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Bulletin of the
University of Minnesota Hospitals
and
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Total and Subtotal
Colectomies

BULLETIN OF THE
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and
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INDEX

	<u>PAGE</u>
I. TOTAL AND SUBTOTAL COLECTOMIES - A CLINICAL EVALUATION	21 - 30
RICHARD C. LILLEHEI, M.D., Medical Fellow, OWEN H. WANGENSTEEN, M.D., Professor and Chairman, Department of Surgery University of Minnesota Medical School	
II. MEDICAL SCHOOL NEWS	31 - 32
III. WEEKLY CALENDAR OF EVENTS	33 - 38

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I. TOTAL AND SUBTOTAL COLECTOMIES
A CLINICAL EVALUATION

Richard C. Lillehei, M.D.
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INTRODUCTION

The present study was undertaken to evaluate the end results of more aggressive surgery in the treatment of cancer of the colon and its frequent concomitant and precursor, polyps of the colon. Often many endeavors of this nature receive their initial impetus from an experience with the conventional or accepted treatment which does not do all that we think it should, hence the desire to seek procedures more adequate. This present effort is such an example, having stemmed from the experience with a patient (Mrs. E. S.) who required a right hemicolectomy for a carcinoma of the hepatic flexure barely six months following a left hemicolectomy for a carcinoma in the sigmoid colon.

Methods of Treatment:

The concern of this paper is the concealed lesions, polyps or carcinomas which often accompany the more obvious carcinomas or large polyps. It is these lesions which are missed in the conventional segmental or hemicolectomy.

One suggested solution to this problem was that of Hedin (1939)⁷. He used a sterile proctoscope at the operating table to inspect the remaining colon after a subtotal resection; but this procedure is often hindered by poor visualization. This is especially true in the right colon which is more difficult to prepare preoperatively. In addition there is the ever present danger of fecal contamination of the operative field. On the other hand, Wangensteen (1943, 1944)^{20, 21} suggested more extensive resections of the colon as a preferable solution when dealing with polyps or carcinoma of the colon. This idea has formed the basis for the study. By resecting more colon, more polyps and an occasional case of multiple carcinomas are discovered. In addition, and none the less im-

portant to the patient, subsequent development of carcinoma of the colon is prevented.

The Relationship Between Polyps and Carcinoma:

At the present time, there is considerable evidence that polyps of the colon are precursors to the development of carcinoma of the colon and rectum^{14a} in many cases. Most investigators hold Helwig's^{14b} viewpoint that it is not possible to predict in advance which polyps will pursue a benign course and which will not. Lockhart-Mummery^{14c} believes that all polyps or adenomata, whether single or multiple, show a significant tendency sooner or later to become malignant. If this idea is accepted, then the classification of polyps is of more academic than clinical importance.

The Frequency of Polyps:

Recently more accurate observations on the true incidence of polyps in the adult population have been made. Polyps of the colon and rectum were once considered a rarity. Allingham (1888)¹ commented on the relative infrequency of polyps in his experience in four thousand proctoscopies. In the most recent report from the Cancer Detection Center of the University of Minnesota (1952)⁶, 17 per cent of 3,364 patients examined over a 3-year period had one or more polyps of the colon or rectum. This entire group was between the ages of 45 and 64 years. Obviously, any statement concerning the incidence of polyps must be considered in relation to the age, sex and other characteristics of the group examined and how they are selected.

Multiple Carcinomas of the Colon:

Multiple carcinomas of the colon occurring simultaneously or successively in time have long been recognized by surgeons interested in this problem, and have constituted a definite problem in surgical treatment of malignancies of the colon. Excluding the condition of disseminated or familial polyposis which is not being considered specifically in

this paper, Bargon and Rankin (1930)³ found two or more carcinomas in 4.6 per cent of 344 cases of carcinoma of the large bowel. Bacon and Gass (1945)² and others^{4, 5, 17, 18} have reported a similar incidence.

In 1942, Mayo and Schlicke¹³ reported 131 necropsies performed within three weeks following resections for carcinoma of the colon and rectum. Forty-nine of the 131 cases (37.4 per cent) had polyps in the remaining colon. There was a second carcinoma present in the residual colon in 7 cases (5.3 per cent).

Selection of Patients:

Patients included in the present series all had a total or near total colic resection including varying amounts of terminal ileum in the period from 1946 through July, 1953. Patients were excluded from this study only if the resection had been palliative or if it had been for ulcerative colitis. Accurate evaluations of the morbidity of this procedure and, more particularly, the resulting bowel function was bound to be obscured in those instances. However, the hospital mortality rate for palliative cases and cases of ulcerative colitis did not exceed that for the cases being reported here.

In a few cases the cecum and 2 or 3 cms. of ascending colon were preserved in an attempt to evaluate the importance of the ileocecal valve in the prevention of postoperative diarrhea. The colic resection was done in one stage, using the closed end to end type, single row anastomosis as advocated by Wangenstein (1940)¹⁹.

The decision to perform a total, or near total, resection, with varying amounts of terminal ileum, was usually made at the operating table. This decision was based on one or both of the following reasons: (1) Extensive pathology involving the entire colon such as multiple carcinomas, polyps or diverticula with diverticulitis scattered throughout the colon, or spread to the colon from malignancies of adjacent organs; (2) The presence of polyps or

a second cancer near the proximal line of resection in lesions of the left colon or near the distal line of resection in lesions of the right or transverse colon. In other words, following the removal of a segment of colon or following the conventional hemicolectomy, the pathologist immediately opened the specimen and reported his findings to the surgeon who also looked at the gross specimen. The surgeon then decided whether further resection was required on the basis of what was found. The second finding enumerated above namely, the finding of polyps near the line of resection, was the most frequent indication for the more extensive colectomies. The amount of terminal ileum excised, of course, depended on the primary condition present. In carcinomas of the right colon, it was always necessary to take more terminal ileum than for carcinomas of the left colon in order to ensure adequate removal of the lymph drainage area in the former.

The Preoperative Diagnosis:

In Table I is a tabulation of the preoperative diagnosis in each of the 67

TABLE I

Preoperative Diagnosis 67 Cases

	No. of Cases
Carcinoma of the Colon	37
Left Colon	16
Transverse Colon	13
Right Colon	8
Polyps of the Colon	11
One or More	9
Polyposis	2
Diverticulitis*	11
Miscellaneous	8
Carcinoma of the Ovary	3
Carcinoma of the Stomach	2
Retroperitoneal Fibrosarcoma	1
Pseudomyxoma Peritonei	1
Mesenteric Thrombosis	1

*All cases involved the transverse or right colon as well as the left colon or were associated with other pathology.

cases. In 37 cases one or more carcino-

mas of the colon or upper rectum was present. In all patients with carcinoma the lesions were located at 10 cms. or more from the anus. In those patients whose lesions necessitated an abdominoperineal resection, the rigors of an ileostomy compared to a colostomy did not seem to justify a total colectomy. Sixteen of the cancers were in the left colon, 13 in the transverse colon and 8 cancers were in the right colon. Of the 11 patients with polyps, only 2 could be classed as having polyposis, although

there was no familial history of polyposis in either patient. There were 11 cases of diverticulitis and the remaining 8 cases were of a miscellaneous nature.

Assessment of Postoperative Bowel Function:

The bowel function following surgery was classed as good, fair, or poor (Table II). Good meant a return to normal, or near normal, bowel habits with

TABLE II

Criteria for Classification of Postoperative Bowel Function

Classification	No. of Stools/24 Hrs.	Consistency of Stools
Good	1 - 3	Usually Normal
Fair	4 - 6	Loose
Poor	More than 6	Usually Watery

1 to 3 bowel movements each day. The stools were usually of a normal consistency. Fair indicated 4 to 6 movements a day, and the stools usually were of a loose consistency. Poor meant more than 6 bowel movements per day. The stools were usually watery. Those patients whose bowel function fell between these criteria were placed in the lower rather than the higher classification. All but 2 patients have been followed since surgery; hence, between 3 months, for the most recent, to 7 years for the earliest cases in the series. A great many of the patients were interviewed personally, the remainder were reached by letter with a simple questionnaire. The results of interviews, the questionnaire and previous notations on the clinical records were integrated to obtain the necessary information.

Tabulation of Findings:

In Table III is an analysis of the 67 cases as to level of anastomosis, length of terminal ileum removed with

the colon and the resulting bowel function. The level of the anastomosis was measured at the time of surgery and usually confirmed postoperatively by proctoscopy. The rectum is considered to be 13 cms., on the average, in length. The term iliac colon is used at this hospital in accordance with conventional anatomic nomenclature to designate that portion of the colon beginning just above the rectum and which lies in the sigmoid colon at the level of the sacral promontory. It has no mesentery and is usually 6 to 8 cms. in length. All anastomoses were made in the area of the rectum or iliac colon. The patients were almost equally divided as to sex and the average was 59 years. Anastomosis between ileum and colon, at the level of 21 to 22 cms., from the anus was done in 9 patients. In five of these patients the bowel function can be called good, in 2 fair and in 2 patients the present bowel function is poor. Of the 2 patients classed as fair, one had 36 cms. of terminal ileum excised and the other 70 cms. of terminal ileum ex-

TABLE III

Results in 67 Cases

Anastomosis Between Ileum and Iliac Colon or Rectum									
Level From Anus	No. of Cases	Good	Terminal Ileum Resected in Each Case	Fair	Terminal Ileum Resected in Each Case	Poor	Terminal Ileum Resected in Each Case	Lost	Deaths
21-22 cm.	9	5	All less than 30 cm.	2	36 cm. 70 cm.	2	51 cm. 40 cm.	0	0
17-20 cm.	15	8	All less than 30 cm.	4	76 cm. 38 cm. 15 cm. (Incontinent) (1-2 Bm/d) 12 cm. (1-5 Bm/d)	0		1	2
13-16 cm.	19	14	All less than 30 cm.	3	34 cm. 38 cm. 76 cm.	1	42 cm.	1	0
8-12 cm.	10	6	All less than 30 cm.	1	15 cm. (4-5 Bm/d)	2	67 cm. 70 cm.	0	1

Anastomosis Between Cecum and Iliac Colon or Rectum

Level From Anus	No. of Cases	Good	Fair	Poor	Lost	Deaths
21-22 cm.	3	3	0	0	0	0
17-20 cm.	1	1 (90 cm. Jejunum) (Resected)	0	0	0	0
13-16 cm.	7	7	0	0	0	1
7-12 cm.	3	3	0	0	0	0

cised. One patient having persistent diarrhea and classed as poor, had a total of 51 cms. of terminal ileum removed in two separate operations for carcinoma of the colon. The other patient having poor bowel function had 40 cms. of terminal ileum resected with the colon.

Resection of colon with anastomosis of ileum to iliac colon between 17 and 20 cms. was done in 15 patients. Eight patients have a good result and 4 a fair result. Of these latter 4, one is a woman of 82 who has only 2 to 3 stools per day but suffers from incontinence, the only complaint of this nature in the entire group of patients. Another patient has 1 to 5 bowel movements daily and this variation has continued the 2 years he has been followed. The other 2 had 76 and 38 cms. of terminal ileum removed with the colon. Two deaths occurred postoperatively in the group. One on the 10th day was due to peritonitis; the other death occurred on the 49th postoperative day due to a bile fistula following a complementary cholecystectomy, and very severe diarrhea. At postmortem this patient had an unrecognized stone in the common bile duct. It is believed this patient could have survived either of the two conditions but the combination proved overwhelming. One patient was lost to follow-up.

Anastomosis of ileum and iliac colon between 13 and 16 cms. was done in 19 patients. Postoperative bowel function has been good in 14 patients, fair in 3

and poor in one. One patient was lost to follow-up. Thirty-four, 38 and 76 cms. of terminal ileum were removed with the colon in each of the 3 patients classed as fair. One patient who had 42 cms. of terminal ileum resected with the colon has a persisting diarrhea.

Ten ileoproctostomies between 8 and 12 cms. from the anus were done. Six patients have a good result. One patient has a fair result although only 15 cms. of terminal ileum had been removed. This patient is one of two who have had some bowel dysfunction despite resection of less than 30 cms. of terminal ileum with the colon. Two patients with poor results had 67 and 70 cms. of terminal ileum removed respectively with the colon. One patient died postoperatively of hepatic failure on the 8th postoperative day.

Colectomy with preservation of the ileocecal valve was done in 14 cases. This procedure was done only for carcinoma of the left colon or for polyps or diverticulitis. Bowel function following anastomosis of cecum to iliac colon or rectum as low as 7 cms. from the anus was good in all cases. There was one death due to coronary thrombosis on the 3rd postoperative day. No autopsy was permitted for verification.

In Table IV is a summary of all postoperative deaths in this series. The overall hospital death rate was 5.9 per cent.

TABLE IV

Postoperative Deaths Overall Hospital Death Rate 5.9%

Pt.	Date Operated	Date of Death	Autopsy	Cause of Death
	2-7-46	2-10-46	Yes	Myocardial Infarct
	9-7-48	9-18-48	Yes	Peritonitis
	12-14-50	12-21-50	No	Hepatic Failure
	12-17-50	2-4-51	Yes	Biliary Fistula, Common Bile Duct Stone

All patients (with only 2 exceptions) having 3 or less bowel movements per day, had either no terminal ileum removed or had less than 30 cms. removed with the colon. All patients usually had diarrhea in the hospital but their average number of postoperative days did not seem to exceed the time spent in the hospital by those having the more conventional type colon resections²⁰. The overall average for the group was 14 postoperative days, many going home before this. Diarrhea had usually disappeared before leaving the hospital, and most all patients had established their permanent pattern of bowel function

by 2 to 3 months following surgery. A few patients continued to improve up to one year and in no case did bowel function become worse with the passage of time.

The Hidden Lesion:

A significant finding, and the justification for this procedure has been the unsuspected lesion which has been unearthed in a significant number of these patients (Table V). A large number of polyps were found which were not recognized preoperatively. These polyps would have been missed if the convention-

TABLE V

A. Occult Polyps Discovered at Surgery			
No. of Cases	No. of Cases Associated With Carcinoma and/or Other Polyps	Total No. Cases Carcinoma and/or Polyps	% of Cases With Occult Polyps
19	18	48	38
B. X-ray Procedures Used in Cases With Occult Polyps			
Barium Enema		Barium Enema and Air Contrast	
9 Cases		10 Cases	
C. Size of Occult Polyps			
Range in Size-Width		Average Size-Width	
5 mm. - 3 cms.		1 cm.	

al segmental or hemicolectomy had been done. This occurrence was noted in 19 patients, 18 of whom had a preoperative diagnosis of carcinoma and/or polyps of the colon. Thus, of 48 patients with an initial diagnosis of adenocarcinoma of the colon and/or polyps, 38 per cent had additional polyps. The 19th patient had a preoperative diagnosis of diverticulitis and when the resected colon was opened, a small carcinoma and several small polyps were discovered in the cecum. Polyps were not included in this group unless they were found in a portion of the colon which was believed to be unin-

involved preoperatively.

Thirteen of these 18 patients had the polyps in the right or transverse colon, the other 5 had them in the left colon above 25 cms. from the anus. In these patients, the diagnostic procedures used preoperatively included barium enema and air contrast in 10 patients and barium enema alone in the remaining 9. The average size of the polyps was 1 cm. in width, with the range being between 5 mm. and 3 cms.

Two or more carcinomas of the colon

were found in 2 patients. In addition, there were 4 patients who developed a new primary carcinoma of the colon from 6 months to 17 years following a colic resection for adenocarcinoma of the colon. The overall incidence of multiple cancers of the colon in the 48 patients with carcinoma and/or polyps was therefore 12.5 per cent. This figure is higher than that reported by many surgeons,^{2,3,15,17,18} but results included cases in which there was a time interval between the development of multiple carcinomas of the colon as well as cases of carcinomas of the colon developing simultaneously.

Interesting Case Histories:

., was first seen at this hospital in 1933 at which time a right hemicolectomy was done for an adenocarcinoma of the cecum. Ten centimeters of terminal ileum was included with the colon. He returned at irregular intervals for barium enemas and in 1949 a filling defect was seen in the transverse colon. The decision evidently was made to temporize with this finding and he was not seen again until one year later. At that time a repeat barium enema showed the filling defect to have enlarged and he was reoperated upon at that time. A carcinoma and 2 small polyps were found in the transverse colon. The remaining colon and 9 cms. of terminal ileum were resected and an ileoproctostomy was then done at 12 cms. from the anus. Since that time the patient has continued to work as a janitor despite his age of 71 years. His bowel function is normal.

, a 51 year old male, was first operated upon elsewhere in 1951, at which time a segmental resection of the left colon was done for an adenocarcinoma of the descending colon. In 1952, he was again operated upon at this same hospital at which time a segment of the transverse colon and another segment of the descending colon was excised for polyps. Two of the polyps were reported as manifesting Grade I malignant changes.

He was first seen here in 1953 complaining of gas pains. A barium enema showed an area of partial obstruction

near the splenic flexure. He was reoperated upon and the remaining colon and 3 cms. of terminal ileum resected. On opening the resected specimen, the area of obstruction was at the site of a previous anastomosis. In addition there was a length of transverse colon 34 cms. long covered with small polyps. The ascending colon and lower iliac colon were free of polyps. At the present time, two months following surgery, his bowels move 3 times daily.

DISCUSSION:

If the colon can be removed in those patients who are predisposed to the development of future carcinomas without crippling them unnecessarily with diarrhea and without pyramiding the operative mortality, the procedure has definite value. The remaining large bowel can then be carefully inspected with a proctoscope at 6-month intervals. In this group, the entire colon and up to 30 cms. of terminal ileum were excised with no more morbidity than that associated with less extensive colectomy. Only 2 patients who had less than 30 cms. of terminal ileum removed with the colon have had difficulties with bowel function. A study of right hemicolectomies done in this hospital has revealed similar findings. In those patients in whom terminal ileum of lengths greater than 30 to 40 cms. was removed along with the right colon, difficulties in bowel function usually resulted. This would seem to confirm the fact that the main function of the left colon is one of storage. Wangenstein²⁰ has said that he has never seen a case of persistent diarrhea in a patient in whom only the colon has been excised.

The terminal ileum and the right half of the colon are the "water wringers"²⁰ of the body. The precise limits of terminal ileum to which water reabsorption is confined is not known. Sharply defined limits are difficult to establish because of the adaptive powers of the ileum for water reabsorption.

When more than 30 cms. of terminal ileum is resected with the colon, there is considerable individual variation in

the degree of bowel dysfunction. Some patients with 70 or more cms. of terminal ileum resected along with the colon seemed to have less diarrhea than those patients in whom only 40 to 50 cms. of terminal ileum was included with the colon.

With regard to the amount of rectum to be preserved, the preservation of the internal sphincter seems most important. Whether the anastomosis was made in the upper rectum or 7 cms. from the anus made little difference in subsequent bowel function. Obviously, it is a simpler operation to effect the anastomosis to the iliac colon than to the rectum. Continence may be impaired in the aged despite preservation of the lower rectal mucosa and the internal sphincter. This was seen in one 82-year old lady in the group.

Although the number of cases is small, preservation of the ileocecal valve, where possible, was an asset in ensuring the early return of normal bowel function.

The hospital mortality rate in the group (5.9 per cent) was not excessive when compared to that for colectomies reported from this hospital in other years. In reporting a series of 61 consecutive cases of colic resection over a 2-year interval, Wangenstein (1943)²⁰ noted a mortality of 1.6 per cent. In this group there were 7 subtotal excisions of the colon in which the ileum or the cecum was anastomosed to the iliac colon. In that group, fortunately, there were no unavoidable deaths. In a larger series reported in 1945²¹, there were 6 hospital deaths in a total of 78 cases, a mortality of 7.6 per cent. Combining the two reported series in 1943 and 1945 gave an overall hospital mortality rate of 5 per cent.

Total or near total colectomy has not been used frequently in the past for the treatment of malignancies and polyps of the colon, although Sir William Lane first popularized one-stage colectomy with ileo-proctostomy at the turn of the century^{10,11,16}. His mortality for the procedure was under 10 percent, remarkably low for that time. He used the pro-

cedure for treating chronic constipation which he believed was the basis for most of the ills of the body. While colectomy had little effect upon the primary disease of his patients, it did cure their constipation. Indeed, several patients in the present study were more grateful for the relief of their constipation than for the removal of a cancer. For very severe resistant cases of constipation, right hemicolectomy of approximately 50 cms. of terminal ileum has occasionally been done in this hospital.

Colectomy with ileoproctostomy has been used more recently in treating familial polyposis. Mayo and Wakefield (1936)¹², Hoxworth and Slaughter (1948)⁸ and others^{5,9} have reported small numbers of cases of polyposis treated in this manner with good results.

Baronofsky (1950)⁴ has advocated this procedure in treating certain cases of large bowel obstruction to overcome the difficulties of anastomosing distended bowel dubious viability. This avoids the preliminary colostomy and its attendant prolongation of hospitalization. He also noted, as has Wangenstein, a number of unsuspected^{20,21,22,23} polyps unearthed by this procedure.

Since most cases in the series have been done rather recently, it is not possible to compare five-year survival rates with those reported by others. It is evident that, in addition to excising more potential malignant lesions, a greater area of lymph drainage is excised as well.

Finally, a word about the inability with our present methods of investigation to demonstrate certain lesions in the colon. It is not always possible to get an accurate roentgen examination of the more proximal colon. The presence of obstructing lesions in the left colon, poor preparation of the right colon, and the necessity of examining ever-increasing numbers of patients without sufficient time or personnel - all these items thwart an accurate examination. Doubtless, this explains the large number of polyps found in the right and proximal

transverse colon. It seems likely, on the basis of these findings, that polyps of the right colon are a more common entity than has been appreciated heretofore.

In conclusion, clinical experience, pathological observations and physiological principles have been integrated to form the basis for a more complete treatment of cancerous and precancerous lesions of the colon. It is possible to take a more aggressive approach toward this condition without increasing the danger to the patient's life nor impairing his ability to carry on a normal existence.

SUMMARY

When total or subtotal colectomy was done for polyps or carcinoma of the colon, a number of concealed lesions were discovered. In this study, 38 per cent of patients with an initial diagnosis for carcinoma of the colon and/or polyps, had additional polyps in the colon. These polyps were found in a portion of the colon which was believed to be uninvolved preoperatively. An occasional case of multiple carcinomas of the colon was also discovered by this procedure.

If it was not necessary to excise more than 30 cms. of terminal ileum with the colon, bowel function postoperatively was usually normal. The hospital mortality rate for this procedure compared favorably with that for less extensive colectomies.

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Recognition of Alimentary Tract
Malignancies; (2) Secondary Delay-
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tients exhibiting Lymph Node In-
volvement; (3) Subtotal Primary
Excision of the Colon; (4) Opera-
tion in Obstruction.
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II. MEDICAL SCHOOL NEWS

Coming Events

- October 26-31 Continuation Course in Radiation Therapy for Radiologists
October 28 Leo G. Rigler Lecture; "Simple Mastectomy and Post-Operative Irradiation for Carcinoma of the Breast"; Dr. Robert McWhirter, Royal Infirmary, Edinburgh; Museum of Natural History Auditorium; 8:15 p.m.
November 3 Elias P. Lyon Lecture; "Action of Sex Hormones on Experimental Diabetes"; Dr. Bernardo A. Houssay, Argentina; Owre Amphitheater; 8:00 p.m.
November 5-6 Continuation Course in Medical Jurisprudence
November 6-7 Homecoming Program
November 16-18 Continuation Course in Fractures for General Physicians
November 19-21 Continuation Course in Dermatology for General Physicians

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Special Coming Events of Wide Interest

A Medical School Faculty Dinner will be held on Monday, November 16, at 6:30 p.m. in the Main Ballroom of Coffman Memorial Union. Featured speaker will be Dr. Morris Fishbein. Each member of the faculty will shortly receive an invitation to the dinner, and more detailed information will appear in a subsequent issue of the BULLETIN.

Dedication of the Elias P. Lyon Laboratories has been set for Thursday, February 11, 1954. An afternoon program will be followed by a dinner in Coffman Union. Details will be announced later.

Mark these dates on your calendar now!!

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Dr. Houssay to Give Lyon Lecture

The annual Elias P. Lyon Lecture will be presented this year by Dr. Bernardo A. Houssay, world-famous physiologist. Dr. Houssay will speak at 8:00 p.m. Tuesday, November 3, in Owre Amphitheater. His subject will be "Action of Sex Hormones on Experimental Diabetes."

The lecture, which honors the late Dean Lyon, has brought a host of outstanding investigators to our campus in past years. The opportunity of having Dr. Houssay with us again is one for which we are all grateful.

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Students Form Journal Club

Several members of the junior and senior classes have organized the Medical Journal Club which held its first meeting at noon on Thursday, October 15. Each week the group will meet to hear one of its members present a paper on some medical topic. At the first meeting William Feller discussed "The Management of Coma", and on October 22 Edgar Gamm will talk on "The Differential Diagnosis of Back Pain."

Richard Anonsen is Chairman of the Club and Martha Larsen Secretary. Time and place of each weekly meeting and the topic for discussion will be posted in Todd and Eustis Amphitheaters and will be announced in the Calendar of Events of this BULLETIN. Meetings are open to all junior and senior students.

The Medical School faculty is naturally delighted to see the students take this step. It should serve to stimulate the students' interest in medical literature and

will provide them with the opportunity of organizing material and presenting it before an audience. Faculty members stand ready to be of help in any manner that the students desire.

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Multiple Sclerosis Clinic Opens

On July 1, 1953, the University Hospitals opened a diagnostic clinic for multiple sclerosis. The organization of the clinic was made possible by a special grant from the State Legislature to provide funds for staff. The clinic is under the supervision of the Division of Neurology with Dr. Charles Van Buskirk, Assistant Professor of Neurology, in charge.

Patients are referred by their family physicians and go by appointment directly to the multiple sclerosis clinic. Following initial examination return visits are scheduled for them on certain clinic days so that the course of their illness may be adequately studied and special therapeutic and diagnostic procedures evaluated. When necessary, patients will be admitted to the Hospitals for special studies, the admission policies being the same for them as for patients entering any other section of the Hospitals.

It is hoped that the establishment of the clinic will enable persons with multiple sclerosis to receive a thorough neurological investigation by making use of the diagnostic facilities of the University Hospitals and also enable them to receive the benefit of any therapies which may be available in the future. After a preliminary survey most patients will be referred back to their family physicians with recommendations for continued care.

* * *

Faculty News

Dr. Irvine McQuarrie, Professor and Head, Department of Pediatrics, attended the recent meeting of the American Academy of Pediatrics in Miami from October 6 to 9. From October 12 to 17 he will be attending the Seventh International Pediatric Congress in Havana, Cuba, where he will speak on "Electrolyte and Water Studies in Relation to Epileptic Convulsions."

Dr. Stewart C. Thomson, Professor and Assistant Director, School of Public Health, served as a consultant in health education at the American Medical Association's National Conference on Physicians and Schools held at the Moraine Hotel, Highland Park, Illinois, from September 30 to October 2.

Dr. C. J. Watson, Professor and Head, Department of Medicine, presented the Walter Estell Lee Lecture in Philadelphia on September 22. Dr. Watson and Dr. F. W. Hoffbauer attended the Macy Liver Conference in Princeton, New Jersey, September 20 to 22.

Dr. H. E. Michelson, Professor and Director, Division of Dermatology, attended the meeting of the Chicago Institute of Medicine on September 22 and 23 where he delivered the William Allen Pusey Oration. His subject was "A Review and Appraisal of the Present Knowledge Concerning Lupus Erythematosus."

On September 28, Dr. Ancel Keys, Professor and Director, Laboratory of Physiological Hygiene, attended the meeting of the Executive Committee, Council on Community Service and Education, of the American Heart Association in New York City. He also attended the meeting of the Committee to Review the Structure of the American Heart Association.

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III.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
WEEKLY CALENDAR OF EVENTS

Physicians Welcome

October 19 - 24, 1953

Monday, October 19

Medical School and University Hospitals

- 9:00 - 9:50 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.
- 9:00 - 10:50 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; W-612, U. H.
- 10:00 - 12:00 Neurology Rounds; A. B. Baker and Staff; Station 50, U. H.
- 11:30 - Tumor Conference; Doctors Kremen, Moore, and Stenstrom; Todd Amphitheater, U. H.
- 11:30 - 12:30 Physical Medicine Seminar; Fundamentals of Electromyography; W. G. Kubicek; Heart Hospital Auditorium.
- 12:15 - Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.
- 12:30 - 1:30 Physiology Seminar 201; Determination of Fluorides in Biological Materials; Wallace D. Armstrong; 214 Millard Hall.
- 1:30 - 2:30 Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.
- 3:30 - Public Health Seminar; Medical Bibliography; Stewart C. Thomson; 15 Owre Hall.
- 4:30 - ECG Reading Conference; James C. Dahl, et al; Staff Room, Heart Hospital.
- 4:30 - Public Health Seminar; 15 Owre Hall.
- 5:00 - 6:00 Urology-Roentgenology Conference; C. D. Creevy, O. J. Baggenstoss, and Staff; Eustis Amphitheater.

Ancker Hospital

- 8:30 - 10:00 Tuberculosis and Chest Conference; Auditorium.
- 2:00 - 3:00 Surgery Journal Club; Classroom.

Minneapolis General Hospital

- 9:30 - Pediatric Rounds; Eldon Berglund; Newborn Nursery, Station C.
- 10:30 - 12:00 Tuberculosis and Contagion Rounds; Thomas Lowry; Station M.
- 11:00 - Orthopedic and Fracture Rounds; Drs. John Moe and Arthur Zierold; Sta. A.
- 11:00 - Pediatric Rounds; Erling Platou; Station K.
- 12:30 - Surgery Grand Rounds; Dr. Zierold; Sta. A.
- 1:00 - X-ray Conference; Classroom, 4th Floor.
- 2:00 - Pediatric Rounds; Robert A. Ulstrom; Stations I and J.

Monday, October 19 (Cont.)

Veterans Administration Hospital

1:30 - Cardiac Conference; Drs. Berman, Weisbart, and Smith; Rounds immediately following conference.

Tuesday, October 20

Medical School and University Hospitals

9:00 - 9:50 Roentgenology-Pediatric Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.

9:00 - 12:00 Cardiovascular Rounds; Station 30, U. H.

12:30 - 1:30 Physiology 114C -- Respiration; E. B. Brown; 129 Millard Hall.

12:30 - 1:20 Pathology Conference; Autopsies; J. R. Dawson and Staff; 102 I. A.

3:30 - Pediatric Seminar; Impressions of South American Medicine; Irvine McQuarrie; Sixth Floor, U. H.

4:00 - 5:00 Pediatric Rounds on Wards; I. McQuarrie and Staff; U. H.

4:30 - 5:30 Clinical-Medical-Pathological Conference; Todd Amphitheater, U. H.

4:30 - ECG Reading Conference; James C. Dahl, et al; Staff Room, Heart Hospital.

5:00 - 6:00 X-ray Conference; Presentation of Cases from Veterans Hospital; Drs. Jorgens, Calin, et al; Eustis Amphitheater, U. H.

8:00 p.m. Minnesota Pathological Society Lecture; The Pathogenesis of Sarcoidosis; H. E. Michelson; Owre Amphitheater.

Ancker Hospital

9:00 - 10:00 Medical X-ray Conference; Auditorium.

Minneapolis General Hospital

10:00 - Pediatric Rounds; Spencer F. Brown; Stations I and J.

10:30 - 12:00 Medicine Rounds; Thomas Lowry and Staff; Station F.

12:30 - Grand Rounds; Fractures; Willard White, et al; Sta. A.

12:30 - Neuroroentgenology Conference; O. Lipschultz, J. C. Michael and Staff.

12:30 - EKG Conference; Boyd Thomes and Staff; 302 Harrington Hall.

1:00 - Tumor Clinic; Drs. Eder, Cal, and Lipschultz.

1:00 - Neurology Grand Rounds; J. C. Michael and Staff.

Veterans Administration Hospital

7:30 - Anesthesiology Conference; Conference Room, Bldg. I.

8:45 - Surgery Journal Club; Conference Room, Bldg. I.

9:30 - Infectious Disease Rounds; Drs. Hall, Zinneman, and Brown.

9:30 - Surgery-Pathology Conference; Conference Room, Bldg. I.

Tuesday, October 20 (Cont.)

Veterans Administration Hospital (Cont.)

- 10:30 - Surgery-Tumor Conference; L. J. Hay and J. Jorgens; Conference Room, Bldg. I.
1:00 - Review of Pathology, Pulmonary Tuberculosis; Conference Room, Bldg. I.
1:30 - Combined Medical-Surgical Chest Conference; Conference Room, Bldg. I.
2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff; Bldg. III.
2:30 - 4:00 Psychosomatic Conference; C. K. Aldrich; Conference Room, Bldg. I.

Wednesday, October 21

Medical School and University Hospitals

- 8:00 - 9:00 Roentgenology-Surgical-Pathological Conference; Paul Lober and L. G. Rigler; Todd Amphitheater, U. H.
11:00 - 12:00 Pathology-Medicine-Surgery Conference; Medicine Case; O. H. Wangensteen, C. J. Watson, and Staffs; Todd Amphitheater, U. H.
12:30 - 1:30 Physiology 14B - Transport Seminar; Nathan Lifson and M. B. Visscher, 214 Millard Hall.
4:30 - ECG Reading Conference; James C. Dahl, et al; Staff Room, Heart Hospital.
5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; Eustis Amphitheater.
8:00 - 10:00 Dermatological-Pathology Conference; Review of Histopathology Section; R. Goltz; Todd Amphitheater, U. H.

Ancker Hospital

- 8:30 - 9:30 Clinico-Pathological Conference; Auditorium.
12:30 - 1:30 Medical Journal Club; Library.

Minneapolis General Hospital

- 9:30 - Pediatric Rounds; Max Seham; Stations I and J.
10:30 - 12:00 Medicine Rounds; Thomas Lowry and Staff; Station D.
11:00 - Pediatric Seminar; Arnold Anderson; Classroom, Station I.
11:00 - Pediatric Rounds; Erling S. Platou; Station K.
12:00 - Surgery-Physiology Conference; Arthur Zierold and E. B. Brown; Classroom.
12:15 - Pediatric Staff Meeting; Classroom, Station I.
1:30 - Visiting Pediatric Staff Case Presentation; Station I, Classroom.

Veterans Administration Hospital

- 8:30 - 10:00 Orthopedic X-ray Conference; E. T. Evans and Staff; Conference Room; Bldg. I.

Wednesday, October 21 (Cont.)

Veterans Administration Hospital (Cont.)

- 8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. B. Baker.
9:00 - Gastro-Intestinal Rounds; Drs. Wilson, Zieve, Hay, Brakel, and Nesbitt.
12:30 - X-ray Conference; J. Jorgens; Conference Room, Bldg. I.
1:30 - 2:30 Infectious Disease Conference; Wesley W. Spink; Conference Room, Bldg. I.
2:30 - 4:30 Infectious Disease Rounds; Main Conference Room, Bldg. I.
5:00 - Medical Journal Club; Conference Room, Bldg. I.
7:00 p.m. Lectures in Basic Science or Orthopedics; Conference Room, Bldg. I.

Thursday, October 22

Medical School and University Hospitals

- 9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
11:00 - 12:00 Cancer Clinic; K. Stenstrom and A. Kremen; Todd Amphitheater, U. H.
12:30 - The Physiological Chemistry Seminar; Recent Work on Nucleic Acid Structure; Fred Bollum; 214 Millard Hall.
1:30 - 4:00 Cardiology X-ray Conference; Heart Hospital Theatre.
4:00 - 5:00 Physiology-Surgery Conference; Todd Amphitheater, U. H.
4:30 - ECG Reading Conference; James C. Dahl, et al; Staff Room, Heart Hospital.
5:00 - 6:00 Radiology Seminar; Report of Meeting of American Roentgen Ray Society; Eustis Amphitheater, U. H.
7:30 - 9:30 Pediatric Cardiology Conference and Journal Club; Review of Current Literature 1st hour and Review of Patients 2nd hour; 206 Temporary West Hospital.

Ancker Hospital

- 8:00 - 10:00 Medical Grand Rounds; Auditorium.

Minneapolis General Hospital

- 9:30 - Neurology Rounds; Heinz Bruhl; Station I.
10:00 - Pediatric Rounds; Spencer F. Brown; Station K.
10:00 - Psychiatry Grand Rounds; J. C. Michael and Staff; Sta. H.
11:30 - 12:30 Clinical Pathological Conference; John I. Coe; Classroom.
1:00 - Fracture - X-ray Conference; Dr. Zierold; Classroom.
1:00 - House Staff Conference; Station I.
4:00 - 5:00 Infectious Disease Conference; Wesley W. Spink; Classroom.

Thursday, October 22 (Cont.)

Veterans Administration Hospital

- 8:00 - Surgery Grand Rounds; Conference Room, Bldg. I.
8:00 - Surgery Ward Rounds; Lyle Hay and Staff; Ward 11.
11:00 - Surgery-Roentgen Conference; J. Jorgens; Conference Room, Bldg. I.
1:00 - 3:00 Metabolic Disease Conference; Drs. Flink, Heller and Sherman.

Friday, October 23

Medical School and University Hospitals

- 8:00 - 10:00 Neurology Grand Rounds; A. B. Baker and Staff; Station 50, U. H.
9:00 - 9:50 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U. H.
10:30 - 11:50 Medicine Rounds; C. J. Watson and Staff; Todd Amphitheater, U. H.
10:30 - 1:50 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Department, U. H.
11:00 - 12:00 Vascular Rounds; Davitt Felder and Staff Members from the Departments of Medicine, Surgery, Physical Medicine, and Dermatology; Heart Hospital Amphitheater.
11:45 - 12:50 University of Minnesota Hospitals Staff Meeting; Observations on the Effects of Fever and Hypoxia in Dogs and Monkeys; W. G. Kubicek, Wesley D. Anderson, and F. J. Kottke; Powell Hall Amphitheater.
1:00 - 2:50 Neurosurgery-Roentgenology Conference; W. T. Peyton, Harold O. Peterson and Staff; Todd Amphitheater, U. H.
3:00 - 4:00 Neuropathological Conference; F. Tichy; Todd Amphitheater, U. H.
4:00 - 5:00 124 Advanced Neurophysiology Lecture; Werner Koella and Ernst Gellhorn; 111 Owre Hall.
4:30 - 5:20 Ophthalmology Ward Rounds; Erling W. Hansen and Staff; E-534, U. H.
4:30 - ECG Reading Conference; James C. Dahl, et al; Staff Room, Heart Hospital.
5:00 - Urology Seminar and X-ray Conference; Eustis Amphitheater, U. H.

Ancker Hospital

- 1:00 - 3:00 Pathology-Surgery Conference; Auditorium.

Minneapolis General Hospital

- 9:30 - Pediatric Rounds; Wallace Lueck; Station J.
10:30 - Pediatric Surgery Conference; Oswald Wyatt, Tague Chisholm; Station I, Classroom.
12:00 - Surgery-Pathology Conference; Dr. Zierold, Dr. Coe; Classroom.
1:00 - 3:00 Clinical Medical Conference; Thomas Lowry; Classroom, Station M.
1:15 - X-ray Conference; Oscar Lipschultz; Classroom, Main Bldg.

Friday, October 23 (Cont.)

Minneapolis General Hospital (Cont.)

2:00 - Pediatrics Rounds; Robert Ulstrom; Stations I and J.

Veterans Administration Hospital

10:30 - 11:20 Medicine Grand Rounds; Conference Room, Bldg. I.

1:00 - Pathology Slide Conference; E. T. Bell; Conference Room, Bldg. I.

2:00 - Autopsy Conference; E. T. Bell and Donald Gleason, Conference Room, Bldg. I.

Saturday, October 24

Medical School and University Hospitals

7:45 - 8:50 Orthopedic X-ray Conference; W. H. Cole and Staff; M-109, U. H.

9:00 - 10:00 Infertility Conference; Louis L. Friedman, David I. Seibel, and Obstetrics Staff; Eustis Amphitheater, U. H.

9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; Heart Hospital Amphitheater.

9:15 - 10:00 Surgery-Roentgenology Conference; L. G. Rigler, J. Friedman, Owen H. Wangenstein and Staff; Todd Amphitheater, U. H.

10:00 - 11:30 Surgery Conference; Todd Amphitheater, U. H.

10:00 - 12:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.

11:30 - Anatomy Seminar; The Cerebellum of Fishes; O. Larsell; 226 Institute of Anatomy.

Ancker Hospital

8:30 - 9:30 Surgery Conference; Auditorium.

Minneapolis General Hospital

8:00 - Urology Staff Conference; T. H. Sweetser; Main Classroom.

11:00 - 12:00 Medical - X-ray Conference; O. Lipschultz, Thomas Lowry and Staff; Main Classroom.

Veterans Administration Hospital

8:00 - Proctology Rounds; W. C. Bernstein and Staff; Bldg. III.

8:30 - 11:15 Hematology Rounds; Drs. Hagen and Hoseth;

11:15 - 12:00 Morphology Dr. Aufderheide; Conference Room.