

MEDICAL BULLETIN



IN THIS ISSUE

Cancer of the Pharynx
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CONTENTS

STAFF MEETING REPORT

Cancer of the Pharynx

JEROME A. HILGER, M.D., BRADLEY W. KUSKE, M.D.,
RICHARD R. LUND, M.D., and
FRANK VAN DE WATER, M.D. 402

SPECIAL LECTURE

*Observations on Medical Education,
Here and Abroad*

JOHN Z. BOWERS, M.D., Sc.D. 413

MEDICAL FOUNDATION NEWS 418

STUDENT NEWS 425

ALUMNI NOTES 428

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Staff Meeting Report

Cancer of the Pharynx*

Jerome A. Hilger, M.D.,† Bradley W. Kusske, M.D.,‡
Richard R. Lund, M.D.,§ and Frank W. Van De Water, M.D.¶

CANCER OF THE NASOPHARYNX

Cancer of the nasopharynx constitutes 0.4 per cent of all cancer in occidental countries;¹ it constitutes 5 per cent of cancer in China.² The reason for the difference is not known. In order of frequency, the symptoms of cancer of the nasopharynx are: 1) enlarged gland or glands in the neck; 2) nasal symptoms, obstruction or epistaxis; 3) fifth nerve pain (in clinical analysis of this symptom a routine submental-occipital X-ray view is a useful addition to clinical examination); 4) signs of auditory tubal obstruction; and, 5) paralysis of cranial nerves other than the fifth cranial nerve.



JEROME A. HILGER

In 50 per cent of cancers of the nasopharynx, a metastatic node is the first evidence of disease. In 70 to 80 per cent, metastatic nodes are present at the time of diagnosis. A high posterior cervical triangle node is the most frequent individual site of nodal involvement.⁴

The average patient waits three months after the appearance of first symptoms of cancer of the nasopharynx before consulting a doctor; the correct diagnosis is not made for an additional four months in the average case; and proper therapy is not applied to the average cancer of the nasopharynx until ten months have elapsed from onset of the initial symptoms.⁵ While in 10 to 15 per cent of cases cranial nerve paralysis represents the first symptom of disease, nerve involvement has increased to 20-25 per cent of all cases by the time correct treatment is initiated.²

*This paper was given at the Staff Meeting of the University of Minnesota Hospitals on April 1, 1960.

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Lack of microscopic differentiation of a high percentage of nasopharyngeal cancers has resulted in varied pathologic classifications. Division into squamous cell epitheliomas, lymphoepitheliomas, and lymphosarcomas delineates treatment and prognosis satisfactorily. The above order is that of frequency of occurrence;²² favorability of prognosis, however, is represented in the reverse order. Thirty to 50 per cent of patients with lymphosarcomas can be expected to be alive five years after treatment, while the corresponding survival rate of patients with lymphoepitheliomas is 25 per cent and of squamous cell carcinomas is 15 per cent.^{4,6,22} Cranial nerve involvement, decalcification of the skull base, and presence of metastases are ominous prognostic signs in any given patient.⁶

Since cancer of the nasopharynx cannot be cured by surgical methods, principal dependence is on radiation therapy applied in a wide variety of ways. Since diagnosis centers on the surgical techniques of the otolaryngologist he frequently maintains an interest in the therapy of nasopharyngeal cancers. Treatment may involve surgical exposure of the tumor, as with palatal fenestration⁷ or partial septectomy;⁸ fulguration of the tumor; or the use of intracavitary radiant applicators.^{9,10} The primary tumor that persists to kill the patient, however, is that cell most remote from the cavity and from fulguration and local radiant sources. For more complete blanketing and homogeneous distribution through the tumor zone, external multiple-port irradiation seems most nearly to fulfill the ideal.^{6,11,12} Combinations of intracavitary and external ray sources have no advantage and some disadvantage to deliverance of the total dose by multiple external ports as the primary treatment. The intracavitary techniques are most applicable for tumor persistence when the skin will tolerate no further external irradiation.⁸

Because of skeletal parts that must be traversed by the beam, the increased penetration of the Gamma rays of Cobalt 60 are preferable for external treatment to the radiations of the more universally available 250 kilovolt equipment. Total irradiation dosage with any technique is determined by individual response. Here the real skill of the radiation therapist becomes apparent, and thus the otolaryngologist who serves best is the one who is most critical in his selection of a therapist.

Since 70 to 80 per cent of cancers of the nasopharynx develop cervical nodal metastases, treatment of the anterior and posterior cervical triangles should be included with treatment of the primary tumor. Because more than 30 per cent of tumors also eventually metastasize to the contralateral side, the supra-omohyoid cervical lymphatics on that side should also be included.

If metastasis is already present on this second side, the field should be extended to the clavicle.¹²

The usefulness of neck dissection for persistent metastatic node involvement has to be analyzed in the light of two considerations: 1) the uncertainty of primary control; and 2) the unresectability of the lateral pharyngeal node, the highest node in the chain. A patient in this predicament requires the most thorough application of irradiation to the metastasis before resort to surgical procedures.^{13,14}

A primary tumor that persists, as evidenced by reappearance after a quiet interval, should be attacked by additional irradiation. The technique, with possible modification for variations in skin tolerance, may be carried to a third and a fourth series. Thus, though "cure" and "survival" are not synonymous, the latter is desirable to the limit of a reasonably comfortable life. In one small series the three-year survival rate was increased from 21 per cent to 57 per cent by these persistent tactics.¹⁵

CANCER OF THE OROPHARYNX

The oropharynx is that anatomic segment extending from the arch of the atlas to the hyoid bone. Its anterior limit is the buccopharyngeal sphincter composed of anterior faucial pillars and soft palate, and the base of the tongue to which the sphincter closes. Malignancy in the area occurs principally as: squamous cell carcinoma, lymphoepithelioma, and lymphosarcoma of the lingual base; and squamous cell carcinoma of the linguotonsillar and glossopharyngeal sulcus and vallecula. Malignancy of the posterior oropharyngeal wall and of the lateral wall posterior to the posterior faucial pillar is uncommon.

Cancer of the Soft Palate

Carcinoma of the soft palate is typically squamous and differentiated. True primary involvement, as distinguished from extension of tonsillar cancer, is not common. Metastasis, when it occurs, is to the upper deep cervical nodes. External irradiation therapy may be combined with irradiation through the open mouth. Neck dissection should be done for uncontrolled metastases if the primary tumor appears controlled. The five-year control rate through these treatment methods approximates 25 per cent.

Cancer of the Tonsil

Cancer of the tonsil comprises 2 to 3 per cent of all cancer. Only cancer of the laryngopharynx is more common in the upper respiratory tract. Lymphosarcoma occurs on an average at an earlier age than does lymphoepithelioma or squamous cell carci-

noma. The latter occurs preponderantly (9 to 1) in men. It usually spreads quite rapidly to the soft palate, the anterior pillar, or the linguotonsillar sulcus. Metastasis to the upper deep cervical lymph node is usually present and may even be the outstanding first symptom with an inconspicuous primary lesion. The latter may be palpable in the tonsil when it is not actually visible. A punch biopsy of the suspected area is a sounder approach to diagnosis than is enucleation of the tonsil; the lymphatic flow from the malignant area will increase in direct proportion to the trauma and extent of the biopsy procedure.

As a method of primary treatment, surgery has no place in the treatment of tonsillar cancer. External irradiation is the preferred therapy. Bilateral fields include the immediate upper deep cervical lymphatic area; according to the best assumption, these areas are involved metastatically even when clinical evidence is lacking. The metastatic disease is more uniformly responsive in tonsillar cancer than in other oropharyngeal cancers and is the most important part of the disease; therefore, treatment should be carried to full dosage even though the nodes disappear early in the course of treatment. Neck dissection is indicated for the infrequent case in which control of the primary tumor is accompanied by persistent metastases. The dissection must be carried well above the level of the digastric muscle.

One of the most distressing complications of the irradiation treatment of tonsillar cancer is mandibular radionecrosis, occasionally developing years later. The usual immediate cause is extension of infection from carious teeth and peridental infection into the partially devitalized bone. This condition can be avoided by removing the patient's teeth before therapy is begun.

The presence of metastases in cancer of the tonsil has an important bearing on prognosis. In one series, three-fourths of the 160 patients exhibited metastases; in 11 per cent these were bilateral. The five-year control rate was as follows: with no metastases, 20 per cent; with unilateral metastases, 4 per cent; and with bilateral metastases initially present, zero.¹⁶

The best prognosis in tonsillar cancer is in the lymphosarcomas. The outlook is approximately twice as favorable as with squamous cell cancer—30 to 40 per cent five year control as compared with 15 to 20 per cent. The lymphoepitheliomas lie somewhere between.

Cancer of the Lingual Base

That portion of the tongue posterior to the circumvallate papillae has well-known histologic differences from the mobile

anterior lingual two-thirds. Cancer involves this posterior area only one-fifth as often as it involves the anterior segment. Cancer in the lingual base occurs primarily in men, and squamous cancers far outnumber the lymphoepitheliomata and lymphosarcomata. Upper deep cervical node metastases (at and below the level of the hyoid horn) appear in 80 to 90 per cent of all three types. The spread is bilateral in one-third of patients if the primary lesion is confined to one side of the base, and in two-thirds if the primary tumor extends on both sides of the midline.

External irradiation is easily applied to the primary tumor and necessarily crosses both lateral lymphatic zones. Special applications of radium needles and radon seeds have been advocated,¹⁷ but on theoretical grounds they lack homogeneity and add nothing to total dose beyond what is accomplished through external irradiation. Unfortunately, in the squamous cell cancers, five-year control of the disease is obtainable in fewer than 10 per cent of cases by either method. Again, the results are twice as good with lymphoepithelioma and lymphosarcoma.

Surgical resection of the primary area is not feasible in cancer of the lingual base. Since X-ray sterilization of the primary tumor occurs only infrequently, neck dissection for the uncontrolled metastatic bed is seldom indicated.

Cancer of the Linguotonsillar and Glossopharyngeal Sulcus and Vallecula

Occurring as they do in a natural anatomic fold, these tumors are frequently not detected by the flashlight-tongue blade routine of the casual examiner. (It will be a real accomplishment when the otolaryngologists indoctrinate their medical confrères in the simple routine of mirror examination and forefinger palpation of the oropharyngeal area). Sulcus cancer can be deeply infiltrating and present only a fissure-like ulcer at the surface.^{18,19}

As with all oropharyngeal cancers, the sheltering effect of the mandible and the proximity of the cartilaginous larynx demand careful external irradiation of sulcus and vallecular cancer. Penetrating gamma irradiation, as with Cobalt 60, on theoretical grounds offers distinct advantages.²⁰⁻²² Tumor residuum is treated by some with implantation of radon emanation seeds. Special techniques with radium needles and emanation seeds have their greatest usefulness when further external irradiation for persistent tumor is not possible because it would exceed the limits of skin tolerance.

Surgery is useful for persistent metastasis if the primary tumor is controlled; this combination of circumstances, however, is not common. In addition, the metastases have a way of infiltrating the carotid sheath. When control of the primary tumor is uncertain, the prospect of carotid resection *en bloc* appears discouraging to temperate surgical minds; indeed cancer in this area rarely lends itself to surgery for the primary or the secondary lesion. Sulcus tumors do not have as favorable an outlook for cure as does tonsillar cancer. As a group, however, they offer a better prognosis than do cancers of the lingual base.⁶

CANCER OF THE LARYNGOPHARYNX

The laryngopharynx extends from the hyoid bone to the cervical esophagus. It combines the functions of ingestion and respiration. A carcinoma of the laryngopharynx interferes with function or gives pain as a first symptom. Alteration of function varies with the laryngopharyngeal area primarily involved. The epilaryngeal area is comprised of the arytenoid, aryepiglottic fold, and suprahyoid epiglottis. The pyriform sinus area, both upper and lower, are the lateral gutters of ingestion. The post-cricoid and cricopharyngeal areas comprise the introitus of the cervical esophagus. The posterior and posterolateral pharyngeal walls are rarely involved primarily with carcinoma.

Epilaryngeal cancer often obstructs respiration and interferes with laryngeal phonation to produce first symptoms. Pain may not occur, or if it does, it may be referred to the ear. Cancer of the pyriform sinus usually causes pain which is described as "sore throat" at first and is unvarying in its position. Dysphagia is a late symptom which often develops, however, before the cancer is recognized. Postcricoid and cricopharyngeal cancers obstruct by mass and sphincter muscle infiltration.²⁵

Of the cancers found at and below the cricoid level, 70 per cent occur in women, many originating in patients with longstanding sideropenic dysphagia. By contrast, only 6 per cent of epilaryngeal and 11 per cent of pyriform sinus cancers occur in women.

Laryngopharyngeal cancer is the commonest malignant lesion in the upper respiratory tract, and 90 per cent of these cancers are of the squamous cell type. Since it produces no consistent early symptoms, its early diagnosis probably cannot be helped much by cancer education directed at the layman. Few cases are diagnosed in Stage one, when only the mucosal area is involved. In fact, few are even identified in Stage two, when muscle and deeper tissues are involved with fixation. Among 307 cases, in one study,²⁶ 45 per cent were diagnosed

during Stage three; by this time the disease had spread outside the laryngopharynx, either by: 1) direct extension—upward to the tongue or oropharynx, downward to the esophagus, outward through the thyroid cartilage or into the thyroid gland, or forward into the pre-epiglottic space; or 2) metastatic involvement of homolateral mobile lymph nodes. In this same study 39 per cent of the cancers were not diagnosed until Stage four, which is characterized by involvement of bilateral, contralateral, or fixed metastatic lymph nodes; distant metastases; or simultaneous or consecutive cancers.

The way in which first symptoms are commonly neglected in medical evaluation compounds the misfortune of late symptoms. This is due to the armchair or flashlight diagnostic routine frequently accorded upper respiratory symptoms. Since symptoms in the laryngopharyngeal region are common, not all patients can routinely be sent for special examination. The inadequacy of ordinary examination is evidenced by the lack of examination equipment in the average out-patient facility or medical floor. A cursory examination with a flashlight is usually considered adequate, but indirect mirror examination is necessary to demonstrate the mass or salivary puddling, and finger palpation is often possible. Externally the mass behind the wing of the thyroid cartilage or the widening and fixation of the hyothyroid membrane may be felt. Metastatic cervical nodes may be present. Air contrast X-ray studies during the Valsalva maneuver may be more informative than those afforded by opaque media. Laminograms are useful, and biopsy specimens are not difficult to obtain.

The treatment of laryngopharyngeal cancer has varied with period and place. In the past 20 years neck dissection and laryngopharyngectomy have been used more extensively in this country than earlier. Radiation therapy is still the predominant treatment in England and the Scandinavian countries.

The need for improvement in results is evidenced in Table 1. Lederman's²⁶ five-year results with irradiation therapy are presented in Table 2. There was little difference in Lederman's results in epilaryngeal cancers with fixation as opposed to those with non-fixation (13 per cent : 12 per cent). In epiesophageal lesions the outlook for non-fixed cases was better (13 per cent : 3 per cent).

THE MEDICAL BULLETIN

TABLE 1
LARYNGOPHARYNGEAL CANCER

Country	No. of Cases	Per cent. of 5-year Cures.
England (Cade, 1949)	44	7
Finland (Sipila, 1949)	172	8
France (Coutard-Baclesse, 1949)	425	6
Germany (Glauner, 1949)	112	3
Ireland (Douglas, 1950)	77	6.5
Norway (Rennaes, 1949)	84	7
Sweden (Jacobsson, 1950)	84	14

TABLE 2
RESULTS WITH IRRADIATION

Site	Five-year survivals	
	Number	Per cent
Epilaryngeal	8/45	18%
Pyriform Sinus	11/87	13%
Epiesophageal	8/85	8%
Lateral and posterior walls	2/13	15%

The significance of metastatic *gland* involvement is evidenced by Lederman's figures of five-year survival:

Epilaryngeal	positive nodes	7% : negative	38%
Pyriform sinus	positive nodes	5% : negative	35%
Epiesophageal	positive nodes	0% : negative	15%
Posterior and lateral wall	positive nodes	14% : negative	17%

There were no survivors following retreatment for recurrent cases. The gravity of metastatic *nodal* involvement has been emphasized by others.^{25,27,28}

These admittedly dismal results have led to more frequent surgical resection of the laryngopharynx and the cervical nodes. In a given medical center this has usually meant that all patients eligible for resection have been treated surgically.^{25,27-30} Lack of standard classification, smallness of series, and insufficient duration of the programs make comparative study inaccurate.

The best treatment program with the available methods is just beginning to evolve. At the University Hospitals the choice of treatment depends on the stage of the disease. Stage one involvement (mucosa only) occurs in less than 10 per cent of cases; in these the response to irradiation therapy has been gratifying. Uncontrolled disease or later appearance of metastatic lymph nodes is treated surgically.

Stage two involvement with fixation of underlying tissues, occurring in no more than 10 per cent of cases, is less likely to be controlled by irradiation. But even if irradiation fails, the tissues heal satisfactorily within three to six months after supervoltage therapy.³¹ Therefore, laryngopharyngectomy and neck dissection are reserved for irradiation failures in Stage two. Proving the existence of residual cancer is sometimes quite burdensome for laryngologist and pathologist.

Stage three disease (45 per cent of cases) is characterized by involvement of adjoining structures, or homolateral mobile metastatic gland involvement, or both. Cancers in this stage respond poorly to irradiation therapy. Demonstration of residual cancer is difficult without improper loss of time in observation. Here primary neck dissection and laryngopharyngectomy is preferable.

Stage four disease (40 per cent of cases) presents bilateral, contralateral, or fixed metastatic lymph nodes, or distant metastases or simultaneous cancer elsewhere, or all of these findings. If the disease is confined to the neck, supervoltage irradiation is preferred. If the residual cancer is resectable, surgical treatment follows irradiation. The judicious combination of irradiation and surgery may produce better results than those obtained by irradiation or surgery alone.

THE OCCULT PRIMARY CARCINOMA WITH CERVICAL METASTASIS

An enlarged lymph node in the cervical area is frequently a metastasis from a quiet primary carcinoma. The diagnosis is properly made by identifying the primary lesion, not by removing or sampling the node. If no primary lesion is found by thorough visual and tactile search, it may be revealed by multiple biopsy specimens from the apparently normal nasopharynx. In addition, a submental-occipital view of the skull base should be obtained because an infiltration arising from the lateral nasopharynx can distinctively alter this view, even though nothing suspicious is seen, felt, or obtained by biopsy in the nasopharynx.²² In any case, this sequence properly precedes direct approach to the nodal enlargement. When this direct approach is necessary, needle biopsy offers many

advantages over node excision. A new needle has recently been described for this purpose.²³

CONCLUSIONS

1. Cancer of the pharynx gives few early symptoms. Even with prompt diagnosis it has usually reached an advanced stage by the time it is identified.

2. The excessive lag between the appearance of the first symptoms and the making of the diagnosis is usually due to ineptitude in use of examining techniques.

3. Early metastatic extension occurs so frequently that a cervical node mass is a common first symptom.

4. Diagnostic attack on the obvious metastatic disease is a final tactic in capable hands.

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THE MEDICAL BULLETIN

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Special Lecture

Observations on Medical Education and Medicine, Here and Abroad*

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The progress of medical care and medical education in the United States has been so rapid during recent years that we tend to lose perspective. We often fail to consider or recognize the rapid progress that is being made in other countries. Further, we ignore the fact that medicine in the United States is a synthesis of the strengths of other countries. Our leaders of the past had the wisdom to pluck the first fruits of the systems of other countries as our programs evolved. The advances in medical education in many other countries suggest that we must be receptive to fresh ideas from without as well as within.

The medical practice of ancient Greece was probably more similar to modern medicine than was any other historical system. Meticulous clinical observation was the touchstone of Greek medicine, and the descriptions of disease are as reliable today as in antiquity. A description of an outbreak of mumps at Thasus details accurately the palpatory findings in the swollen parotid glands. Testicular involvement is recognized. Great emphasis was placed on palpation of the pulse, and a wide variety of pulse beats were recognized. Inspection of the urine, sweat, and tears was also considered essential.

Two factors were important in fostering the development of new ideas and attitudes in the physicians of ancient Greece. Since Hellas lay athwart the cultures of Mesopotamia, Phoenicia, Crete, and Egypt, the opportunity for assimilating the prime medical fruits of these areas was unique. A second factor was the existence of the strong city states rather than an overpowering national government. The city states fostered individual creative thought unfettered by the dictates of a central authority.

Hippocrates of Cos, the first of the great Greek physicians, is remembered for a famous oath, but his contributions tran-

*History of Medicine Lecture delivered at the University of Minnesota College of Medical Sciences on January 21, 1960.

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scended this legacy. He was the acknowledged leader of his era. The writings of the physicians of the day were gathered at Alexandria into the Hippocratic Collection (*Corpus Hippocrates*) probably written between 450 and 350 B.C. The aphorisms of Hippocrates further indicate the excellent clinical observation of the period:

"Diarrhea in phthisis is a mortal symptom."

"Spasm supervening upon a wound is fatal." (Tetanus)

"Spinal deformity often coexists with cough and tubercle of the lung."

Diseases were considered to be due to disturbances in the bodily humors and the major therapeutic approach was through diet. Surgery was undertaken as a last resort and included trepanation of the skull and the opening of empyemas.

The next great Greek physician was Galen, who was the first physician to develop a system of medicine based upon dissection and experimentation. His dissections on swine and monkeys resulted in the revision of many theories regarding the circulation and the nervous system. Galen was an experimental physiologist who demonstrated the difference between sensory and motor nerves, the role of the kidney in the production of urine, and the relationship between the medulla and respiration. His approach to medicine was highly systematic. In contrast to the Hippocratic approach, he believed in the use of many drugs, but primarily he emphasized prevention. The writings of Galen, dogmatic and self-laudatory, dominated medicine for centuries.

As we move to the medieval period, we find medicine becoming primarily an activity of the Church. Among the monasteries, which were the seats of medicine, Monte Cassino in Italy—more recently famed as an enemy bastion in World War II—was perhaps most outstanding as a repository for medical writings of the period. Surgery sank to an all time low with the edict of the Council of Tours (1163), *Ecclesia abhorret a sanguine* (The Church does not shed blood). This separation of surgery from medicine, which was to last for 700 years, placed the operative responsibility in the hands of barbers, butchers, quacks, and mountebanks.

Yet a few schools and communities in Italy and southern France nurtured surgery as an essential part of medicine. Salerno, the seat of our first lay medical school, and Bologna as well contributed to the continuity of surgery in an academic setting.

The emancipation of surgery began in France through the gratitude of Louis XIV, who was cured surgically of an anal fistula. The Royal Academy of Surgery was founded in 1731 in

Paris, but full restoration of surgery came only after the French Revolution, in which all traditional philosophies and practices were swept away. The University of Paris emerged as the first great clinical medical school, partly because of the rapid development of hospitals in Paris. The Industrial Revolution brought thousands of peasants from isolated rural life to the squalor of urban congestion. Tuberculosis and typhoid flourished, and facilities for medical care were urgently needed. From Paris, even before the French Revolution, the new emphasis on teaching clinical medicine spread westward to Edinburgh and London and eastward to Berlin and Vienna.

The development of strong medical schools in Britain had a favorable effect on medicine in colonial America. Preparation for a medical career could be obtained through a three-year apprenticeship, which was a poor substitute for the seven-year program in Britain. A second avenue to medicine was to combine an apprenticeship with attendance in the formal medical courses of London and Edinburgh. Fortunately, a few of those who ventured overseas returned to Philadelphia to establish our first department of medicine in 1765. In 1775, there were some three thousand physicians in this country, of whom only four hundred held a medical degree.

The cessation of hostilities in the Revolutionary War started medicine and the medical education on a toboggan slide which lasted for more than one hundred years. As the frontiers spread westward and the population burgeoned, the need for medical care far outgrew the resources of the handful of medical schools that had been established under sound educational principles. The apprentice system expanded rapidly in quantity and declined as rapidly in quality; medical schools fell, and diploma mills sprang up detached from universities as money-making enterprises for busy practitioners. Except in a handful of schools, standards disappeared.

But fortunately, a small group of physicians was concerned about the state of medical education in the United States. Their hopes were crystallized by the opening of the Johns Hopkins Medical School in 1893. Hopkins embodied all that was great in medical education and represented the imagination and intelligence of one of the two architects of modern medical education in our country—William Welch. After his formal education in New York City, Welch went to Germany for training in pathology in Cohnheim's laboratory. He was deeply impressed by the university atmosphere and the scholarly research of the German medical schools. When, on Cohnheim's recommendation, Welch was designated as the first dean at Hopkins,

he established a comparable atmosphere of scholarship and investigation. Welch's influence extended far beyond Hopkins. He was the leading medical educator of his era, and he emphasized the university attitude of scholarship on which we endeavor to develop our medical schools today.

The other architect of modern medical education in the United States was Abraham Flexner. He was not a physician and had never seen a medical school until he undertook his revolutionary survey of medical education for the Carnegie Foundation. Before this time, the Council of Medical Education of the A. M. A., which was charged with the responsibility of overseeing our medical schools, had found it difficult or even impossible to improve medical education from within. The Carnegie Foundation agreed to undertake a survey of medical education in the United States and Canada. Flexner, who had gone to Heidelberg after directing a private high school in Kentucky, had written a provocative treatise on the educational system in the American college. This caught the eye of Henry Pritchard, President of the Carnegie Foundation, who promptly recruited Flexner for the survey. When Flexner opened the door of the first medical school in his survey, he opened a new era in medical education. Today, fifty years after the Flexner survey, another fresh look at our medical schools by an "outsider" might also bring ideas of value.

Flexner visited each of the 154 medical schools in the United States and Canada. His report was scathing in its criticism of proprietary practices, miserable facilities, and lack of educational perspective. Many schools closed, and those that remained moved toward a university relationship and philosophy.

Flexner moved next to surveys of medical education in Britain, France, and Germany. Like Welch, Flexner was deeply impressed by the German medical schools and their research institutes. The university atmosphere, the combination of teaching and research in clinics and laboratories, rigorous entrance requirements and teachers who "were professors, not practicing physicians" were principles which he determined to establish in the United States. The clinical teaching in France and Britain impressed him greatly.

On his return to the States, he became associated with the Rockefeller Foundation and soon took up the cause of medical education. Through funds which he persuaded Mr. Rockefeller to make available (fifty million dollars), he was able to seed a handful of medical schools with opportunities for great advances across the country. His program was uniquely successful, and

THE MEDICAL BULLETIN

a new era was launched. Thus, today, our system of medical education is based primarily upon the university relationship and strong basic science teaching and research of Germany, together with the emphasis on excellent clinical teaching of Britain and France.

We have been particularly fortunate in our opportunity to experiment in medical education. In many countries, the regulations laid on by various accrediting associations have, in a large sense, stifled advances in the organization of education. Now, however, many countries are in a period of change and development for medical education. In Britain, for example, the General Medical Council has set broad requirements to replace the previously exacting demands on curriculum structure. The Association for the Study of Medical Education, embracing all schools in the United Kingdom as well as many in the Commonwealth, will serve as a focus for experiments in medical education. The clinical teaching in the British schools has always been excellent and, combined with the scientific emphasis in the United States, would make an ideal blend. Departments of Social and Preventive Medicine in Britain have contributed greatly to developments in this country.

Sweden has recently completed an extensive reorganization of the curriculum. The effort to develop clinical courses for the basic science departments will be watched with enthusiasm. Japan is studying medical education and endeavoring to develop strong intern and residency training programs. Other countries are also studying medical education. From such studies we may learn a great deal to the benefit of our own programs.

In this essay I have endeavored to touch upon some of the people and developments which have been instrumental in the advancement of medical education in the United States. Our willingness, indeed our desire, continually to review our educational programs is a great source of strength today. Experiments must go forward in our teaching programs as well as our research laboratories.

Medical Foundation News

MEDICAL FOUNDATION OFFERING SCHOLARSHIP AID, SEEKING DONORS

The Minnesota Medical Foundation is now accepting student applications for aid from its 1960 Scholarship Program, and has set its sights on a \$20,000 goal which would provide 40 awards for the coming academic year. The Scholarship Program, which embodied 26 awards in 1959 totalling \$13,250, is the principal area of support presently extended to the University of Minnesota Medical School by the Foundation.

Deadline date for completing and returning applications is May 30, 1960, according to Dr. H. Mead Cavert, chairman of the Foundation's Scholarship Awards Committee. Incoming Freshmen students received announcements by mail and present freshmen, sophomore, and junior medical students have been notified via Medical School channels. More than 50 applications have already been filed.



H. MEAD CAVERT

Scholarship awards are generally \$500 each. The awards are designed to reward outstanding Medical School students who are in financial need. A variety of factors are considered in each application.

The Scholarship Awards committee will meet in mid-July to evaluate the applications and select the winners. The awards will be distributed on Minnesota Medical Foundation Day, September 26, 1960, in ceremonies at the Medical School.

The Foundation's Committee on Fund Raising is tackling the job of gathering contributions for the Scholarship Fund. Gifts are welcomed from individuals, business firms, and organizations. Contributions of \$500 or more can be identified with the donor's name if requested.

Interested contributors should contact the Executive Secretary, Minnesota Medical Foundation, 1342 Mayo Memorial, University of Minnesota, Minneapolis 14, Minn.

Medical School News

MEDICAL SCIENCES DAY NOTED

Medical Sciences Day was observed at the University of Minnesota Medical School April 23, 1960, as 100 students and faculty advisors from twelve colleges in Minnesota visited the Medical Center.

The visitors, most of whom are enrolled in pre-medical or related college courses, spent the day in consultation with Medical School faculty, students, and administration becoming acquainted with all aspects of student life. A tour of the University of Minnesota Hospitals was conducted, and commentaries were presented by physicians connected with various levels of the practice of medicine.

The Medical School's 6th Annual Medical Sciences Day was planned to give prospective medical students a first-hand opportunity to preview a career in Medicine. Faculty-student teams from the Medical School have also visited college campuses and high schools in Minnesota this year disseminating similar information. The Minnesota State Medical Association and state colleges also currently sponsor career festivals and career days featuring Medicine.

DR. DAY WINS SURGERY PRIZE

Dr. Stacey B. Day, Medical Fellow in Surgery, has been named winner of the 1960 Moynihan Prize of the Association of Surgeons of Great Britain and Ireland.

The award consists of a medal and modest cash prize. Competition is open to surgeons from the British Commonwealth and Republic of Ireland.

The prize-winning essay submitted by Dr. Day was titled "The Surgical Treatment of Ischemic Heart Disease: An Experimental and Clinical Study with an Account of the Coronary and Intercoronary Circulation in Man and Animals."

Dr. Day's home is in Nairobi, Kenya. He was there Feb. 3-6 to present a paper before the Annual Conference of the Association of Surgeons of East Africa. He has been a Fellow in Surgery at the University of Minnesota Hospitals since 1956.



STACEY B. DAY

MEDICAL RESEARCH GRANTS GIVEN

The Arthritis and Rheumatism Foundation has granted two University of Minnesota scientists a total of \$53,750 for research programs.



ROBERT A. BRIDGES

Dr. Robert Bridges, Assistant Professor of Pediatrics, received a five year grant of \$46,750 to continue his research into the cause of arthritis.

Dr. Ray D. Peterson, Fellow in Pediatrics, was awarded a first year fellowship of \$7,000 to study aspects of vascular diseases.

The grants were announced by the Minnesota Chapter, Arthritis and Rheumatism Foundation.

DR. HARRY B. ZIMMERMANN, PROFESSOR EMERITUS, DIES

Dr. Harry B. Zimmerman, Professor Emeritus in the Department of Surgery, died March 11, 1960, while vacationing in St. Petersburg, Florida. He was 74 years old and the retired Chief of Staff at Miller Hospital, St. Paul, where a new wing had been named in his honor.

He is survived by his wife, daughter, and son, Dr. Bernard Zimmerman, Professor of Surgery at the University of Minnesota Medical School.

Dr. Zimmerman had been a surgeon for 40 years, and was a founder of the St. Paul, Minn. Surgical Society. He received his medical degree from Columbia University College of Physicians and Surgeons in 1909, and was a Fellow of the American College of Surgeons in addition to being Certified by the American Board of Surgery.

He was first affiliated with the University of Minnesota Medical School in 1912 when he was appointed a Clinical Assistant in Surgery. He retired in 1954 as a Clinical Professor.

Departmental News

RADIOLOGY

Dr. Richard Greenspan, former Assistant Professor of Radiology, was appointed as Head of the Division of Diagnostic Radiology at Yale University School of Medicine. He assumed his new post Jan. 1, 1960, in New Haven, Conn.

Dr. Donn G. Mosser, Head of the Division of Radiation Therapy, was appointed to the Advisory Committee on Radiological Safety for the Minnesota Department of Health. Dr. Maurice B. Visscher, Head of the Department of Physiology, is serving as Chairman.

Dr. Mosser and Dr. B. J. Kennedy, Associate Professor of Medicine, spoke March 22, 1960, at a meeting of the Range Medical Society in Hibbing, Minn. Their papers were concerned with the current status of roentgen therapy and the chemotherapy of cancer.



DONN G. MOSSER

PSYCHIATRY & NEUROLOGY



LEO KANNER

Dr. Leo Kanner, Visiting Professor of Psychiatry at the University of Minnesota, and Emeritus Professor of Child Psychiatry at Johns Hopkins University, began a 12-week educational television discussion series March 28, 1960, on KTCA-TV, Minneapolis-St. Paul. The topic is "Child Psychiatry: Past and Present." Programs are presented at 9 P.M. each Monday. Dr. Kanner has also been named recipient of the first annual award of the National Organization for Mentally Ill Children, Inc. He will receive the award May 17 in New York

City for "significant contributions to understanding of childhood mental illness."

NEUROSURGERY

Dr. Lyle A. French, Professor and Director of the Division, presented a paper on "Hemispherectomy for Seizures" March 29, 1960 in the University of California at Los Angeles Medical School. He spoke on "Hypothermia" at the Neurosurgical Society of America meeting at Pebble Beach, California, on

THE MEDICAL BULLETIN

March 31; served as Visiting Professor of Neurosurgery at the University of California April 4-15, 1960 in San Francisco; and spoke on "The Treatment of Glioblastoma Multiforme and Medulloblastoma with Surgery and Irradiation" April 14 at the Harvey Cushing Society meeting in San Francisco.

MEDICINE

Dr. Wesley W. Spink, Professor, lectured on "Newer Developments in Antibiotic Therapy" March 22, 1960 at the annual meeting of the American Academy of General Practice in Philadelphia, Pa.



W. W. SPINK

He spoke on "The Pathogenesis and Management of Shock Due to Infection" April 5, 1960 at the American College of Physicians meeting in San Francisco, and gave the annual James Waring Lecture April 11, 1960 at the University of Colorado Medical School on the topic "Brucellosis: An Adventure in Clinical Investigation."

Dr. Spink was elected to the Board of Regents of the American College of Physicians and was named First Vice President of the Hennepin County (Minneapolis) Medical Society.

Dr. Richard P. Doe, Instructor who is assigned to the Veterans Administration Hospital, recently received a U. S. Public Health Service grant of \$2,300 for research. Title of his project is "Clinical Studies on Ultrafiltrable Cortisol."

LABORATORY OF PHYSIOLOGICAL HYGIENE

Dr. Ancel Keys, Professor and Director, left March 16, 1960, for Europe where he is consulting with European insurance companies regarding the feasibility of obtaining serum cholesterol values on insurance applications. This parallels a U.S. program which may open the way toward comparing the length of life with the serum cholesterol concentration in large numbers of people. Dr. Keys is spending nine weeks in Italy this Spring supervising field work on the epidemiology of coronary heart disease.



ANCEL KEYS

UNIVERSITY HOSPITALS

Florence Julian, Director of Nursing Services, and Professor in the School of Nursing, left April 18, 1960, to spend a year as nursing consultant at Seoul National University School of Nursing in Korea. Following this assignment under the faculty exchange program of SNU and the University of Minnesota Medical School, she will attend a meeting of the International Council of Nurses in Australia in 1961.

During Miss Julian's absence, Miss Betty Pederson, now Assistant Director of Nursing Services, will become Acting Director; Miss Mary Ann McIntyre, former supervisor of Nursing at Variety Club Heart Hospital, will become Assistant Director.

Mr. Jack Fecteau, who was a Resident in Hospital Administration and administrative assistant of the Hospitals Administrative Staff this year, resigned March 4, 1960, to become Administrator of White Community Hospital, Aurora, Minnesota.

PHYSICAL MEDICINE AND REHABILITATION

Dr. Frederic J. Kottke, Professor and Head, spoke to Sigma Theta Tau, nursing honor society, on March 24, 1960, on the topic "Possibilities for Research."

He also lectured on "Emotions and Coronary Heart Disease" March 7, 1960, before the regular meeting of the Hennepin County Medical Society.

Dr. William G. Kubicek, Professor, addressed the Lac Qui Parle County Alumni Club in Dawson, Minn., February 29, 1960. He discussed medical research at the University of Minnesota and problems relating to space medicine and space flight.

New members of the department include Patricia A. Dion, RPT; Lionell Greenberg, Laboratory Assistant; and Marilyn K. Daly, Secretary.

UNIVERSITY HEALTH SERVICE

Dr. Ruth E. Boynton, Director, was recently reappointed to a three year term on the Minnesota State Board of Health. Her service on the Board has been continuous since 1939.

Dr. Benjamin R. Reiter, surgeon in the Health Service, presented a paper on "Surgery in College Health Services" April 28, 1960, at the 38th annual meeting of the American College Health Association in Toronto, Canada.



F. J. KOTTKE

PEDIATRICS

Dr. John A. Anderson, Professor and Head, addressed the national White House Conference on Children and Youth in Washington, D.C. during March.

PHYSIOLOGY

Dr. Lerner B. Hinshaw, Assistant Professor, has won a \$33,000 grant from the U. S. Public Health Service for research in high blood pressure. The grant was effective January 1, 1960, and will cover a three-year period. Title of the project is "Hypertension and its Relationship to Renal Hemodynamics."

Mr. John Trank, Instructor, has accepted a position for the next academic year at McGill University, Montreal, Canada, in the Departments of Physiology and Surgery.

LECTURES

Dr. Keith Taylor of the Department of Medicine, Cambridge University, England, lectured April 4, 1960, at the Medical School under sponsorship of the Department of Pathology. His topic was "Etiological Factors of Pernicious Anemia."

Dr. Nils Oker-Blom of the Institute of Virology, University of Helsinki, lectured March 21, 1960 on "Studies of Russian Spring Summer Encephalitis Viruses in Finland." His address was sponsored by the Department of Bacteriology.

Dr. Frank T. Perkins of London, England, spoke on "Response of Infants to Poliomyelitis Vaccine" March 22, 1960. Dr. Perkins is associated with the Medical Research Council Laboratories of Hampstead, London. He was sponsored by the Department of Bacteriology.

Dr. Alexander Marble of the Harvard Medical School lectured April 1, 1960, under sponsorship of the Twin Cities Diabetes Association. Dr. Marble's topic was "Vascular Disease in the Diabetic: Nature and Pathogenesis." He is a past president of the American Diabetes Association.

Dr. Edward Allen Boyden, of Seattle, Washington, delivered a *History of Medicine* lecture April 7, 1960, entitled "Astley Cooper and the Anatomy of His Time." He is A Research Professor in the Department of Anatomy, University of Washington School of Medicine. His lecture was jointly sponsored by Alpha Omega Alpha Honorary Medical Fraternity, and the Department of Surgery.

Student News

HEAVY DEMANDS ON EMERGENCY LOAN FUNDS

Medical students at the University of Minnesota borrowed \$3,065.00 during the first months of the Emergency Loan Fund Program administered by the Minnesota Medical Foundation. Twenty-three loans were made since the Minnesota State Medical Association helped set up the program Nov. 11, 1959 with a grant of \$2,000.

Loans have averaged \$133.00, and have been given for a variety of critical purposes such as fee payments, family needs, school needs, etc. A large majority of the borrowers have been married students.

As pleasing as the broad use made of the money has been the prompt repayment schedules adhered to by borrowers. There were no delinquent accounts reported during the first audit period which ended March 31, 1960.

Main feature of the Emergency Loan Fund is the interest-free use of up to \$200 for a period of 90 days. Students are finding the fund a handy, dignified means of meeting unexpected financial emergencies.

"In addition, they are learning some simple lessons about managing their finances," said Eivind Hoff, Executive Secretary of the Medical Foundation.

The University's Bureau of Loans and Scholarships has praised the program as a valuable supplement to the University's resources for aiding students.

Alpha Omega Alpha, honorary medical fraternity, will present Dr. Joseph C. Hinsey, Director of Cornell Medical Center, New York City, May 4, 1960, in a public lecture titled "Ingredients in Medical Research—The Story of a Method."

Dr. Hinsey's talk will be at 8 p.m. in the Mayo Auditorium and is open to the public. It will follow AOA's annual dinner at 6:30 p.m. when new members will be initiated and officers elected.

The Interfraternity Council of the Medical School will again sponsor its annual Six O'Clock banquet on May 26, 1960, in Coffman Memorial Union at 6 p.m. The dinner will be followed by a dance. All medical students, wives, and faculty are in-

THE MEDICAL BULLETIN

vited. Loren Anderson, Medical School Senior from Ponsford, Minn., is President of the Council.

The IF Council also sponsored a dance February 27, 1960, at the Radisson Hotel, Minneapolis. About 245 medical students, wives, and guests attended.

Progress Report

Class of 1959 Scholarship Fund

RECENT CONTRIBUTORS

Carl Christenson
Michael W. Davis
David K. Drill
Kenneth Halverson
Leslie H. Hoium
David J. Nielsen
W. R. Schmalhorst
John F. Zachman

Total Contributions to Date	\$69.00
Number of Contributors	49
Number of Class Members	113
Percent of Participation	44%
Current Year's Goal	\$125.00
*Objective by 1963	\$500.00

*To underwrite a "Class of 1959 Scholarship" for a meritorious medical student in September 1963.

ALUMNI DEATHS

Dr. Tolbert Watson (Med. '08) died July 30, 1959 in Sunnyvale, Calif. He was 79 years old.

Dr. Harold P. Proff, (Med. '41) died January 3, 1960 in Olympia, Washington.

Dr. Jesse Sanford Potekin (Med. '31) died January 8, 1960, in Woodland Hills, Calif. He was 54 years old, a member of the American Medical Association, and veteran of World War II.

Dr. Malcolm E. Hoffman (Med. '32) died January 24, 1960 in Tijuana, Mexico. He was 55 years old.

Dr. Eskil Erickson (Med. '30) died Feb. 19, 1960 in Fargo, N.D. A physician and surgeon, he had practiced in Halstad, Minn. since 1931.

Dr. Oscar T. Benson (Med. '05) died March 7, 1960 in Hollywood, Calif. He was 80 years old and had practiced in Bismarck and Glen Ullin, North Dakota for more than 50 years.

Memorial Gifts

Recent memorial contributions to the Minnesota Medical Foundation have been received in memory of:

Dr. Harry B. Zimmerman
St. Paul, Minn.

Mr. James Coffield
Wilmette, Ill.

Mrs. John B. Oman, III
Nashville, Tenn.

Mr. John L. Garrity
St. Petersburg Beach, Fla.

Memorial gifts are a practical means of honoring the memory of a friend or loved one while providing needed assistance for the University of Minnesota Medical School. Dignified acknowledgments are made by the Foundation to both the donor and to the family of the deceased.

Alumni Notes

◆ 1920

Lawrence F. Richdorf, who has been a practicing pediatrician in Minneapolis more than 40 years, was honored recently at a gathering of his friends and colleagues in medicine. His admirers named him a V.O.P. (Venerable Old Pediatrician), an honor limited to men over 65 years of age who have practiced more than 25 years. Dr. Richdorf was the first man at the Medical School to receive a Ph.D. in Pediatrics, and is credited with establishing the American Legion Heart Research Professorship at the University.

◆ 1923

Arnold O. Swenson, Duluth, was elected Chief of Staff of St. Mary's Hospital, Duluth. Chief-Elect is **Dr. R. H. LaBree**, Duluth, (Med. '34).

◆ 1929

Gustave E. Ledfors is an instructor in Obstetrics and Gynecology at the College of Medical Evangelists, Los Angeles, Calif.

Arthur C. Skjold, Minneapolis surgeon, recently was named a "Town Topper" by the Minneapolis Star for his years of service on the medical committee of the annual Shrine Circus. He is Chief of Staff at Fairview Hospital, Minneapolis.

◆ 1932

Jan H. Tillisch, head of a Section of Medicine in the Mayo Clinic, Rochester, Minn., served as chairman of the Board of Visitors of the Air University of the U. S. Air Force at Maxwell Air Force Base, Alabama Feb. 29-March 5. The Board is composed of outstanding educators and business executives of the nation who meet to evaluate the program of the Air University, the professional education center of the Air Force.

◆ 1933

Clayton T. Beechman spoke at a panel discussion on Endometriosis at the 1960 meetings of the American College of Surgeons during March in Boston, Mass. He is a Fellow in the College and lives in Philadelphia, Pa., where he is a Clinical Professor of Gynecology and Obstetrics, and Chief of the Gynecologic Tumor Service at Temple University School of Medicine.

THE MEDICAL BULLETIN

◆ 1935

Giles A. Koelsche, Consultant in Medicine in the Mayo Clinic and Assistant Professor of Medicine in the Mayo Foundation, Graduate School, University of Minnesota, was installed in March as President of the American College of Allergists. The College was founded in 1942 to stimulate research and the advancement of knowledge of the allergic diseases. It has about 1,000 members among physicians in the United States.

◆ 1937

Hendrik J. Svien, of the Section on Neurosurgery of the Mayo Clinic, Rochester, Minn., has been elected an honorary member of the St. Olaf (Minn.) College chapter of Phi Beta Kappa, national honor society for scholarship. He is a native of Dennison, Minn., and received his pre-medical education at St. Olaf from 1928 to 1932.

◆ 1938

Martin S. Buehler has been practicing Internal Medicine and Cardiology in Dallas, Texas, since the end of World War II, and is a retired Captain in the U. S. Naval Reserve Medical Corps. He is a recent president of the Texas Academy of Internal Medicine, which he helped organize. Dr. Buehler is also Clinical Assistant Professor in Internal Medicine at the Southwestern Medical School, University of Texas, and is an Attending Physician in Medicine at the Veterans Administration Hospital in Dallas. He was decorated for military service by the Army, Navy, and the Philippine Government.

◆ 1939

William E. Proffitt, Jr., of Minneapolis, served as official tournament physician for the 1960 Minnesota State High School Basketball Tournament March 24-26.

◆ 1941

W. Compere Basom, orthopedic surgeon in El Paso, Texas, was recently elected First Vice President of the American Fracture Association. He has served on the Association's Board of Governors for the past five years.

◆ 1943

Roberta G. Rice is a Clinical Professor of Surgery at Yonsei and Ewha University Medical Schools in Seoul, Korea. Her address is Dr. Roberta G. Rice, Methodist Mission, International P.O. Box 1182, Seoul, Korea.

THE MEDICAL BULLETIN

◆ 1943

Richard W. Anderson, Associate Professor of Psychiatry, University of Minnesota Medical School, gave a lecture on Mental Health before the Minneapolis Council of Jewish Women March 25, 1960. Title of his talk was "Is There a Father in the House."

◆ 1946

George E. Moore, Professor of Biology and Associate Professor of Surgery at the Roswell Park Memorial Institute, Buffalo, New York, lectured at the University of Minnesota Medical School Feb. 10, 1960 on the "Study of the Spread of Cancer Cells." He was awarded a medal for outstanding scientific achievement February 22 by the Buffalo Club, Buffalo, N. Y.

◆ 1947

J. Earle Estes, Jr., has resigned from the Section of Medicine at the Mayo Clinic after 12 years to enter private practice in Phoenix, Arizona. Dr. Estes was also an Assistant Professor of Medicine in the Mayo Foundation Graduate School, University of Minnesota. He is married and has three children.

Benjamin P. Owens of Hibbing has been elected 1960 President of the Range Medical Society. **Dr. Robert T. Kelly**, Nashwauk, (Med. '52) was elected Vice President, and **Dr. Frederic L. Mast**, Chisholm (Med. '54) was chosen Secretary-Treasurer. The Range Medical Society now has 108 members.

◆ 1949

Major Alexander M. Boysen is now on duty with the U. S. Army at the Second General Hospital in Landstuhl, Germany. He on the surgical staff and expects to be at his present post for two to three years. His address is Maj. Alexander M. Boysen, M.C., 0-59612, Second General Hospital, APO 180, New York, New York.

◆ 1957

William D. Gaunt is an Assistant Professor of Medicine at the School of Medicine, University of Missouri, Columbia, Mo. He was married in 1958 to Miss Eleanor Van Dyke of Smithton, Mo.

READERSHIP OPINION SURVEY

Dear Reader:

The Editors of the MEDICAL BULLETIN are eager to know if this publication is serving you in the best possible way. We are depending on you to help us find out. Will you please detach this page, mark your answers, sign if you wish, and mail back? Thank you!

1. Do you receive the University of Minnesota MEDICAL BULLETIN?

Yes _____ No _____

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Regularly _____ Occasionally _____ Never _____

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More _____ Less _____ Scientific Papers

More _____ Less _____ Alumni & General News

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MINNESOTA MEDICAL FOUNDATION

1342 Mayo Memorial Building

University of Minnesota

Minneapolis 14, Minnesota

Coming Events

University of Minnesota Medical School

COURSES IN CONTINUATION MEDICAL EDUCATION DURING 1960

- April 21-23 Otolaryngology for General Physicians
- May 2-6 Intermediate Electrocardiography for General
Physicians and Specialists
- May 9-11 Cardiovascular Diseases for General Physicians
and Specialists
- May 16-18 Psychiatry for General Physicians
- May 23-27 Proctology for General Physicians
- Continuous in 1960 Cancer Detection for General Physicians

Courses are held at the Center for Continuation Study or at the Mayo Memorial Auditorium on the campus of the University of Minnesota. Usual tuition fees are \$10 for a one-day course, \$40 for a three-day course, and \$65 for a one-week course. These are subject to change under certain circumstances.

Register early. For further information write to:

DIRECTOR
DEPT. OF CONTINUATION MEDICAL EDUCATION
1342 Mayo Memorial — University of Minnesota
Minneapolis 14, Minnesota

A Word About Memorial Gifts

Many people have adopted the appropriate custom of sending memorial gifts to worthy organizations in time of bereavement or other occasion. Such funds have lent significant strength to the fight against the major diseases known to Americans.

The Minnesota Medical Foundation welcomes your memorial gifts when an appropriate occasion arises. Memorial gifts serve the living and pay thoughtful tribute to the memory of a friend, associate, or relative. The Foundation will acknowledge gifts with suitable cards mailed promptly to both the donor and the family of the deceased. The gift will help finance the Foundation's program of support for the Medical School of the University of Minnesota.

Special memorial funds may be created within the Foundation on request to serve as a permanent repository for continuing contributions.

When making memorial gifts to the Foundation, include the names and addresses of the deceased, next of kin, and the donor.

MINNESOTA MEDICAL FOUNDATION
1342 Mayo Memorial
University of Minnesota
Minneapolis 14, Minnesota