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IN THIS ISSUE:

Porphyria Cutanea Tarda
Nursing Administration

University of Minnesota Medical Bulletin

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Published semi-monthly from October 15 to June 15 at Minneapolis, Minnesota.

Staff Meeting Report

Porphyria Cutanea Tarda and Photosensitivity*

Nadine G. Smith, M.D.¹

Watson has recognized two main classes of porphyria: erythropoietic and hepatic. Subgroups of the hepatic disease are (1) intermittent acute, (2) cutanea tarda, (3) mixed, and (4) latent.

Erythropoietic, cutanea tarda, and mixed hepatic porphyria have been considered photosensitive diseases. This paper deals only with the two latter conditions.

The mechanism of formation of cutaneous lesions in porphyria cutanea tarda needs further study, and the most logical approach is reassessment of photosensitivity. This was recently done in 28 cases from the University of Minnesota Hospitals and the Minneapolis Veterans Hospital.

As reported by other investigators, the influence of porphyrins is not easily demonstrated but is by no means excluded. One or more of these substances may be active in human disease through various complex mechanisms not readily disclosed by experiment.

An association between sunlight sensitivity and excessive excretion of urinary porphyrins was first suggested in 1898. A few years later, hematoporphyrin was shown to be photosensitizing and was thought to be a factor in hydra.

Most attempts to reproduce the lesions of porphyria cutanea tarda have yielded equivocal results, but the importance of actinic rays should not be overlooked. The distribution of lesions, seasonal incidence, and association with natural exposure to sunlight are at least suggestive. No simple photodynamic relation has been discovered, but sunlight could make the skin more sensitive to trauma and to subsequent ultraviolet irradiation.

Photodynamic action is defined as the sensitization of a biologic system to light by a substance which serves as a light absorber for photochemical reactions in which molecular oxygen takes part. Only

*This is an abstract of a report given at the Staff Meeting of the University of Minnesota Hospitals on March 9, 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, Minn.

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wave lengths which are absorbed by various compounds in the skin may produce photochemical reactions.

A primary objective in studying photosensitivity is to determine the spectral bands which cause reactions. This information may help explain the disorder by correlating the action spectra (or the wave lengths responsible for effects) with the absorption spectra. Such data may also be used in protecting the skin by topical agents.

All studies relating photosensitivity to porphyria have concentrated on wave lengths around 4,000 Angström units, where light absorption by porphyrin is maximal. Failure to reproduce lesions at these wave lengths does not exclude the role of porphyrins. The porphyrin-protein complex which absorbs below 3,000 Å may be responsible for the photo-oxidation phenomena. Most radiation effects, occur in this range, and, at 3,000 Å, penetration through the skin is limited to 0.1 mm. The principal injury is in the epidermis and is characterized by erythema. Most changes below 3,300 Å are destructive.

Normal skin will not react to radiation wave lengths above 3,300 Å, and below 3,200 Å, waves do not penetrate window glass. In the range of 4,500 Å, however, 30% of radiation may reach the papillary layer of the dermis. As some people with porphyria have reacted to radiation through plate glass, the range around 4,000 Å may indeed be implicated, as originally believed.

Finally, the longer waves should reach the papillary layer, whereas those around 2,900 Å should not. The bulla most typical of porphyria cutanea tarda is usually located just under the epidermis. If the disease is actually photodynamic, the action spectrum is still not determined.

Previous work with hematoporphyrin is useful, though not directly applicable to problems of porphyria cutanea tarda. Action spectra and absorption spectra were correlated by intracutaneous injection in man in 1937. Results showed that photosensitivity is produced by wave lengths between 3,000 and 4,500 Å and, to a lesser extent, up to 6,500 Å. Exposure of the area to light is followed by a pruritic wheal and flare.

Several recent reports cite efforts to reproduce cutanea tarda lesions with various sources of illumination. Vesicles appearing in a farmer after work in summer sun were not evoked by a carbon arc lamp. In some instances, the only relation to sunlight was improvement of skin changes in winter.

However, a case was precipitated by severe sunburn. During

attacks red fluorescence in serum was due mainly to protoporphyrin. Subsequently, lesions developed after exposure to direct sun for twenty minutes through window glass and tannic acid applied in vanishing cream. Protective creams usually shield only the rays from 2,900 to 3,900 Å. Carbon arc rays from 3,500 to 4,100 Å caused the same reaction as sunlight.

In a mixed type of case, abdominal colic developed instead of skin reaction to the carbon lamp.

Several observers have noted lesions after sunburn, and most cases begin in spring or early summer. Skin and hair often darken for years before actual onset of disease. Slight trauma may be a factor, for instance, in causing blisters, and at times reactions are exaggerated by pressure combined with light.

Fluorescence of gross lesions and of fluid from bullae seems to vary from case to case. Porphyrins glow red under Wood's light at a physiologic pH. One investigator has reported that under the Wood's light lesions may be purple. Greenish blue fluorescence confined to the epidermis has also been reported.

Of the 28 cases recently studied, 22 were porphyria cutanea tarda and 6 were the mixed hepatic type; 21 patients were males and 7 were females. Many were habitually exposed to sunlight or cutaneous trauma. The majority improved during the winter, but only a few had complete remissions.

The problem was approached in two ways. First, the carbon arc lamp was used to compare photosensitivity in porphyria cutanea tarda with effects in subjects given intravenous hematoporphyrin and in controls normally responsive to sunlight. If photosensitivity could be shown, the next goal would be to delimit the action spectra, first in broad bands by the carbon arc lamp with filters and later by the monochromator.

The second phase depended on the assumption that a photodynamic substance in the skin would probably be uroporphyrin, which might be demonstrated by gross inspection of lesions with the Wood's light and by fluorescence microscopy.

To discover clinical factors in photosensitivity, all charts were reviewed, all available subjects were examined, and follow-up form letters were sent in all instances. Possibilities considered were occupation, seasonal incidence, site of lesions, pigmentation, the subject's evaluation, and the course.

In brief, clinical data indicated that sunlight might be a factor

in producing cutaneous lesions but was not the only cause. The majority of subjects were affected just on exposed parts. Sensitivity to the carbon lamp and to sunlight was apparent in one instance. No porphyrins have been shown in fluid of bullae.

Photosensitivity was tested in seven subjects. Hematoporphyrin was injected by vein in two individuals, 14.5 gm. in 30 days and 1 gm. in two days, respectively, before exposure to light. Carbon rays were directed to a 1-in. square on the back, as for one control. A third and a fourth subject had active porphyria cutanea tarda and were deeply pigmented. Apparently one was sensitive to sunlight and the other only to trauma. Irradiation was applied on 1-in. squares on the arms, and similarly for two other controls.

Minimal erythematous reactions after 24 hours were graded 1 plus; moderate erythema, 2 plus; erythema with edema, 3 plus; and additional vesiculation, 4 plus.

The two persons who received hematoporphyrin before irradiation showed increased sensitivity to light throughout a broad spectrum but especially around 4,000 Å. Reactivity was about three times as intense with the larger dosage.

The two patients with porphyria cutanea tarda had increased tolerance to light as compared with two controls. Trauma was employed with light in one instance by snapping a flexible metal band against the irradiated area but no lesions resulted.

Tissues previously obtained in 10 cases of porphyria cutanea tarda were recut, treated with acid or alkali, and examined; two fresh frozen sections were also prepared. No red porphyrin fluorescence was observed in old or new sections, though all had blue-green fluorescences in the epidermis. Biopsy after injection of hematoporphyrin indicated that porphyrins localize primarily in the basal layer of the skin and in adjacent overlying cells.

A purple hue was seen under the Wood's light on the hands of one person with porphyria cutanea tarda. More patients should be examined and compared with darkly pigmented controls.

Staff Meeting Report

Studies in Nursing Service Administration*

Isabel M. Harris, M.Ed.,¹ Doris I. Miller, M.Ed.,²
and Helen F. Watters, M.N.A.³

This report is presented in two parts. The first deals with the progress of the development of the University of Minnesota project in nursing service administration sponsored by the W. K. Kellogg Foundation; the second is a report of a study of staff development.

PART I. NURSING SERVICE ADMINISTRATION PROGRAMS

The University of Minnesota School of Nursing prepares young men and women for the practice of professional and practical nursing and for supervisory, teaching, and administrative posts in the various fields of nursing.

Up to the last few years, most professional nurses were engaged in private practice and the need for knowledges and skills basic to administration was not keenly felt. The dynamic nature of medical practice and the increasing complexity of hospitals, especially since World War II, have made imperative the acquisition of these knowledges and skills by nurses in responsible administrative positions.

Despite amazing progress, nursing service administration only recently has been recognized as a professional specialty. Although individual courses in nursing administration have long been taught and the need for improved instruction has been acknowledged, little intensive consideration has been given to ways in which the science of administration could be used to improve the conduct of total nursing service.

W. K. Kellogg Foundation Study

An historic step was taken in 1950 when the W. K. Kellogg Foundation provided funds for an exploratory study of nursing service

*This is an abstract of a report given at the University of Minnesota Hospitals on March 16, 1956. A copy of the complete report, including references and graphs, may be obtained by writing to the Editor, UNIVERSITY OF MINNESOTA MEDICAL BULLETIN, 1342 Mayo Memorial, Minneapolis 14, Minn.

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administration. Under the direction of Herman S. Finer, D.Sc., Professor of Political Science at the University of Chicago, a seminar of nurse administrators and teachers of nursing worked on the problem from January 15 to June 8, 1950. During this period, two conferences were organized. The first set up the research project and seminar; the second was for discussion of interim reports prepared by seminar members. The work of the seminar resulted in publication of a report that was a real contribution to the field.

In 1951, the W. K. Kellogg Foundation initiated a five-year project and committed one million dollars to the development of nursing service administration programs in 14 universities: Boston University, University of Chicago, University of Colorado, State University of Iowa, University of Minnesota, University of Mississippi, University of Pittsburgh, Syracuse University, Teacher's College of Columbia University, University of Texas, University of Washington, Wayne University, Western Reserve University, and St. Louis University.

From 1951 to 1954, approximately 200 students completed graduate programs in nursing service administration. Since 1951, more than 150,000 nurses have benefited from regional in-service education activities provided by these universities. During the past four years, the faculties of these universities have made a concerted effort to evaluate, revise, and improve educational programs for nurses preparing for administrative positions.

Some graduates have emphasized the need for more field experience in administration. This is the general weakness of most programs at the graduate level and is due in part to the lack of prepared persons holding administrative positions in universities and related hospitals and in part to the short period available for field experience. To compensate for this deficiency, several universities have established or are considering residency programs.

Development of Programs at the University of Minnesota

A study of nursing needs in Minnesota in 1949 revealed that, of 5,879 nurses answering the questionnaire, only 710 had had special preparation or experience in areas other than the clinical specialties. Of the 710, many had taken one or more of our individual courses.

With financial support from the W. K. Kellogg Foundation, the School of Nursing developed a project to meet nursing service administration needs within the state. This project has four main aspects: (1) a program at the master's level to prepare directors of nursing service; (2) a program at the baccalaureate level to prepare

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team leaders, head nurses, and supervisors; (3) in-service education for hospital nurses; and (4) integration of administrative principles in the basic degree program.

The nursing service administration program leading to a master's degree was opened to students in 1951. The program is endorsed by the Graduate School, and the degree is recommended by the School of Nursing and given by the College of Medical Sciences. The aim is to prepare professional nurses for positions as directors, assistant directors, and supervisors. The program includes supervised observation and field practice. The central group of courses related to nursing service administration is complemented with instruction in public, business, and hospital administration. Emphasis is placed on the development of understanding of human behavior and skill in dealing with people. A total of 33 nurses have enrolled in the program. The greatest factor limiting enrollment appears to be a financial one. In most instances, remuneration for nursing is not adequate to provide funds for advanced education. Also, some institutions seem hesitant to release personnel for such education.

The bachelor of science program in nursing administration was initiated in 1955. A survey revealed that, of the 218 hospitals in Minnesota, about one-half have less than 100 beds. Many persons, upon receiving the three-year diploma in nursing, are employed in administrative capacities by these hospitals. The baccalaureate program is intended to prepare these nurses for positions such as team leader, head nurse, or supervisor, the level of preparation depending upon the experience and ability of the nurse.

Integration of administrative concepts in the basic professional nursing program has been directed toward identifying opportunities for learning administrative knowledges and skills. From this study, it has been possible to assist the students to develop further concepts and skills through instruction and supervised experience as a team leader and head nurse.

Continuing education services to nurses in Minnesota have been of three major types: (1) extension classes, (2) institutes at the Center for Continuation Study, and (3) consultations. The faculty renders consultations regarding nursing service administration upon request to individuals and to agencies in Minnesota and occasionally in other states.

PART II. STUDY OF STAFF DEVELOPMENT

Ability to plan and direct in-service education programs in hospitals is desired for graduates of the master's program. Because of the need

for research in this area, we are attempting to include preparation for research in our program. Our major purpose in presenting a report of this study of staff development is to show how one graduate of the master's program has applied the methodology of research to the solution of a practical problem. Since the data collected are confidential in nature and, in its present form, of value only to the University of Minnesota Hospitals, the complete finding and recommendations will not be presented in describing the design and sampling of this study.

Need for Leadership Skills

More dynamic and purposeful leadership in nursing is recognized as an essential means of improving patient care in the face of a continuing shortage of professional nurses. This shortage is not one of fewer practicing nurses but rather is related to rapidly expanding hospital facilities and services. Some examples which illustrate the real need for more effective leadership are: (1) the inadequacy of academic preparation of directors of nursing, supervisors, and head nurses; (2) the growing interest in and adoption of the "team plan" which has the head nurse delegate responsibility for patient care and supervision of nonprofessional personnel to a staff nurse called a team leader; and (3) the increase in the number of nonprofessional workers with a minimum of training to supplement the services of the professional nurse.

Design of the Study

The goal is to discover potential leaders and to help them develop their ability as a means of improving patient care through skillful management of human resources.

We believe that the head nurse is a key administrator in providing the best possible nursing care for patients. Within each hospital there are professional staff nurses with the attributes of capable leaders, but a method must be developed for finding such nurses and accelerating their development.

Our objective is of a conscious, planned development program for selected staff nurses in order to:

- 1) Provide an adequate reserve of qualified candidates to fill head nurse positions as needs occur
- 2) Assure promising staff nurses the opportunity to develop and to utilize their capabilities to the mutual advantage of the patient, the nurse, and the hospital

3) Develop among top-level nursing and hospital administration personnel an increased appreciation of their obligation for selecting and training the most capable staff nurses and for using them to fill head nurse positions on a department-wide rather than on a ward-unit basis.

Sampling and Instrument

The Assistant Director of Nursing Service has interviewed 30 of the presently employed head nurses, with representation from the majority of the stations as well as the operating room and the out-patient department. Data were obtained by means of individual questionnaire structured interviews.

Selected Findings

Preparation of head nurses interviewed: 70% were graduates of a three-year diploma program in nursing; 30% had a degree in nursing or in nursing education.

Head nurses' training for their position: 77% learned by apprenticeship methods from the previous head nurse; 20% taught themselves; 3% felt they had received assistance from the supervisor.

Head nurses' opinion about responsibility for teaching students: 96% felt that the supervisor or instructor had responsibility; 96% felt that the head nurses also had responsibility; 13% felt that the medical staff had responsibility.

Head nurses' evaluation of quality of nursing care now being given: 13%, excellent; 10%, very good; 53%, good; 20%, fair; 4%, minimum.

Recommendations

1) The Nursing Service Department of the University of Minnesota Hospitals should establish a developmental program designed to prepare staff nurses for head nurse positions.

2) An advisory committee should be appointed to evaluate the finding of the questionnaire and make recommendations relative to the type of staff development program to be established.

3) The advisory committee should be composed of persons employed by the University of Minnesota in the following positions: Director of Nursing Service, Medical Resident, Hospital Administration Resident, Assistant Director of Nursing Service, Supervisor of In-Service Education, School of Nursing Representative in Nursing Administration, Clinical Nursing Supervisor, Head Nurse, General Staff Nurse and Coordinator of Training of the University of Minnesota Civil Service Personnel Department.

Editorials

"Silo-Filler's Disease"

A Newly Recognized Syndrome

Six months ago, two young farmers, brothers operating adjacent farms, were referred to us by their family physicians, and both expired soon after admission to Northwestern Hospital, Minneapolis. Autopsies revealed, in both, extensive bronchiolitis fibrosa obliterans. Each had experienced his first symptoms (cough, "choking," dyspnea, and weakness), on September 1, 1955, upon inhalation of extremely irritating fumes encountered in the "chute" of a silo filled the previous day with corn silage. The clinical courses of these two men were nearly identical. Chest roentgenograms were also closely similar, their appearance being indistinguishable from that of miliary tuberculosis. The inexorable downhill trend characterizing the previous week continued. The treatment employed was without effect. One brother died September 28 (the day after admission) and the other three days later.

In October, we received reports of four additional cases. Each noted the same symptoms described above immediately upon inhaling irritating fumes from fresh silage. All together, three of the six patients died. Yet there is no record of any bronchial or pulmonary condition ascribed to "gas" or "fumes" to be found in the medical literature. We believe the subject merits complete study of all its aspects, and a full scale research project having this objective is being planned.

"Silo-Filler's Disease" is the topic to be presented by the Department of Internal Medicine at the University Hospital Staff Meeting on April 13, 1956, and therefore no further details will be discussed here. General conclusions reached are: 1) The condition is caused by inhalation of oxides of nitrogen, demonstrated now to be produced early in silage fermentation. 2) Dangerous concentrations of gas occur rarely under unusual conditions of soil, moisture, etc. 3) Evolution of nitrogen dioxide may begin 3 to 6 hours after silo-filling starts; toxic concentrations may then persist for 3-4 days. 4) Dangerous exposure is totally avoided simply by adherence to strict rules absolutely forbidding entrance into any silo or space communicating with it during silo filling, and for one week thereafter.

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New Observations on Vitamin B₁₂ Absorption

Measurement of radioactive vitamin B₁₂ absorption has hitherto been carried out by the fecal excretion method of Heinle *et al.*,¹ the urinary excretion method of Schilling² and the technique of Glass *et al.* with *in vivo* radioactivity measurement over the liver.³ These methods have given valuable information regarding the absorption of vitamin B₁₂ in normals as well as in pernicious anemia and various other intestinal disorders.^{4,5,6} Since these methods utilize indirect measurements, however they cannot reveal certain details of the fate of the vitamin. Furthermore, they have the drawbacks attendant to the collection of excreta or require a comparatively long time (days) before the final results are known.^{1,3}

Stimulated by these facts as well as by falsely positive Schilling tests in two individuals, we have searched for a more direct measurement of the ability to absorb vitamin B₁₂ using oral tracer doses of radiocobalt-labelled vitamin B₁₂. Since blood serves as a transport medium it was natural to examine the blood for radioactivity, although we were aware of the fact that such a search had been made before with negative results.² Our investigation was carried out with the use of Co⁶⁰ labelled vitamin B₁₂ with a high specific activity of 1082 micro c/mg. Radioactivity measurements were made on 20 ml. samples of blood or plasma in a well-type scintillation counter with a preset count of 12,800. With this method we have been able to detect definite radioactivity in blood or plasma in all of 28 control subjects but none in four patients with pernicious anemia unless a source of intrinsic factor was added to the oral test dose. A fifth patient with pernicious anemia had traces of radioactivity in his plasma when examined with the labelled vitamin alone; however, when a potent intrinsic factor concentrate was added to the tracer dose, the radioactivity in plasma increased five fold. Nine control subjects have been examined at different time intervals from the ingestion of the tracer dose. During the first three hours the amount of radioactivity present in the blood was less than three times the standard deviation of the background and therefore not definite. At four hours measurable amounts usually started to appear and from then on there was a gradual increase until a peak was reached during the eight to twelve hour interval after the ingestion of the test dose. Then there was a gradual decline over the ensuing days, but even after one week there was definite activity present in the plasma in three out of five cases. When the oral test dose of vitamin B₁₂ was raised from 0.46 micro g (0.5 micro c) to 0.92 micro g (1.0 micro c) the

same phenomena were observed, but higher counts were found.

The prolonged plasma clearance curves found after oral administration of physiologic doses of labelled vitamin B₁₂ were completely different from the rapid disappearance reported after parenteral administration of massive⁷ or physiologic⁸ doses of vitamin B₁₂.

Approximately 2.0 per cent of the radioactivity of the oral test dose was circulating in the blood at the peak of the radioactivity. The urinary excretion of radioactivity during 24 hours after a flushing dose of 1,000 micro g non-radioactive vitamin B₁₂ given on the second day of the experiment, however, averaged 10.3 per cent of the ingested test dose in nine cases. When plasma was examined for radioactivity 24 hours after the flushing dose, a measurable quantity was still present.

The gradual and late accumulation of radioactivity in the plasma, the slow disappearance from the plasma, the fact that about five times more radioactivity could be excreted in the urine than was present in the blood at the peak of the radioactivity, and the finding of definite radioactivity present in the blood even after such a flushing procedure, may all be taken as evidence for a slow and gradual influx of radioactive vitamin B₁₂ into the blood stream. A slow transport through the intestinal wall with gradual release into the blood could explain all of these phenomena, alternative explanations being less likely.

Since washed red blood cells contain no definite radioactivity, it is more efficacious to use plasma. Higher counts are thereby obtained and makes the use of smaller scintillation counters practical in further applications of the direct blood measurement technique.

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"Medical Education Week," April 22-28, 1956

In the first nationwide observance of Medical Education Week, April 22-28, the Hennepin County Medical Society has joined with the University of Minnesota Medical School and other allied medical and health organizations in this area to present a community-wide program of information.

Medical Education Week has three functions: (1) to focus national attention on the significance of medical education and the problems of medical schools; (2) to bring home to the public the contributions of medical science to American life, and (3) to foster public interest, through wide public knowledge in the private support of medical education.

The nation's 81 schools are enrolling and graduating more physicians and providing greater research facilities than at any time in history. Translating these achievements in terms of community understanding, they mean the United States, largely because of its excellent medical schools, will continue to be the healthiest nation in the world. A healthier people, protected by expert medical care, attains maximum industrial production, peak efficiency in the armed forces, and increased earning power. Medical Education Week will stress the *positive* picture of the medical schools' contributions to the American life. It will attempt to overcome the myths and false impressions identifying the schools as the "closed shops" of the medical profession.

The American Medical Association, the Association of American Medical Colleges, the National Fund, and the American Medical Education Foundation, national sponsors of the Week, are providing the national promotion through syndicated news features, magazine articles, network radio and TV programs. DR. U. SCHUYLER ANDERSON is Chairman of the Hennepin County Coordinating Committee.

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Harold W. Carlson
Charles F. Cervenka
Jack I. Chalek
B. J. Clawson
Walter C. Coddon
Wallace H. Cole
Ogden A. Confer
Theodore L. Cook
Lillian Cottrell
Mrs. Dorothy L. Cowan
E. E. Crabb
Robert W. Cranston
Sam A. Crantham

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 Dwight E. Curry
 Rollin E. Cutts
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 Jay C. Davis
 R. D. Davis
 James R. Dawson
 Clarence Dennis
 Randall S. Derifield
 Thomas H. Dickson
 H. S. Diehl
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 A. Louis Dippel
 Tom Donlin
 Wendell L. Downing
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 Della G. Drips
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 Robert Earl
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 William Edson
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 E. W. Erickson
 Eskil Erickson
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 Ward S. Fowler
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 Louis L. Freidman
 George Friedell
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 T. R. Fritsche
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 Walter P. Gardner
 Maude M. Gerdes
 Ellis K. Giere
 Silas W. Giere
 Allan F. Giesen
 Conrad Giesen
 Miss Gertrude Gilman
 W. H. Gilsdorf
 William P. Gjerde
 Robert A. Glabe
 Otto N. Glesne
 H. W. Goehrs

Neill F. Goltz
 L. R. Gowan
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 Arild E. Hansen
 Erling W. Hansen
 Olga S. Hansen
 Emil Hanson
 Malcolm B. Hanson
 William A. Hanson
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 Malvin E. Herz
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 E. R. Hudec
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 Clarence Jacobson
 Reynold A. Jensen
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 Algot F. Johnson
 Carl M. Johnson
 Einer W. Johnson
 Harry A. Johnson
 Hobart C. Johnson
 James A. Johnson
 Kenneth R. Johnson
 Reuben A. Johnson
 Richard S. Johnson
 William E. Johnson
 E. M. Jones
 H. M. Juergens
 Gordon R. Kamman
 Ben Karpman
 Edward J. Kaufman
 G. M. Kelby
 Roger L. J. Kennedy
 Arthur C. Kerkhof
 E. H. Kersten
 Ancel B. Keys
 Thomas J. Kinsella
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 Miland E. Knapp
 Ralph T. Knight
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F. J. Kucera
 William J. Kucera
 Gilbert Kvitrud
 Arthur T. Laird
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 Eva Jane Larson
 Evrel A. Larson
 G. A. Larson
 Leonard W. Larson
 Lester E. Larson
 Paul N. Larson
 Paul C. Leck
 H. R. Leland
 Samuel Leonard
 John A. Lepak
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 Francis W. Lynch
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 Frank D. Mann
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 Walter J. Marcley
 James C. Masson
 S. R. Maxeiner
 R. F. Mears
 G. L. Merkert
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 H. E. Michelson
 Archie Miller
 Harold E. Miller
 J. C. Miller
 J. L. Mills
 Mrs. Albert G. Minda
 H. H. Minthorn
 Mancel T. Mitchell
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 Herman J. Moersch
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 Byron Mork, Jr.
 Frank E. Mork
 Selma C. Mueller
 C. B. Murphy
 R. D. Mussey
 J. A. Myers
 John H. Myers
 Eugene J. McCann
 Malcolm A. McCannel
 Donald McCarthy
 J. S. McCartney
 John L. McKelvey
 C. A. McKinlay
 Irvine McQuarrie
 Harold D. Nagel

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 Arthur A. Nelson
 Bernette G. Nelson
 Bernice A. Nelson
 Clayton E. J. Nelson
 Frank A. Nelson
 O. L. N. Nelson
 Wallace I. Nelson
 Nathan Nemetz
 Samuel Nesbitt
 Karl G. Neumeier
 Harley D. Newby
 E. W. Newman
 John F. Noble
 G. T. Nordin
 Martin Nordland
 E. E. Novak
 Roland E. Nutting
 Malvin J. Nydahl
 I. L. Oliver
 E. A. Olson
 Kenneth L. Olson
 C. L. Oppegaard
 Telford V. Oraas
 Carlton L. Ould
 Owen W. Parker
 M. M. Pearson
 Olonzo P. Peeke
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 Harold O. Peterson
 Herbert W. Peterson
 Joel L. E. Peterson
 W. Henry Peterson
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 Kenneth A. Phelps
 A. C. Plankers
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 Claude R. Poston
 John E. Power
 Victor S. Quale
 R. J. Quinlivan
 John T. Quirk
 C. S. Raadquist
 A. T. Rasmussen
 R. B. Rathbun
 Charles E. Rea
 E. A. Regnier
 Fred B. Riegel
 W. W. Rieke
 Leo G. Rigler
 W. P. Ritchie

Robert I. Rizer
 Owen F. Robbins
 W. L. Robertson
 C. M. Robilliard
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 H. B. Roholt
 Gust C. Roos
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 Peter S. Rudie
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 O. W. Scholpp
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 Leon Seley
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 C. E. Johnson
 Malcolm R. Johnson
 Fred H. Koenecke

John T. Kometani
 Satoru Matsuyama
 Malcolm B. McDonald
 Clayton E. J. Nelson

Olmsted Medical Group
 J. L. Posch
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 Arden L. Abraham
 Milton Abramson
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 Carl W. Ahl
 Curtis F. Ahrens
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 Harley C. Carlson
 Herbert A. Carlson
 Norman C. Carlson
 R. E. Carlson
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 Merrill D. Chesler
 J. E. Christopherson
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 Dennis J. Collins
 W. H. Condit
- Mrs. Edwin C. Coolidge
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 B. D. Elliott
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 Karl W. Emanuel
 E. E. Emerson
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 Ed E. Engel
 Rudolf Engel
 George F. Engstrom
 Stephan Epstein
 Ove A. Erdal
 Vernon D. Erickson

(The list of annual members will be continued in the next issue of the BULLETIN)

Postgraduate Education

Endocrinology for General Physicians

The University of Minnesota announces a continuation course in Endocrinology for General Physicians which will be held at the Center for Continuation Study from April 9 to 11. Management of the more common endocrine and metabolic abnormalities will be stressed. Guest speaker will be DR. PETER H. FORSHAM, *Associate Professor of Medicine and Pediatrics*, and *Director of Metabolic Unit*, University of California Medical School, San Francisco. The course will be presented under the direction of DR. C. J. WATSON, *Professor and Head*, Department of Medicine.

Electrocardiography at the Intermediate Level

The University of Minnesota announces a continuation course in Electrocardiography at the Intermediate Level which will be held at the Center for Continuation Study from May 7 to 12, 1956. The course is intended for physicians who are familiar with the basic principles of electrocardiography. During the afternoons, registrants will have an opportunity to interpret over 200 selected electrocardiographic tracings and to discuss them with qualified instructors. The faculty will include two guest speakers who are recognized authorities in the field, DOCTORS HAROLD D. LEVINE, *Clinical Associate of Medicine*, Harvard University Medical School, Boston, and HENRY J. L. MARRIOTT, *Department of Medicine*, University of Maryland School of Medicine, Baltimore. The remainder of the faculty will be drawn from the clinical and full-time faculty of the University of Minnesota Medical School and the Mayo Foundation.

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

- April 3 SPECIAL LECTURE; "Formation and Binding of Histamine in the Body"; *Dr. Richard W. Schayer*, The Rheumatic Fever Research Institute, Chicago, Illinois; Room 100, Mayo Memorial; 4:00 P.M.
- April 4 SPECIAL LECTURE; "Catabolism of Radioactive Histamine in Animals and Man"; *Dr. Richard W. Schayer*, The Rheumatic Fever Research Institute, Chicago, Illinois; Todd Amphitheater, University Hospitals; 3:00 P.M.
- April 7 Continuation Course in Trauma for General Physicians
- April 9-11 Continuation Course in Endocrinology for General Physicians
- April 12 Student-Faculty Coffee Hour; Foyer, Mayo Auditorium; 3:30 to 5:30 P.M.
- April 16-18 Continuation Course in Radiology for General Physicians
- April 26 Student-Faculty Coffee Hour; Foyer, Mayo Auditorium; 3:30 to 5:30 P.M.
- May 7-12 Continuation Course in Electrocardiography for General Physicians
- May 10 Student-Faculty Coffee Hour; Foyer, Mayo Auditorium; 3:30 to 5:30 P.M.
- May 14-19 Continuation Course in Proctology for General Physicians
- May 15 DULUTH CLINIC LECTURE; "Experimental Hepatic Injury in its Relation to Hepatic Disease in Man"; *Dr. Paul Gyorgy*, Professor, Department of Pediatrics, Hospital of the University of Pennsylvania, Philadelphia; Mayo Memorial Auditorium; 8:00 P.M.

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
- 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.