkins from St. Louis, and W. W. Greene from Kansas City, Mo.

1932

Albert M. Richmond is in the pathology department of Brooke General Hospital at San Antonio, Texas.

Attending the Alumni Reunion were Barrett Taussig, R. C. Sunderman, Sim F. Beam, Carl V. Moore, William H. Meinberg, Cecil M. Charles, Paul F. Max and
Wendell G. Scott from St. Louis; Fay S. Comer, Cairo, Ill.; and Brian B. Blades, Washington, D. C. Dr. Blades was one of the guest speakers for the scientific program on the afternoon of April 8, speaking on "Arteriovenous Fistulas of the Lungs."

Alexander G. Wooldridge passed on January 26 at the age of 43. His home and practice were in Bates County, Mo.

Robert T. Terry recently was promoted to assistant professor of clinical medicine at Vanderbilt University. His address is Thayer Hospital, Nashville 5, Tenn.


Col. Sheldon S. Brownton recently has been appointed staff air surgeon for the First Air Force. Formerly staff air surgeon for the Alaska Air Command, he is a regular medical corps officer and has received the Legion of Merit award for organizing medical installations within the Air Training Command. Following graduation, Col. Brownton served for four years as a reserve officer in the Medical Corps, then went into private practice in otolaryngology. In 1941 he was called to military duty, serving most of his tour of duty with the Air Force as Staff Surgeon. In 1946 he joined the Alaska Air Command. He was graduated from the School of Aviation Medicine at Randolph Field, Texas, in 1943, and the School of Applied Tactics Senior Medical Officers' Course at Orlando, Fla., in 1944. His home is at 910 Stuart Ave., Macon, Ga.


Everett Caldemeyer now lives in Washington, D. C., at 1615 Kenyon St., N. W.


Herbert Atherton is living at 7569 Buckingham Dr., in St. Louis.


William H. Gray now lives at 1006 W. Yakima, in Yakima, Wash.

Attending the Reunion were R. D. Williams, Lawrence Mendonsa, George W. Ittner, Edward H. Lyman, John Mikscek, Robert Kingsland, Carl Lischer and Herman Erlanger from St. Louis; and Samuel Brady of Gary, Ind.; and Edward Harris of Birmingham, Ala.

Tim V. Richay has moved from El Cajon, Calif., to Box 102, La Mesa, Calif.

Garrett Hogg, Jr., is now practicing in Cabool, Mo., after spending four and a half years in the army. He was decorated for rescuing men of his battalion aid station under fire and returned a major
in the medical corps after serving all over Europe with Patton's 35th Division.


1939

Robert M. Hardaway III has returned from duty in Korea and is living at 1549 Willow St., Denver, Colo.

The tenth anniversary of the class was celebrated during the Alumni Reunion, April 8 and 9, by these graduates: Alfred Baur, St. Louis; William Baumgarten, Jr., St. Louis; R. J. Rossow, Evansville, Ind.; Edgar Keys, Jr., Quincy, Ill.; Earl Burbridge, Kalamazoo, Mich.; O. W. Towers, St. Charles, Mo.; Ben Berman, Bunker Hill.; John R. Hall, Chicago, Ill.; Kenyan Latham, California, Mo.; and V. P. Blair, Jr., Gene Starkloff, Benjamin Milder, Bart Passanante, Edward Reinhard, Robert Shank, and Charles Eckert, all from St. Louis.

1940

Henry Friedman has moved from San Francisco to 301 North Branson Ave., in Los Angeles, Calif.

Floralou Kettenbach, (Mrs. W. O. Frich) is doing dermatology in Los Angeles. Her address is 1930 Wilshire Blvd.

In St. Louis for the Reunion were Gordon Moore, Alton, Ill.; Fred Biggs, Jr., Poplar Bluff, Mo.; Ben Skinner, Durham, N. Car.; Donald Bottom, Alton, Ill.; and these from St. Louis: Robert M. Smith, Otto Grunow, John Skinner, David N. Kerr, Russell J. Crider, Robert Koch, Frank Davis, Charles Obermeyer, Seymour Brown, William Tomlinson, and William MacDonald.

1941

Robert B. Dickerson recently received word of his certification from the American Board of Internal Medicine. He is at Letterman General Hospital in San Francisco.

Robert E. Buck recently moved from Salt Lake City to 503 Mitchell Dr., San Luis Obispo, Calif.

Those at the Banquet from the class were Bruce Canaga and J. H. Cross from Chicago; and Joseph Noah, Calvin Ellis, William McGinnis, Samuel Gollub, and Samuel Schechter from St. Louis.

Bruce Canaga recently moved from Philadelphia to 1808 South Prairie Ave., Chicago, Ill.

Frank Pickett is living in Bozeman, Mont.

1942

Edward Kraft is living at 4519 Jamieson in St. Louis.

Birkle Eck can be reached at 4959 Northland Pl., St. Louis.

Attending the Alumni Reunion were George Watkins of Farmington, Mo., and Elbert Cason, Philip Shahan, Warren Mills and C. B. Mueller from St. Louis.

Herman Rice is with the Veterans Administration Hospital in Temple, Texas.

Hanes H. Brindley now lives at 1867 N. Rainbow in Memphis, Tenn.

1943

Wallace Leibner has announced the opening of his office at 470 Ocean Ave., Brooklyn, N. Y.

Howard Joslyn now lives at 1300 S. Cole St., Mexico, Mo.

In a letter to the Quarterly, Elaine K. Lince writes that she and her husband, Dr. Robert J. Lince, share an office in the private practice of psychiatry at 1583 Rose Villa St., Pasadena, Calif. They proudly announce the birth of a son, Martin Alexander, on February 8. They have two daughters, Anita, 4½ years old, and Kendra, 2½ years old. Both doctors are candidates of the Los Angeles Psychoanalytic Institute. Having the office near their home makes it easier for Mrs. Lince to combine family and professional life.

Stuart Ramsdell is now living in Clarinda, Iowa, and recently moved there from South Dakota.

Roberts Pappenfort, Jr., is at Presbyterian Hospital in New York City.

1944
Jack Cole is living in Cleveland, Ohio, at 2184 East 30th St., Apartment 620.

Homer C. Marshall has moved from Longmont, Colo., to 935 E. Hyde Park Blvd., in Chicago, Ill.

Representing the class at the Reunion were Ralph Fargotstein of Springfield, Ohio, and Henry Noller, Irvin Birenboim, Marvin Pursell and David Citron of St. Louis.

Elrie P. Rodgers, who lives at 7115 Southwest Ave. in St. Louis, is a resident in medicine at the Jefferson Barracks Veterans Hospital. Mrs. Rodgers is in her third year at W. U. Medical School, and they have a three-year-old daughter, Susan.

1945
Attending the Reunion were Barbara Shier, B. F. Smith, Hugh Stephenson and Robert Ruby from St. Louis, and E. C. Spitze, Belleville, Ill., and Sanford Tut hill, New Orleans, La.

1946
Ann DeHuff Peters, now living at 3840 Ashland Ave., in St. Louis, has a daughter, Joan Forman, born last December 24.

Gilbert Chamberlain, Jr. of New Franklin, Mo., Dorothy T. Magallon of St. Louis, and Albert Ishii of St. Louis attended the Alumni Reunion.

Robert E. Lee’s new address is 6107 Music, New Orleans, La.

Andrew Lanier is with the U. S. Marine Hospital in San Francisco.

John Koehler is assistant resident in internal medicine at St. Louis City Hospital.

Glenn Richardson is stationed at the Naval Hospital in Pensacola, Fla., but is due for discharge in May, 1949.

James W. Owen is assistant chief of medicine at the 22nd Army General Hospital on Guam Island.

Charles Nicolai recently returned to St. Louis after two years as a naval medical officer. He will start an assistant residency in surgery at Missouri Baptist Hospital in July.

Siver A. Wilson passed away on July 2, 1948, at Walter Reed General Hospital in Washington, D. C. He was with the Army in Liege, Belgium when he became ill, and death resulted from a brain tumor.

Stanley Wald was chief of the preventive medicine section, Office of the Chief Surgeon, U. S. Army Headquarters, Manila, until April 1, when he returned to the United States. His home is in Doniphan, Mo.

Mary Bublis is serving a residency at Malcolm A. Bliss Psychopathic Hospital in St. Louis.

Jacob W. Old, Jr., a captain in the medical corps, is studying tissue pathology at the Army Institute of Pathology in Washington, D. C.

Robert McConnell is a captain in the Army Medical Corps stationed at McCormack General Hospital, Pasadena, Calif., on urology service. Mrs. McConnell is the former Martha May Burgoon, who received her R.N. here. They live at 19 North Sunny Slope Ave., Pasadena, Calif.

Tennie Mae Lunceford is clinical assistant in pediatrics at Roberts Hospital, University of Chicago.
C. A. Luer completed a year's residency as assistant in surgery at St. Louis City Hospital last year and is now at Camp Whitside, Fort Riley, Kansas, until 1950.

Harry Wieman, on a tour of duty with the navy, expected to return to the United States in April from a world cruise.

William Weiss is at the Navy Dispensary Department in Washington, D. C.

Frank Vellios is at Brooke General Hospital at Fort Sam Houston, Texas.

Sanford Snyderman is chief of ENT service at the 359th Station Hospital, Waller Air Force Base, Trinidad, B.W.I.

James Sisk is living at 5 Canyon St., Hot Springs, Ark.

John Shapleigh is a captain in the Army Air Corps at San Antonio, Texas, and hopes to be released next fall.

Loy Seabaugh, with the U. S. Navy, can be reached at 912-H Bougainville, Oceanside, Calif.

Rutledge Schropp is with the 26th Station Hospital in Honolulu, T. H.

Arthur Schmidt has been with the Army in Seoul, Korea.

Drennan Bailey has been stationed with the army in Yokohama, Japan, but expects to return to City Hospital in St. Louis about May.

Raymond Bates is at St. Joseph's Mercy Hospital in Detroit, Mich.

Jack Barrow is at the Navy Medical Center Research Institute, Bethesda, Md.

Ralph B. Busch, a lieutenant in the navy, is at the Naval Hospital in Corona, Calif.

Arthur Brownlie is a captain at the Station Hospital, Williams Air Force Base, Chandler, Ariz.

Capt. Ralph H. Jones also is at Williams Air Force Base and expects to return to De Paul Hospital, St Louis about June 10.

Harold Jolley is chief of anesthesia at Valley Forge General Hospital, Phoenixville, Pa.

Eugene Johnson is on duty with a civil administration unit of the navy overseas.

Gilbert Hall is at Station Hospital, Fort Sheridan, Ill.

Marvin Gibstine has been a captain in Germany with the Army for the last year and a half.

Donald Gallagher has served with the Army Medical Corps in Japan for more than a year.

Robert Funsch is at Children's Hospital in Boston, Mass., and will be there for another year.

Carolyn Forman will complete her residency at Children's Hospital of Philadelphia in July.

James Folsom is with the Army Medical Corps in Germany and due to return to the states in July.

Robert Farrier is at the Marine Hospital, Staten Island, N. Y.

George Ewing is at Keneohe Bay, Hawaii, with the navy.

Capt. Roland P. Ernst is at Topeka Army Air Base in Kansas.

Capt. Warner Crouch has been in Germany and Austria for about two years with the Army. He is head of surgery at the 124th Station Hospital and will return to this country to start an assistant residency at Presbyterian Hospital in Chicago on July 1.

Among those attending the Alumni Reunion were these 1947 graduates: Charles Harrison, Olney, Ill.; John A. Nuetzel, Carroll Behrohorst, Jack Gregory, Lewis Farr, and Frank B. Long, Jr. of St. Louis.

John D. King is at Duke Hospital, Durham, N. C.

Edward Wood is assistant resident in surgery at St. Luke's Hospital, and will be resident in radiology there next year.

Arthur Weigel is assistant resident in surgery at St. Louis County Hospital.

Roger A. Smith can be reached at 1021 E. River Rd., Minneapolis, Minn.

William Regan is serving his residency at St. Luke's Hospital, St. Louis.

Burnet and Virginia Peden are living at 6971 Dartmouth in St. Louis.

John Nuetzel is a research fellow at Barnes Hospital in hypertension.

Thomas Keely is resident in radiology at Barnes Hospital.

Robert Launch is resident in medicine at De Paul Hospital, St. Louis.

Irving Koffler is living at 2310 Highland Ave., Birmingham, Ala.

Fred P. Handler lives at 837 Westgate in St. Louis.

Paul Busiek, Robert Garner and James McNeil are at St. Louis Children's Hospital.

Winfield Edgerton is at Chicago Living-In Hospital.

Arnold Brody can be reached at Jackson Memorial Hospital in Miami, Fla.

William Tevis is in the department of medicine at Barnes Hospital.

Donald Stewart is assistant resident at Missouri Baptist Hospital in St. Louis.

Helen Prieto is surgical resident at Sisters Hospital in New Orleans.

Louis Kacaliiff is resident in psychiatry at Cleveland State Receiving Hospital, affiliated with Western Reserve University.

William Abele is at New Haven Hospital, New Haven, Conn.

Beverly Cockrell is at Vanderbilt University Hospital in Nashville, Tenn.

David Goldenberg is resident in internal medicine at Winter General Hospital, Topeka, Kansas.

Albert Warshauer is at Fort Miley Veterans Hospital, San Francisco.
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Charles Belknap, B.S., Vice Chancellor
Joyce C. Stearns, Ph.D., LL.D., Dean of Faculties
Thomas Edward Blackwell, Ph.B., M.S., J.D., Director of Business Administration

The College of Liberal Arts
Stuart A. Queen, Ph.D., Dean

The School of Engineering
Lawrence E. Stout, Ph.D., Ch.E., Dean

The School of Architecture
Joseph D. Murphy, Acting Dean

The School of Business and Public Administration

The George Warren Brown School of Social Work
Benjamin E. Youngdahl, A.M., Dean

The Henry Shaw School of Botany
Henry N. Andrews, Jr., Ph.D., Acting Dean

The Graduate School of Arts and Sciences
Carl Tolman, Ph.D., Dean

The School of Law
Wayne L. Townsend, A.B., LL.B., J.S.D., Dean

The School of Medicine
Robert A. Moore, M.D., Ph.D., Dean

The School of Dentistry
Otto W. Brandhorst, D.D.S., Dean

The School of Nursing
Louise Knapp, R.N., B.S., A.M., Director

The School of Fine Arts
Kenneth E. Hudson, B.F.A., Dean

University College
Willis H. Reals, Ph.D., Dean

The Summer School
Frank L. Wright, A.M., Ed.D., Director