

UNIVERSITY OF MINNESOTA

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ASSOCIATION

IN THIS ISSUE:

*Renal Biopsy*

*Pancreatic Tumors*

*Philanthropic Foundations*

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# University of Minnesota Medical Bulletin

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## Staff Meeting Report

### Renal Biopsy in the Study of Chronic Renal Disease in Children by Light and Electron Microscopy \*†

Robert L. Vernier, M.D.,<sup>1</sup> Marilyn G. Farquhar, Ph.D.,<sup>2</sup>  
Joel G. Brunson, M.D.,<sup>3</sup> and Robert A. Good, M.D., Ph.D.<sup>4</sup>

In an attempt to gain a better understanding of the etiology and pathogenesis of the chronic renal diseases, we have undertaken an extensive clinical, laboratory and pathologic investigation of this group of diseases in childhood. Included are children with the nephritis of anaphylactoid purpura, the nephritis of disseminated lupus erythematosus, glomerulonephritis, and the nephrotic syndrome.

The pathology of chronic renal disease as revealed by kidney biopsies in 52 children, was studied by conventional light microscopy and electron microscopy. No serious complication or significant alterations of renal function has been noted in the total series of 90 kidney biopsies in children.

#### Observations — Light Microscopy

Seven children with anaphylactoid purpura have been studied. The acute renal lesion of anaphylactoid purpura is characterized by segmental glomerular capillary occlusion by fibrinoid material; while the more chronic morphologic alteration is focal glomerular hyalinization. The acute renal lesion of anaphylactoid purpura does not resemble the renal lesion of acute glomerulonephritis.

The nephritis of disseminated lupus erythematosus is character-

\* This is an abstract of a report given at the Staff Meeting of the University of Minnesota Hospitals on October 19, 1956. A copy of the complete report, including tables and references, may be obtained by writing to the Editor, UNIVERSITY OF MINNESOTA MEDICAL BULLETIN, 1342 Mayo Memorial, Minneapolis 14.

† This study was aided by grants from the U. S. Public Health Service (H-2085, E-798, and H-1542), the Helen Hay Whitney Foundation, the American Heart Association, the Minnesota Heart Association, and the Graduate School Research Fund of the University of Minnesota.

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ized by proliferation of the endothelial cells and focal occlusion by fibrinoid of the glomerular capillaries. The so-called "wire-loop" lesion of the glomerulus was not observed. Evidence suggesting that the early morphologic changes of the nephritis of disseminated lupus erythematosus may be reversible was obtained by study of serial renal biopsies in a case treated with cortisone.

Twelve cases of glomerulonephritis, including acute, subacute, and chronic glomerulonephritis, have been studied. Further clarification of the relationship between acute and subacute glomerulonephritis, the pathogenesis of the acute exacerbation of subacute glomerulonephritis and of latent chronic glomerulonephritis, was obtained by examination of renal biopsies in this group of studies.

The microscopic renal pathology of "pure" nephrosis, "mixed" nephrosis, and the nephrotic syndrome in chronic glomerulonephritis, was obtained by study of kidney biopsies in 27 children with clinical nephrotic syndrome. The spectrum of morphologic alterations observed varied from normal kidneys in "pure" nephrosis, through proliferative nephritis, to the severe fibrotic lesions of chronic glomerulonephritis, and appeared to be related to the duration and severity of the basic disease process. These observations support the concept that nephrosis is a single type of nephron disease in which the signs of hypertension, hematuria, and renal insufficiency may occur and is separate from the form of chronic glomerulonephritis in which nephrotic symptoms do not appear.

### Observations — Electron Microscopy

The availability of suitable renal tissue obtained by kidney biopsy has made possible the study of ultra-microscopic renal pathology with the electron microscope.

The three basic components of the glomerular capillary—the epithelial cell, the basement membrane, and the endothelial cell—are differentially involved in the pathogenesis of nephrosis, glomerulonephritis, and the nephritis of lupus erythematosus as revealed by electron microscopy.

The ultra-microscopic pathology of nephrosis is characterized by deformity of the epithelial cell, namely obliteration of the normal foot process morphology and smudging of the epithelial cytoplasm along the basement membrane. This abnormality was observed in the kidney

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of every case of nephrotic syndrome studied regardless of the clinical findings or the pathology as revealed by light microscopy.

Glomerulonephritis is associated with proliferation of the endothelial cells and accumulation of basement membrane-like material within and between the endothelial cells. The epithelial cells and the basement membrane proper remain relatively intact.

Uniform thickening of the basement membrane proper was the characteristic ultra-microscopic alteration observed in the nephritis of disseminated lupus erythematosus.

In the late stage of the pathogenesis of the chronic renal diseases (the hyalinized glomerulus of the light microscopist) the ultra microscopic pathologic lesion may not be distinctive.

These observations correlating clinical data with the microscopic and ultramicroscopic pathology of renal biopsy specimens offer new insights into the interrelationship between the various forms of chronic renal disease in children. In addition, the tool of renal biopsy has proven to be safe and of unique value in the diagnosis, prognosis, and in assessing treatment of this group of disorders.

# Staff Meeting Report

## Tumors of the Pancreas and Extrahepatic Biliary System\*

Peter A. Salmon, M.D.,<sup>1</sup> Frederick Neher, M.D.,<sup>2</sup>  
 Alan Thal, M.D.,<sup>3</sup> and Bernard Zimmermann, M.D., Ph.D.<sup>4</sup>

Carcinoma of the pancreas, of the ampulla of Vater (AV), of the extrahepatic biliary ducts (EHBD), of the gallbladder (GB), and some lesions of the duodenum, have many common features. Diagnostic criteria and surgical management are often, but not invariably, similar. The present report is concerned with an analysis of 401 cases at University Hospitals of primary malignancies in this anatomic region, as follows:

Total	Pancreas	AV	EHBD	GB	PORTA DUODENUM
401	241	32	51	66	8 3

Pancreatic tumors analyzed included 152 examples involving the head (HP), 71 of the body and tail (BTP), and 18 classified as diffuse (DP). Of all the tumors in the cases studied, 349 were adenocarcinoma, 3 were squamous cell carcinoma, 3 were sarcomas, 2 were islet cell tumors, and in 44 cases there was no histologic documentation. The average age in each group was between 60 and 70 years. Except in the group having gallbladder carcinoma, males predominated.

The patients were divided into two groups, those who were operated upon, and those who were not, based upon the extent of the malignancy. The following table gives the types of surgical procedures performed:

	HP	BTP	DP	AV	EHBD	GB	PORTA DUODENUM
Definitive -----	26	11	--	26	17	8	1 1
Palliative -----	84	18	11	3	17	18	3 2
Explored -----	12	17	4	1	6	23	4 -
No operation --	29	25	3	2	11	17	- -
Totals -----	151	71	18	32	51	66	8 3
No. without biopsy -----	36	2	3	0	1	2	0 0

\* This is an abstract of a report given at the Staff Meeting of the University of Minnesota Hospitals on October 26, 1956. A copy of the complete report, including tables and references, may be obtained by writing to the Editor, UNIVERSITY OF MINNESOTA MEDICAL BULLETIN, 1342 Mayo Memorial, Minneapolis 14.

1. Medical Fellow, Department of Surgery
2. Medical Fellow, Department of Surgery
3. Assistant Professor, Department of Surgery
4. Associate Professor, Department of Surgery

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### *Symptoms*

The most frequently occurring symptoms in the combined groups are shown in the following table.

	HP	BTP	DP	AV	EHBD	GB	PORTA
Total cases -----	151	71	18	32	51	66	8
Jaundice -----	78%	17%	44%	78%	94%	43%	37%
Pruritus -----	49	4	22	50	56	15	12
Light stool -----	66	7	44	75	88	40	37
Dark urine -----	70	11	27	72	78	35	37
Pain — total -----	62	87	66	31	53	70	37
Dull -----	57	74	50	9.3	41	54	37
GB type -----	1.3	7	11	12	11	10	--
Distress -----	3	5	5.5	9.3	--	6	--
Diarrhea -----	31	9	22	18	21	4	12
Constipation -----	23	53	33	6.2	15	31	12
Anorexia -----	44	57	55	59	57	37	50
Weight loss -----	49	87	72	84	64	67	12
Flatulence -----	24	36	33	37	27	29	24
Fat food intolerance--	10	4.7	11	6.2	8	23	--
Weakness -----	36	49	50	62	39	29	50
Malaise -----	36	34	27	62	37	31	50

### *Physical signs*

The incidence of specific physical findings, of which jaundice was the most frequent, is recorded in the following table:

	HP	BTP	DP	AV	EHBD	GB	PORTA
Total cases -----	151	71	18	32	51	66	8
Jaundice -----	80%	17%	50%	81%	92%	47%	37%
Peripheral thrombosis	2.0	8.4	--	--	--	--	--
Liver palpable -----	46	26	11	15	41	35	37
Gallbladder palpable--	29	8	22	34	37	18	--
Mass palpable -----	7	21	22	6	4	14	12
Distant metastasis ---	6	29	5	--	--	1.5	--

### *Laboratory findings*

This investigation confirmed previous observations that 24-hour fecal urobilinogen levels below 5 mg. indicate total biliary obstruction and in these patients, malignant obstruction. Furthermore, this determination had a higher degree of diagnostic accuracy than the single or "grab" specimens. The results of cholesterol ester determinations showed that levels consistent with hepatocellular damage are seen in patients with malignant obstruction more often than in the presence of other types of obstruction. The cephalin cholesterol flocculation test was positive in a small number of patients with cancer of the head of the pancreas, negative in all of the other patients studied except for one patient with carcinoma of the gallbladder. The incidence of

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positive thymol turbidity tests was somewhat higher. Of 194 patients in whom both tests were performed, in only one were they both positive.

The alkaline phosphatase test, which is most valid when used in conjunction with the cephalin cholesterol and thymol turbidity tests, was below the level diagnostic of obstruction in one-third of the cases in this series. Serum amylase studies showed that 85 per cent of patients having body and tail carcinomas had *decreased* levels. In analyzing the total bilirubin as a diagnostic test, values ranged from normal to exceedingly high levels. In only a small number of cases did prompt reacting bilirubin exceed 70 per cent of the total bilirubin.

### *Roentgenologic Diagnosis*

Negative small bowel examination in pancreatic cancer was frequent. Approximately fifty per cent of examinations were negative in patients with tumors in the head of pancreas and with diffuse lesions, and in approximately thirty per cent of those with body and tail lesions. In pancreatic head carcinoma, proximity to the duodenum and not tumor size was responsible detection by X-ray. Duodenal deformity was the commonest finding except in body and tail lesions where stomach deformity was more frequent.

### *Cholelithiasis*

The following table gives the incidence of cholelithiasis in this series:

	HP	BTP	DP	AV	EHBD	GB	PORTA	DUODENUM
Total cases--	151	71	18	32	51	66	8	3
% with cholelithiasis	14%	18%	11%	15%	29%	56%	50%	0

### *Gallbladder Distention*

The following table, giving findings at operation, indicates that among jaundiced patients studied, malignant obstruction of the biliary tract is not necessarily associated with a distended, non-tender gallbladder.

	HP	DP	AV	EHBD
No. of cases of distended gallbladder----	67	5	23	22
% jaundiced patients with gallbladder distention -----	54%	45%	82%	48%

On the other hand, the frequency of clinically palpable gallbladder in patients later demonstrated at surgery to have gallbladder distention

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was quite high in patients with carcinoma of the pancreas, diffuse (80 per cent) and of the extrahepatic biliary ducts (86 per cent) but considerably lower in those with carcinoma of the head of pancreas (69 per cent) and of the ampulla (66 per cent). Some distended gallbladders were, no doubt, obscured by overlying enlarged liver. Studies for occult blood (stool guaiac test) were as often positive in head of pancreas and EHBD lesions as in ampullary lesions.

There was a significant incidence of abnormal carbohydrate metabolism as measured by the glucose tolerance test in patients with carcinoma of the pancreas as compared with the other groups in this series.

The highest incidence of survival and the lowest postoperative mortality rate were in those patients with carcinoma of the ampulla. In the other groups many patients with negative lymph nodes, who were possibly cured, died immediately after, or of other complications shortly after, discharge from the hospital. In recent years this early postoperative mortality has been very significantly reduced to the point where operative mortality for radical pancreatoduodenectomy does not exceed that of other major abdominal procedures. It would appear, therefore, that in the future more long-term survivals can be anticipated.

## Special Article

### Philanthropic Foundations and Medical Education\*

A. A. Heckman<sup>1</sup>

Dr. Spink, Dr. Howard and I thought it would be appropriate, and perhaps of interest to you, if I discussed at this Annual Meeting of The Minnesota Medical Foundation, the role that foundations are taking in the field of medical education. This is proving to be a more difficult assignment than I thought it would be, due chiefly to the need to make decisions as to what to omit in order to stay within time limits.

I am sure that all of you are fully aware of the fact that philanthropy, as an instrument for the contribution of private wealth to public purposes, is older than recorded history. It has been of special significance in the history of the United States where it has flourished as no where else in the world.

The newcomer in the field of philanthropy is the foundation. Philanthropic foundations are largely a social invention of the United States and a product of the twentieth century. These modern creations for philanthropic and charitable giving function in a variety of ways and have different interests, yet all have some similarities. They truly are a vivid expression of the American philanthropic phenomenon. Their objectives are as broad and as dynamic as the definitions of public welfare, of education, of science, of public health and of charity. Philanthropy is a part of our culture. We believe that private giving and private action are indispensable means of obtaining our social objectives.

In my opinion there are three reasons justifying a discussion of these newcomers to philanthropy at this particular meeting.

The first I already have alluded to, namely the role philanthropy has played and continues to play in medical education, research in the medical sciences and in the practice of medicine. While this particular medical school is a part of a great tax-supported, public

\* Address given at Annual Meeting of the Minnesota Medical Foundation, The Medical School, University of Minnesota, October 1, 1956.

<sup>1</sup> Executive Director, Louis W. and Maud Hill Family Foundation, and Member, Board of Trustees, Minnesota Medical Foundation.

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University, it would not be the outstanding school that it is today without private giving. There would be no Mayo Memorial, no Variety Club Heart Hospital and other important physical facilities. Research funds would be less plentiful, even if they now are inadequate, and scholarships and fellowships would be fewer in number. The private practitioners of medicine would not have the modern hospitals they now have at their command for the treatment of their patients.

The second reason is that our host today, The Minnesota Medical Foundation is one of these distinctly American philanthropic organizations.

The third reason is that "health", in the broadest meaning of the word, is one of the three leading fields of interest of philanthropic foundations. The other two are education and social welfare. I am sure that all of you will agree that there is such an inter-relationship between these three fields as to make them of primary concern to every member of the medical profession, whether he is engaged primarily in the practice of medicine, or in research in the medical sciences, or in teaching in a medical school.

Perhaps there is a fourth reason for discussing this subject at this meeting. Many of you medical students, in the not too distant future, will be joining with faculty members of the Medical School and other scientists in seeking support for research and experimental undertakings. Not all of the funds necessary for such activities will be forthcoming from the School's regular budget or from governmental funds appropriated for medical and other scientific research.

I would like to define a philanthropic foundation, review their history briefly, discuss their methods of operation and suggest ways in which you and we in the foundation field can work together.

A true foundation is a non-profit, legal entity whose donor or donors have given or will give it a principal fund, whose management is under its own trustees or directors, and whose purpose is to conduct or aid activities which serve the welfare of mankind. A variety of names may be given to such organizations—foundation, association, trust, fund, endowment and corporation being the most common. An organization that annually appeals to the public for gifts in support of its program is not a foundation, in accordance with my definition, regardless of the fact that its legal title may include the word and its program be of extreme value.

The oldest foundations were founded by men and women of great

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wealth which was created by the early industrialization of this country. Their numbers were not large, it being estimated that only about two hundred had been created by the end of the third decade of this century. Included in these are such well known foundations as Rockefeller and Carnegie Corporation, just to name two.

There probably were many individual and some very superficial and selfish reasons which led these people of wealth to establish foundations. But the most fundamental reason was a philosophy of giving—a philosophy of charity and philanthropy that is a part of the very warp and woof of our culture. Certainly such giving was not to avoid taxes. There were no income or inheritance taxes in those days. Rockefeller tithed from the time he first started earning an income, Carnegie believed in and advocated what he called "The Gospel of Wealth", a belief that the man of wealth should be "a trustee for the poor, entrusted for a season with a great part of the increased wealth of the community but administering it for the community". He labeled the man who died rich a disgrace.

Some of these early pioneers in philanthropy saw the inflexibilities and weaknesses of endowments to specific organizations or for specific causes. Their own successes were due in part to keen imaginations and a spirit of venture. At considerable risks they dared to enter into new fields and sail uncharted courses. They realized that progress is not made by always sticking close to the known and proven. They knew that keen as a man's intellect may be, sharp as may be his insight, and vivid as may be his imagination, he cannot foresee and foretell what will need to be done, or what ventures may need to be risked in the years, decades, and centuries ahead. They recognized the futility of trying to predict which organizations will some day become obsolete or which problems will cease to exist or be greatly diminished in importance at some future date.

Men like John D. Rockefeller and Andrew Carnegie and their advisers knew the dangers of a "dead man's hand controlling the tiller". Flexibility is essential if advantages are to be taken of the opportunities to push back the frontiers. Such flexibility would not be possible if all philanthropic giving was to endow existing organizations.

These men also appear to have sensed the dangers of deterring and discouraging wide spread voluntary support of our private enterprises in the field of philanthropy; something that could easily have

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happened had all of their wealth gone for the support of existing, on-going programs.

Not all philanthropists had such insight and imagination. Some even used poor judgment in selecting the objects of their benefactions. Hence, such endowments as the one existing up to a few years ago to aid travelers going west by ox carts; the one to maintain watering troughs for horses in a certain eastern city; and another for the aid of sailors before the mast.

Starting with the 1940's we witness the second wave of foundation development. In this era the philosophy of giving is teamed with tax and business expediency, the latter two being encouraged by the exemption clauses of nearly all tax legislation at the federal and state levels of government. Higher individual income taxes, corporation taxes and inheritance taxes have led to the reduction of taxable incomes and estates by increasing gifts to charitable, educational and welfare causes. Foundations serve as one of the channels for such giving. There also is more of a realization today than ever before that there is a relationship between private enterprise in business and private enterprise in such activities as education, health and welfare. Allow the latter to weaken or die and the former becomes less strong and vigorous.

Extremely high estates taxes create problems for the families owning all or a major portion of a business enterprise as well as for the enterprise itself. The death of the principal owner of a business can force the liquidation of his holdings, for the purpose of meeting taxes, at a time that might be most disadvantageous for the remaining members of the family and the business enterprise itself. The creation of family foundations and trust funds can prevent such problems and at the same time preserve sizeable sums of capital for private initiative in research, education, health and welfare.

Generally speaking there are four broad classes or types of foundations: the family foundation whose creator is still living and active in its management; the foundation, often carrying a family name, whose founder is dead or, if living, no longer taking an active part in its management and where management and program direction rest with a board of trustees and often a staff; the corporation foundation, a channel through which the corporation's gifts to philanthropy can be made in an orderly manner and also provide a continuity of giving that is less dependent upon yearly fluctuations in earnings of

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the corporation; and the community foundation or trust. A fifth class, quite new, is the government foundation.

Functionally, foundations tend to operate in one of three ways: they may make grants to organizations or individuals or to both; they may themselves conduct research or render services, using either permanent or temporary project staffs; and they may make grants and also operate programs or research projects. The Ford Foundation and Carnegie Corporation are examples of foundations making grants to organizations and individuals. Locally the Amherst H. Wilder Foundation is an example of an operating foundation, conducting its own programs of services and research. Russell Sage Foundation comes to mind as illustrative of those which both operate programs and make grants. Hill Family Foundation only makes grants to non-profit organizations.

No one really knows how many foundations there are in this country today. Recent studies indicate that the figure may run in excess of ten thousand. In a recent study completed by American Foundation Information Service data was compiled on 4,164 foundations. Of this number only 718 had either assets of \$1 million or more or were making yearly grants in excess of \$50,000. Of these, just 78 possessed the bulk of the \$4.5 to \$6 billion estimated value of all the assets of all foundations. Of these 78, just seven possess \$100 million or more each in assets. These are: The Ford Foundation, the giant of them all and the youngest of the 78 big foundations, with assets probably in excess of \$2 billion; Rockefeller with over \$447 million; Carnegie with over \$178 million; Kellogg and Duke, each with in excess of \$109 million; Commonwealth with more than \$105 million; and Pew with nearly \$105 million.

Hill Family Foundation, one of the 78 just referred to, has assets at book value in excess of \$21 million.

The popular impression is that foundations are reservoirs of almost unlimited funds. It is true that they spend, grant, or give away, whatever term you wish to use, more than \$310 million dollars annually, not including Ford's recent large gifts to educational institutions, including medical schools, and hospitals.

Whether it be \$310 million or \$4.5 billion, we are talking about a lot of money. Yet, it is by comparison a mere drop in the bucket. For example, the American public's annual outlay for tobacco exceeds the accumulated wealth of all the foundations. According to the Wall

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Street Journal, Americans spend more than \$3 billion a year for owning and caring for a wide assortment of pets—dogs, cats, birds and the like. We annually spend approximately \$1.6 billions a year for old age assistance benefits—not social security or pensions—just old age assistance granted on the basis of need. Ten health organizations like the American Cancer Society raised over \$143 million in 1955.

Actually the foundations of the United States provide about  $4\frac{1}{2}$  cents of the American philanthropic dollar<sup>1</sup> and only a fraction of this is directly related to medical education. However, this is, or can be, an important  $4\frac{1}{2}$  cents if it is expended wisely.

According to a study made by F. Emerson Andrews<sup>1</sup> all philanthropic giving in 1952, for all research was about two percent of the total research expenditures in that year. In medical research alone, philanthropy and other non-profit sources contributed just 23 percent of the total expenditures and much of this came from the non-profit health agencies. The big bulk of the medical research funds came from government and industry, about 42 percent from the former and 35 percent from the latter.

It is obvious then, that to make their  $4\frac{1}{2}$  cents count for the most, the foundations must keep themselves flexible, program-wise. They must be prepared and willing to undertake the support of those things which are risks but, if successful, will pay large returns. In short, they must be the source of venture capital, supporting activities and programs that are less likely to appeal to the general giving public or for which governmental funds are not available. While an over-simplification, one might say that if a project, program or cause is popular it is not for the philanthropic foundation. Playing such a role in the field of philanthropy will cause the foundations'  $4\frac{1}{2}$  cents to influence materially the other  $95\frac{1}{2}$  cents of the philanthropic dollar for the good of mankind. Any risk undertaking which does pay off will open the gates for a flow of new money to provide for its continuing support.

Being completely free from pressures of political and vested interest groups, the foundations can act promptly in helping to push back frontiers; in developing new services; in bringing about efficiency and correlation of existing programs which have public acceptance and support; in encouraging the utilization and correlation of

<sup>1</sup> Philanthropic Foundations, F. Emerson Andrews, Russell Sage Foundation, 1956.

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existing bodies of knowledge and in developing new bodies of knowledge.

Now let us try to relate this general picture of philanthropic foundations more specifically to medical education. I will touch briefly on what I believe to be five problem areas. They are:

1. The need for more adequate general support of medical schools.
2. The importance of increasing the flow of new personnel into the sciences generally.
3. The need for more opportunities for basic research by men of ability.
4. The importance of good clinical and research facilities in the medical schools and the affiliated institutions, such as hospitals and special clinics.
5. The need for support of clinical research as an integral part of medical education at all levels, from the undergraduate to the postgraduate and the more selfdirected educational program of the progressive practicing physician.

Foundations are not likely to be of great assistance in providing funds for the basic budget of the University of Minnesota's Medical School. That support will have to come from the taxpayers. However, foundations have been of considerable assistance to the privately supported medical schools. Sometimes such grants stimulate general support for such institutions from new sources. In other instances they encourage support for needs which heretofore have not been popular with the general giving public. In the long run, increased support for the private schools affect favorably the tax appropriations for the publicly supported schools.

Examples of such support are: a gift of \$15 million by three Mellon Foundations to the medical school of the University of Pittsburgh, primarily to strengthen its teaching faculty; the Samuel H. Kress Foundation made a conditional grant to New York University of approximately \$8.5 million dollars for the University's post-graduate Medical School, part of this to be used for current support and part for capital purposes; Hill Family Foundation is supporting, for ten years, a position of physiologist in surgery here at this Medical School. If this proves to be an improvement in the educational program of the School there is no doubt that its cost will be borne by the School's basic budget.

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Current efforts to solve the problem of the shortage of scientists may not at first appear to have any relationship to medical schools. However, in the final analysis they do, because medical education also is feeling the effects of this acute shortage, especially in the basic medical sciences and in competent teaching faculty.

To many, including Hill Family Foundation, one fundamental solution to this problem must be centered in the elementary and secondary schools. It is here that the young people with capacities and potentialities for successful careers in the sciences can be discovered, motivated and helped to prepare themselves for scientific careers. To do this requires both a strengthening and an enriching of the curriculum, especially in science and mathematics. This in turn means better prepared teachers and good counseling programs. We also need to be sure that a maximum of the capable high school graduates have opportunities to go on to colleges, universities, technical and graduate schools. Today a sizeable number of our high school graduates of ability do not go on to college chiefly for financial reasons.

There also is the need to strengthen the teaching of sciences and mathematics in the undergraduate colleges and for retaining, at that level, the able scientists who also are skilled teachers. After all, we do need to remember that the small, liberal arts colleges have played a role out of proportion to their size in contributing good men of science. A little examination of the facts will reveal, almost every time, that one or two able teachers in each of the institutions account for this steady flow of budding scientists.

These good teachers should be helped to remain in teaching positions and other good potential teachers should be encouraged to teach. We must stop looking upon teaching at any level as a second rate activity not to be compared with research or industrial scientific careers or the private practice of medicine.

Foundations are doing many things in the area of this particular problem. I will use Hill Family Foundation as an illustration because I know its program best.

Last year we made a grant to this University for the purpose of conducting summer institutes for high school teachers of science and mathematics. The year before that we made a grant to the University of Minnesota in support of a summer institute for high school teachers of biology. It looks as though these institutes are paying off, if we can believe the testimonies of the teachers who have attended.

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Now governmental funds are available to continue these programs and to extend them so that more high school and college teachers from all over the United States can be helped to become better teachers. Industry too is sharing in all of these efforts to strengthen the teaching of science and mathematics.

This year we made a grant to a public school system for the purpose of developing an enriched curriculum in science and mathematics for gifted students. If a sound plan can be developed that eventually can be taken over by this and other public school systems, we stand ready to finance a four year experimental operation of the plan.

At the undergraduate level we have made quite a few grants over the past several years primarily to aid good teachers to keep their skills sharp and to remain in teaching positions. Some of these grants have enabled teachers to spend a sabbatical leave in research. Other grants have made possible the conducting of research projects in their own laboratories on some of which students may be used.

Other foundations, including The Minnesota Medical Foundation, have made funds available for scholarships at both the undergraduate and graduate levels.

Again using the Hill Family Foundation as an example, I can illustrate what some foundations are doing to support fundamental research in the medical sciences. In the last few years, five research professorships in this Medical School have been given substantial support by the Foundation. In addition, several basic research projects of faculty members have been supported by substantial grants. Over a period of years sums totaling approximately \$200,000 have been given to the Malignant Disease Research Fund and the Burch Memorial Fund of this School.

These grants in support of research professorships have made it possible for men of outstanding ability to devote a major portion of their time, over a period of years, to fundamental research. I don't believe that there is any doubt about these men having a direct relationship to medical education, or that they will bring to this School, in grants for project research which is closely geared to the teaching program, sums that will be five to ten times greater than the original investments by the Foundation. And no one can measure or place a dollar value on the contributions they will make in better preparing young men and women for professional practice in the health field.

Other foundations, here and elsewhere, are making possible new

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programs in medical education, major revisions of educational programs and opportunities for young scientists to launch themselves on research careers.

Many foundations have contributed to the providing of facilities for medical education. Often these are attached to affiliated hospitals and clinics rather than directly under the jurisdiction of the medical schools. Nevertheless, they are important parts of medical education. Frequently, foundations support research being conducted in voluntary and public hospitals and clinics in which interns, residents and practicing physicians take part. These, I believe, represent activities properly classified as medical education. Thus work is going on at Ancker, Mt. Sinai, Minneapolis General, St. Barnabas, Miller and St. Joseph's Hospitals here in the Twin Cities which is of significance to medical education and often has a direct tie to this Medical School.

The John A. Hartford Foundation has a rather unique program. It specializes in making funds available to private hospitals primarily for the purpose of meeting the cost of the care of patients being used in research work at such hospitals. Having this big cost factor covered has enabled a good many private hospitals in the United States to carry on research and educational programs which they otherwise would have found to be financially impossible.

The phase of medical education which is the easiest to sell to some foundations, as well as to corporations and individuals, is clinical research related to the more spectacular diseases. If the disease carries a great threat for the masses or if its results play on the emotions, the money for research comes pretty easily. However, the larger foundations with professional staffs are tending more and more to avoid any areas of research which are being well financed by the national health organizations and governmental funds, even though in an earlier day they may have made substantial grants in such problem areas. This is as it should be. This is an evidence of flexibility and of making the 4½ cents of the philanthropic dollar count for the most by moving into the least generally recognized, least popular problem fields.

A legitimate and proper question at this point is: how does one learn where to turn for foundation support of a given need or undertaking in medical education, using the term in its broadest meaning?

I would not pretend to know the final answers to such a question. There are sources of general information on the fields of interest of

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many of the foundations; for example, Bio Sciences Information Exchange and the directory, American Foundations and Their Fields, Volume VII, published by the American Foundation Information Service. Most of the larger foundations now publish annual reports which contain both statements of policy and descriptions of current grants. I know of few deans and department heads who do not know of many of the most likely sources of support. Certainly all these help one to determine those foundations, which, by policy or charter, are interested in the medical sciences and the field of health generally.

There are a few generalities which one might dare to make, but keep in mind that they are just the opinions and observations of one person. More and more of the larger foundations with some years of experience and with professional staffs and consultants are excluding from their activities the support of current operating budgets, capital funds and, if I may use the term, the more popular areas of clinical research. These foundations are more apt to be concentrating on the truly risk or venture proposals—the pioneering and fundamental undertaking that offer great potentials for opening up new frontiers.

Having said this, one immediately can think of exceptions, such as grants by corporation foundations to the general support of medical colleges in the United States or in their geographic area of major business activity; support by old-line foundations of medical education in underprivileged areas of the world; and grants to help establish well-proven programs which are not yet popular in a given geographic area with the average person, be he taxpayer or private contributor.

The smaller family foundations, whose founder or founders are still living and, if interested in the health field at all are more likely to contribute to capital fund needs, for current operating purposes, and for clinical research on those problems which appeal to them. Their operations are more likely to reflect the personal interests of the donors and to be localized.

The community foundations, administering funds left to them in trust by many different donors frequently are sources of support for clinical research and capital fund needs.

May I take this opportunity to make a few comments on how to approach a foundation, at least one which does have a professional staff?

Contrary to opinions popular in some circles, it isn't necessary

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for the University of Minnesota to establish training programs to coach faculty "in the techniques of foundation milking", to quote John Fisher, writing in a recent issue of *Harpers*. You don't have to "stalk philanthropoids with cap and gown". Most foundation executives are not "morose, twitchy and ulcerous" to again quote Mr. Fisher. On the other hand we are not creatures "running barefoot through a hay loft full of ten dollar bills". We don't look upon you men and women as "vulture-like creatures"—philanthropees who have developed "grant-wrangling" into a "way of life".

I would suggest especially to you students who still can avoid some bad habits, that you remember that often you are trying to describe your project, proposal or need to laymen, as far as your profession is concerned. In the final analysis, your request very likely will have to be understood by laymen.

"The scientific jargon, the technical cant and the professional argot, though familiar and even impressive to the user may have little meaning to others . . . and may actually produce suspicion."

Applications need not be dressed up in fancy folders accompanied by expensive art work. A clear-cut statement of the problem, of how it is to be approached, of the expected outcomes, of the qualifications of the principal persons involved usually is sufficient.

The emergency or "rush" type of application can be overdone. After all, foundations do not know personally the qualifications and reputations of all of their applicants. We are held accountable for the ways in which the funds intrusted to our care are expended. We do need and expect to take reasonable time to analyze applications.

Don't try to by-pass the foundation staff and appeal directly to directors or trustees. Most foundations with staff have operating policies which provide that the Boards will pass on applications only after they have been received and analyzed by staff and are presented with staff recommendations.

Another bit of gratuitous advice is to be regular and frank in making progress reports, if same are conditions of grants. Foundations with any experience at all in supporting new adventures and research are not surprised or shocked by reports of failure. On the other hand, I know of no quicker way of drying up a potential source of future support than to avoid the grantor at all times until you

<sup>1</sup> *Children*—May-June 1955—Dr. Herbert Koepp Baker.

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want more money and to keep him or it at all times in complete darkness as far as your current use of a grant is concerned.

We in the Hill Family Foundation have the highest respect for this Medical School, its faculty and its student body. In our opinion there is no better medical school in the country. We believe that we are getting good returns on our investments in the men of this institution.

Being so close physically to the campus and having contacts with many physicians in private practice who also know the School has been an advantage. We feel that we know the faculty and after all, no research or educational proposal is worth much if it cannot be directed and executed by men of ability. We believe that we enjoy the confidence of the faculty and can discuss with its members, quite frankly, any proposal arising in the broad field of health.

Your profession has an excellent philanthropic foundation which has contributed much to medical education at this University. It has and is continuing to help you as students and faculty. You too can be philanthropists through supporting, to the best of your abilities, your own professional philanthropic foundation. Whether it continues to receive support from non-medical persons and sources will depend, to a large extent, on the value placed upon it by members of the profession, expressed in terms of their financial support of it.

It has been a pleasure as well as an honor for me to meet with you this noon. I hope my remarks have warranted your time and patience.

## Editorial

### Atherosclerosis--Are Its Days Numbered?

Research on atherosclerosis is passing through an extremely interesting period. The current medical literature is full of articles which tend to implicate the diet in the etiology of the disease. I have a feeling that workers in the field suspect that an important "break-through" is imminent. I believe that this atmosphere is created by a train of reasoning which goes about as follows:

Population surveys have now demonstrated fairly clearly that the incidence of atherosclerosis and coronary occlusion is far lower among certain groups than it is in the United States. These same groups have uniformly low concentrations of cholesterol in the blood. They subsist on diets low in fat. It is plausible to assume that the low fat intake causes the low blood cholesterol, which in turn causes the low incidence of atherosclerosis. Furthermore, methods are at hand which make possible the lowering of the blood cholesterol in man. Favorable responses in the blood lipid pattern can be effected by a low fat diet, by the addition of unsaturated vegetable oils to the diet, and by the administration of such agents as plant sterols, estrogens, and heparin. These same regimens have been reported to result in an improvement in the survival rate of persons who have previously had one coronary occlusion. Is it not reasonable to expect that these gains will soon be extended and consolidated, with an immediate sharp reversal of the current upward trend in cardiac mortality?

I do not know whether this optimism is justifiable. I do believe that it is a healthy sign, and that it will serve as a powerful stimulus for further work. At this moment, epidemiological and clinical research in the field is ahead of laboratory research. The survey teams deserve unqualified praise for their persistence in obtaining exact information on the important variables in the various populations studied. It is regrettable that the laboratory has not yet matched this information with equally reliable explanations of the mechanisms involved. We do not really know why the blood cholesterol is elevated when the diet is rich in fats. We do not know why it is depressed by unsaturated fats and sitosterol. We have theories, but they have not been put to the test.

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With interest at the present level, answers to these questions will surely be found. I think that there is a distinct possibility, however, that the clinical problem will be solved before the explanation of the facts as they now stand is nearly complete. A solution along current lines of thinking would require sweeping changes in the habits of our whole population. I have no doubt but that such changes could be brought about, and we would probably be none the worse for them, once the economic dislocations in the food industry had been adjusted. The proponents of unorthodox diets have exercised great restraint in delaying advocacy of their recommendations to the general population. I believe they have done so in the hope that even more effective measures will be forthcoming shortly, possibly requiring less drastic action. I suspect also that they are not entirely unafraid of possible harmful consequences—consequences which might become evident only after prolonged trial on very large groups. However this may be, I doubt if their patience can be expected to last much longer. Either we come up with better answers, or we will be called upon to act on the basis of those now at hand.

The next few years will bring fascinating developments. It is still possible that these will prove that we have jumped too hastily to conclusions, and the fatty bubble will burst. The opposite extreme appears equally likely, that atherosclerosis will be the first of the degenerative diseases to go the way of the bacterial infections.

IVAN D. FRANTZ, JR., M.D.

*George S. Clark Research Professor*  
Department of Medicine.

# Minnesota Medical Foundation

## Board Meeting

A meeting of the Board of Directors of the Minnesota Medical Foundation was held on October 18, 1956. The following officers were re-elected for a term of two years:

PRESIDENT - - - - - DR. WESLEY W. SPINK  
VICE PRESIDENT - - - - - DR. R. S. YLVISAKER  
SECRETARY-TREASURER - - - DR. ROBERT B. HOWARD

Besides the foregoing officers, the following constitute the Board of Directors for 1956-1957:

DR. KARL W. ANDERSON, Minneapolis	MR. M. E. HERZ, Minneapolis
DR. MOSES BARRON, Minneapolis	DR. N. LOGAN LEVEN, St. Paul
DR. LEO G. RIGLER, University Hospitals	DR. FRANCIS W. LYNCH, St. Paul
MRS. FRANK BOWMAN, Minneapolis	MR. MALCOM McDONALD, Hopkins
DR. DONALD J. COWLING, Minneapolis	MR. GERALD T. MULLIN, Minneapolis
DR. HERMAN E. DRILL, Hopkins	DR. RAYMOND D. PRUITT, Mayo Foundation, Rochester
DR. BERNARD HALPER, Hibbing	DR. CHARLES E. REA, St. Paul
MR. A. A. HECKMAN, St. Paul	DR. HAROLD O. PETERSON, St. Paul

### Ex-Officio Members:

DR. HAROLD S. DIEHL, Dean	DR. BYRON B. COCHRANE, President, Minnesota Medical Alumni Association, St. Paul
DR. WILLIAM F. MALONEY, Assistant Dean	MR. RAY AMBERG, Director, University Hospitals
DR. NEAL GAULT, Assistant Dean	

The major activities of the past year were reviewed, and the projects for the coming year were discussed. The plans for the year 1956-1957 will be detailed in forthcoming issues of the Bulletin.

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### Foundation Membership

*All membership dues and contributions are tax-deductible.*

By action of the Board of Trustees in 1955, the following classes of membership have been authorized.

1. Annual Members. Those who contribute \$10 per year.
2. Contributing Members. Those who contribute \$25 per year.
3. Sustaining Members. Those who contribute \$100 annually.
4. Life Members. Those who have contributed \$100, or \$10 annually for 12 years, during the organizational period of the Foundation.
5. Patron Members. Corporations, foundations, other interested groups or individuals who contribute \$1,000 or more to the Foundation.
6. Resident Members. Those who contribute \$3 per year. Open to residents or fellows in approved training programs in any hospital in the United States or Canada, for a period not to exceed three years.
7. Student Members. Those who contribute \$1 per year. Open to medical students while enrolled in the University of Minnesota Medical School and for one year following their graduation.

For further information concerning membership in the Foundation, write to the Secretary-Treasurer, Minnesota Medical Foundation, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14, Minnesota.

## Medical School Activities

### Faculty Dinner

A faculty dinner was held on Tuesday, October 23, at the Coffman Memorial Union. DR. WILLIAM F. MALONEY, *Assistant Dean*, related his recent experiences in Korea, and DR. ANCEL KEYS, *Professor and Director*, Laboratory of Physiological Hygiene, described his recent visit to Russia. DEAN H. S. DIEHL introduced the new and departing faculty members and described the University's future plans regarding the Medical School.

### Building Plans

During the current year many alterations have been undertaken. The remodeling of several of the nursing stations, the total remodeling of the Child Psychiatry unit, and the new additions to Physical Medicine and Rehabilitation are underway.

The Masonic Memorial Hospital and Nursing Home is now in the planning stage. Funds for its erection have been raised through the generosity of the Masonic groups in Minnesota. The unit, to be called the "Masonic Memorial Hospital," is planned to contain from 60 to 80 beds. Building should begin during the current year and will meet a long felt need for the care of advanced cancer. Patients with many other types of long-term illnesses will also be cared for in this unit, however.

As a result of fund raising now in progress \$400,000 has been turned over to the University, and an additional amount of \$300,000 in pledges has been obtained. The total cost of the unit is expected to be approximately one million dollars. The building will be located on the corner of Essex and Harvard, an area where other buildings will undoubtedly be erected in the future.

### Faculty News

A number of distinguished visitors have come to the Medical School campus in recent weeks. Among these have been DR. JAN WALDENSTROM, *Professor*, University Medical Clinic, Malmo, Sweden; DR. F. RIEMANN, *Professor*, Department of Medicine, Institute for Medical Research, University of Istanbul, Turkey; LADY ETHEL M.

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FLOREY, world authority on antibiotics, Oxford, England; DR. LESLIE BRENT, *Department of Zoology*, University College of London, London, England; DR. N. F. MACLAGAN, *Professor*, Department of Chemical Pathology, Westminster Medical School, University of London, London, England; and DR. FREDERICK ROBBINS, *Professor*, Department of Pediatrics, Western Reserve University, Cleveland, Ohio, and Nobel Prize winner in 1954. These visitors gave a number of formal talks and had informal discussion sessions with the faculty and students at the Medical School.

The second annual Irvine McQuarrie Lecture was held on September 26, 1956, at the Mayo Auditorium. Dr. Joseph Stokes, Jr., *William H. Bennett Professor of Pediatrics*, University of Pennsylvania School of Medicine, Philadelphia, spoke on "Immunopheresis — Development and Study of Hyperimmune Sera."

DR. WESLEY W. SPINK, *Professor*, Department of Medicine, was honored by the University of Minnesota Press at a reception at Coffman Memorial Union on the occasion of publication of his new book *The Nature of Brucellosis* which appeared October 15, 1956.

DR. PAUL M. ELLWOOD, *Assistant Medical Director* of the Elizabeth Kenny Foundation, and *Instructor*, Department of Pediatrics, was special adviser to the Argentine Ministry of Health during the devastating poliomyelitis epidemic in that country recently. While in Argentina he participated in the International Symposium on Poliomyelitis in Rio Cuarta.

DR. MAURICE B. VISSCHER, *Professor and Head*, Department of Physiology, and several members of his staff, DOCTORS N. LIFSON, H. M. CAVERT, and GEORGE NAHAS, attended the 20th International Physiological Congress held in Brussels, Belgium, from July 29 to August 5, 1956. Dr. Visscher was reelected General Secretary of the International Union of Physiological Sciences.

DR. DAVID GLICK, *Professor*, Department of Physiological Chemistry, recently returned from a three-month's trip abroad. He worked at the Carlsberg Laboratory in Copenhagen and the Institute for Medical Physics at the Karolinska Institute in Stockholm, Sweden.

DR. ARNOLD LAZAROW, *Professor and Head*, Department of Anatomy, has been elected to the Council of American Diabetes Association for a three-year term ending in June, 1959.

## Postgraduate Education

### Fractures for General Physicians

The University of Minnesota announces a continuation course in Fractures for General Physicians which will be held from November 19 to 21, 1956, at the Center for Continuation Study. Management of the fractures most frequently met in general practice will be stressed. Guest speaker will be DR. ROBERT A. KNIGHT, *Assistant Professor*, Department of Orthopedic Surgery, University of Tennessee College of Medicine, Memphis, Tennessee, and the course will be presented under the direction of DR. LEONARD F. PELTIER, *Acting Head and Associate Professor*, Division of Orthopedic Surgery. The remainder of the faculty will include members of the faculties of the University of Minnesota Medical School and the Mayo Foundation.

### Physical Medicine for Specialists

The University of Minnesota, in conjunction with the Elizabeth Kenny Institute, will present a continuation course in Physical Medicine for Specialists at the Center for Continuation Study from December 6 to 8, 1956. Therapeutic exercise in rehabilitation will be stressed. Guest speakers will include DR. WILLIS C. BEASLEY, *Director*, Biophysics Research Laboratory, Bethesda, Maryland; SIGNE BRUNNSTROM, *Consultant* in Amputee Training, Institute of Physical Medicine and Rehabilitation, New York University Bellevue Medical Center, New York City; DR. EDWARD E. GORDON, *Director*, Department of Physical Medicine, Michael Reese Hospital, Chicago; DR. H. HARRISON CLARKE, *Research Professor*, Physical Education, University of Oregon; and DR. WALTER J. TREANOR, *Chief*, Physical Medicine, St. Mary's Hospital, San Francisco. The course will be presented under the direction of DR. FREDERICK J. KOTTKE, *Professor and Head*, Department of Physical Medicine and Rehabilitation.

### Notice

All continuation courses presented by the University of Minnesota are approved for formal postgraduate credit by the American Academy of General Practice. Attendance certificates will be furnished on request.

Further information concerning the above programs or others to be presented may be obtained by writing to Dr. Robert B. Howard, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.

## Coming Events

- November 5-9 ----- Continuation Course in Radiation Therapy for Radiologists
- November 7 ----- ANNUAL LEO G. RIGLER LECTURE; "Clinical Management of Malignancies of the Ovary"; *Dr. Hans-Ludwig Kottmeier*, Director of the Gynecological Department of Radiumhemmet, Stockholm, Sweden; Mayo Memorial Auditorium; 8:15 P.M.
- November 15 ----- ST. LOUIS PARK MEDICAL CENTER LECTURE; "*Dr. Gerald A. Wrenshall*, Associate Professor, Banting and Best Department of Medical Research, University of Toronto Faculty of Medicine, Toronto, Ontario, Canada; Mayo Memorial Auditorium; 8:00 P.M.
- November 19-21 ----- Continuation Course in Fractures for General Physicians
- November 20 ----- MINNESOTA PATHOLOGICAL SOCIETY MEETING; "The Morphological Responses to Certain of the Sympathomimetic Amines"; *Mr. William M. King*; Owre Amphitheater; 8:00 P.M.
- November 27 ----- SPECIAL LECTURE; "The Role of the Liver and Medical History"; *Dr. C. J. Watson*, Professor and Head, Department of Medicine, University of Minnesota Medical School; Room 100, Mayo Memorial; 8:00 P.M.
- November 29 ----- JACK FRIEDMAN LECTURE; "The Detection of Minimal Disease by Periodic Roentgen Examination"; *Dr. Leo G. Rigler*, Professor and Head, Department of Radiology, University of Minnesota Medical School; Mayo Memorial Auditorium; 8:15 P.M.
- December 6-8 ----- Continuation Course in Physical Medicine for Specialists

## Faculty Publications

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- SOMMERS, BEN: The Value of the Electrocardiogram in Diagnosis. *Minn. Med.*, 38: 640, 1955.
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## WEEKLY CONFERENCES OF GENERAL INTEREST

### *Physicians Welcome*

- Monday, 9:00 to 10:50 A.M. OBSTETRICS AND GYNECOLOGY  
Old Nursery, Station 57  
University Hospitals
- 12:30 to 1:30 P.M. PHYSIOLOGY-  
PHYSIOLOGICAL CHEMISTRY  
214 Millard Hall
- 4:00 to 6:00 P.M. ANESTHESIOLOGY  
Todd Amphitheater,  
University Hospitals
- Tuesday, 12:30 to 1:20 P.M. PATHOLOGY  
104 Jackson Hall
- Wednesday, 7:45 to 9:00 A.M. PEDIATRICS  
McQuarrie Pediatric Library,  
1450 Mayo Memorial
- Friday, 8:00 to 10:00 A.M. NEUROLOGY  
Station 50, University Hospitals
- 9:00 to 10:00 A.M. MEDICINE  
Todd Amphitheater,  
University Hospitals
- 1:30 to 2:30 P.M. DERMATOLOGY  
Eustis Amphitheater,  
University Hospitals
- Saturday, 7:45 to 9:00 A.M. ORTHOPEDICS  
Powell Hall Amphitheater
- 9:15 to 11:30 A.M. SURGERY  
Todd Amphitheater,  
University Hospitals

For detailed information concerning all conferences, seminars and ward rounds at University Hospitals, Ancker Hospital, Minneapolis General Hospital and the Minneapolis Veterans Administration Hospital, write to the Editor of the BULLETIN, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14.