

**Staff Meeting Bulletin
Hospitals of the » » »
University of Minnesota**

**Surgical Treatment
of Essential Hypertension**

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during the school year, October to May, inclusive.

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William A. O'Brien, M.D.

I. LAST WEEK

Date: February 23, 1940

Place: Recreation Room
Powell Hall

Time: 12:15 to 1:10 p.m.

Program: Movie: "How to Sub-Let"

The Use of Vitallium in Bone
and Joint Surgery

W. H. Cole

H. B. Hall

Discussion

M. E. Knapp

W. T. Peyton

Present: 137

Gertrude Gunn,
Record Librarian

- - - -

II. MOVIE

Title: "Beach Picnic"

Donald Duck and Pluto

Released by: R-K-O

- - -

III. ANNOUNCEMENTS1. WELCOME

Adelbert Louis Dippel, associate professor of obstetrics and gynecology, will fill the position made vacant by the death of Dr. John A. Urner. Dr. Dippel came to the University of Minnesota to start work March 1, 1940, having spent the previous month in special studies in the East preliminary to taking his new position. Dr. Dippel was born in LeGrange, Texas, is married, and has one child. He attended the University of Texas from 1920-1928, receiving the B.A., M.A., and M.D. degrees. He made his graduate studies at Johns Hopkins University School of Medicine where he has been in-

structor and associate in obstetrics. Dr. Dippel was a member of the faculty for the course in Obstetrics which was held at the Center for Continuation Study last spring. Fourteen years ago he took some undergraduate work at Minnesota. Dr. Dippel is primarily interested in female pelvis and soft tissue roentgenology in obstetrics. He impressed all with his ability when he was with us last spring. He is favorably known to his many friends for the modest way he practices medicine as well as carries on investigations. They assure us that we are very fortunate in having him as a member of our staff.

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2. CENTER FOR CONTINUATION STUDY

Continuation course in Physical Therapy Technology, March 4-6, 1940. Guest - William H. Schmidt, Assistant Professor of Physical Therapy, Jefferson Medical College of Philadelphia,

- - -

3. SPRING SESSION,
Midwestern Section,
American Congress of Physical
Therapy, University of Minnesota
Hospitals (Eustis Amphitheatre,
March 7. See program in this
issue.

Earl C. Elkins - Rochester
Disraeli Kobak - Chicago
John Frampton Wyman - Milwaukee
Milan E. Knapp - Minneapolis
Frederick L. Wahrer - Marshalltown
Frank H. Krusen - Rochester
Robert L. Bennett, Jr. - Rochester
Charles O. Molander - Chicago
Milton G. Schmitt - Chicago
William H. Schmidt - Philadelphia

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IV. THE SURGICAL TREATMENT OF ESSENTIAL HYPERTENSION

H. F. Buchstein

Essential hypertension occurs in several clinical forms, some more malignant than the others. Patients may progress from the more benign to the more malignant forms.

In any type of hypertension the increase in the arterial tension is generally conceded to be the result of increased peripheral vascular resistance. This must, in accordance with physical principles, reside in the smaller arteries and the arterioles. Organic changes in these vessels may be observed in the retinae. Kernohan and his students have demonstrated narrowing of the lumen of the arterioles of the muscles, kidney, brain, heart and other organs in cases of hypertension of all degrees of severity but most consistently and in greatest degree in cases of so-called malignant hypertension. These changes are regarded as the result, not the cause of the hypertension. However, marked organic change is thought to produce a "fixed" hypertension which cannot be altered by the elimination of vasoconstricting mechanisms.

Functional narrowing of the arterial lumen may be produced in several fashions, the most obvious being through the mediation of vasoconstrictor nerves. These are known to play an important role in the maintenance of the normal blood pressure, being activated reflexly by impulses arising in the carotid sinus, the arch of the aorta and other parts of the vascular system. That they may also be influenced by psychic stimuli is generally admitted and many authors have been impressed by the role of psychic factors in the production of essential hypertension. A type of experimental hypertension can be produced in animals (dogs) by exclusion of all of the so-called "moderator nerves," but most authors deny that this resembles human hypertension. There is no evidence that the vasomotor nerves are hyperactive in essential hypertension although such a premise has often been assumed.

Circulating vasopressor substances may also produce narrowing of the arterial lumen. There is no evidence that the hormones of the adrenal and pituitary gland are present in excessive amounts in essential hypertension, nor has it been possible to demonstrate a vasopressor substance of any sort in the blood of hypertensive men. Great interest has been aroused by Goldblatt's demonstration that a permanent hypertension may be produced in animals by the production of a renal ischemia by the placing of clamps on the renal arteries. It has been shown that this "Goldblatt hypertension" is independent of the nervous system in its origin and persists after removal of the entire sympathetic nervous system. Saline extracts of the kidneys from the hypertensive animals and from men with essential hypertension have been found to have a greater vasopressor action than a similar extract of the kidneys of normal dogs or men. Renal ischemia has been demonstrated as the cause of hypertension in a number of human patients having actual renal disease, and some authors have accepted it as the mechanism of essential hypertension. Others accept it as the cause of "malignant" hypertension but not of the "benign" forms.

Several investigators (Prinzmetal and Wilson) have concluded that the arterial constriction is chiefly due to an "intrinsic vascular hypertonus" upon which normal vasomotor activity is superimposed.

The history of the development of the surgical treatment of essential hypertension was reviewed for this group by Dr. Ritchie in 1936. Several of the procedures which he discussed have since been generally abandoned. Suprarenalectomy, as proposed by DeCourcy, has been found to be ineffectual. Ventral rhizotomy, as proposed by Adson, was more effective but produced too much disability and carried too great a risk. At present some form of sympathectomy, usually a resection of the splanchnic nerves and various adjacent portions of the sympathetic trunk and ganglia, is considered the procedure of choice by most workers.

Despite the very considerable number

of patients in whom surgical procedures have been carried out for the relief of hypertension there is as yet no unanimity of opinion regarding the value of such operations or the indications for their application. Goldblatt has well summarized the objections raised by critics of the surgical treatment, pointing out that the various authors tend to be enthusiastic about operations of their own invention but no other; that regardless of the type of operation employed the percentage of patients in whom the blood pressure is lowered is about the same; and that all authors report that more patients are relieved of their subjective symptoms than have their hypertension reduced. Aymen noted a similar state of affairs in connection with various types of medical treatment and reported a subjective improvement in 82% of a mixed group of hypertensive patients treated simply with dilute HCL and enthusiasm.

Volini and Flaxman studied the effects of non-specific operations (hysterectomy, appendectomy, etc.) on twenty-seven patients with elevated blood pressures. In every instance the blood pressures were lower during the immediate postoperative period than before operation, and the authors reported a relief of subjective symptoms for periods varying from 4 months to 9 years. They further cited blood pressure estimations obtained from 1 to 13 years after operation which in many instances were lower than the preoperative levels. The value of these figures is vitiated by the fact that apparently many of the patients were decompensated and dying of heart failure or uremia at the time the "last postoperative" blood pressures were taken.

In attempting to evaluate a treatment such as an operation for the relief of hypertension chief reliance must be placed upon a study of relatively large series of cases, particularly those in which adequate clinical studies were carried out before and after operation. Therefore, in this review no attempt is made to mention all reports of single or small series of cases. Our own experience has been too limited to render it of any value as a standard of judgment.

Crile believes that "essential hypertension is an example of pathologic physiology of the adrenal medulla-sympathetic complex"; and has devised an operation consisting of a removal of the celiac ganglia and a "denervation of the aorta," for its relief. This he accomplishes by a technic termed "touch surgery," which involves identifying the ganglia, dissecting them free from the celiac axis and removing them entirely by blind dissection. He reports 239 such operations in 144 patients, with an operative mortality of 2.4%.

Crile states that the operability of patients with essential hypertension is best determined by the "experience of the operator" and that a fall in blood pressure is not the only criterion of a good result, citing relief of subjective symptoms for at least a year in 78% of his patients. It is virtually impossible to learn from his published statistics just what sort of hypertension his patients had or what the result of surgery has been so far as their blood pressure is concerned.

There is little to recommend this operation either as a surgical procedure or as a form of treatment.

The Mayo Clinic group believes that essential hypertension develops in persons having an inborn and probably hereditary hyperreactivity of their vasomotor mechanism which may be demonstrated by the application of a standard stimulus (cold pressor test). Such individuals, even before they have clinical hypertension, will respond to these stimuli with an abnormally great rise of blood pressure. They may develop arteriolar sclerosis and narrowing visible in the retinae before they have any clinical evidence of essential hypertension.

Although they previously leaned to the view that essential hypertension was neurogenic, i.e., due to a "faulty autonomic nervous system," Allen and Adson now believe that there is no single basis for the increased arteriolar tension, but contend that sympathectomy may relieve this increased tone even though

it is not the result of excessive sympathetic vasoconstrictor action. The operation which they employ is a bilateral subdiaphragmatic resection of the splanchnic nerves and the upper lumbar sympathetic trunks, carried out in two stages at a ten day interval. They point out that this procedure in addition to denervating the splanchnic vascular bed also denervates the kidney and the adrenal glands.

Keith and Wagener have proposed a classification of hypertension based largely on the condition of the arterioles as ascertained by ophthalmoscopic examination. Since this has been widely accepted by other workers it may be summarized:

- Group I: Minimal narrowing and sclerosis of the retinal vessels. Mild hypertension which may fall to normal during sleep. Cardiac and renal function remain adequate for many years. Most cases of "benign" hypertension fall in this group.
- Group II: More marked narrowing and sclerosis of the retinal vessels but no retinitis. Hypertension more severe and sustained than Group I and tends to elevate progressively. Cardiac and renal function may remain satisfactory for years.
- Group III: Fundi show an angiospastic retinitis (hemorrhages and/or exudates) in addition to diffuse and localized narrowing and sclerosis of the retinal vessels; there is no edema of the disks. The hypertension is often high and sustained. Cardiac and renal function may show mild impairment and the patient frequently complains of nervousness, headache, vertigo and visual disturbances. Occasional remissions may occur but in general the prognosis is serious, only 20% of patients surviving 5 years.

- Group IV: (Malignant hypertension). These patients present edema of their disks in addition to an angiospastic retinitis with marked spastic and organic changes in the vessels. The blood pressure is high and relatively fixed. Cardiac and renal function may be adequate at first but eventually fail. The patients complain of nervousness, asthenia, loss of weight, headache, visual disturbances and dyspnea on exertion. The prognosis is serious, 80% of the patients being dead within a year after examination. An occasional case may undergo spontaneous remission; in these spastic changes in the vessels are predominant.

Not every patient can be fitted into one of these groups, particularly in the late stages of the disease. Furthermore, patients may be in Group I or II when first observed and subsequently progress to Groups III or IV.

Allen and Adson have reported the results of their procedure in 124 patients. There were no operative fatalities; seven of the patients have died since operation but the authors point out that five of these seven did not conform to the indications for operation which they have since formulated. The follow-up studies were conducted by the questionnaire method and by having the patient's home physician report blood pressure estimations made while the patient was active and after a short period of rest.

Chief interest attaches to the effects of operation on the blood pressure levels. Immediately after operation most patients have an orthostatic hypotension and tachycardia; this has been found to disappear at a variable time after operation regardless of the effect of operation on the blood pressure. When the blood pressure level was favorably influenced by the opera-

tion the response to the "cold pressor test" was greatly diminished in most instances. When the blood pressure was not significantly altered the response to the "cold pressor test" was likewise not significantly changed.

The effect of operation on the actual blood pressure levels is summarized in Table I. In this table "temporary" indicates an immediate postoperative lowering of blood pressure which was subsequently found to have returned to preoperative levels. A "fair" result was one in which there was a "significant reduction of blood pressure which, however, did not approach normal levels." A "good" result was one in which the postoperative level was "greatly reduced" although not always within the range of normal. "Good" results were reported in patients having been observed over periods varying from 3 to 26 months after operation. Actual figures were given for each patient in their paper.

Table I

Result of Operation on Blood Pressure

<u>Result</u>	<u>Cases</u>	<u>Per Cent</u>
Failure	25	20
Temporary	35	28
Fair	35	28
Good	29	24

These authors have not been able to re-examine many of their patients after dismissal from the hospital, but in those in whom such studies have been possible it has been noted that T waves which were originally inverted in the electrocardiogram may become upright and the transverse diameter of the heart may decrease. Retinitis and retinal arteriolar spasm have been noted to disappear but the changes have not been constant and it has not been possible to correlate them with the effect of operation on the blood pressure.

The symptomatic relief produced by operation is summarized in Table II where it may be noted that even though the

effect of operation on the blood pressure level was poor a high percentage of symptomatic relief was experienced.

Table II

Effect of Operation on Symptoms

<u>Symptoms</u>	<u>Per cent relieved</u>		
	<u>Poor^o</u>	<u>Fair^o</u>	<u>Good^o</u>
Headache	76	80	100
Nervousness	67	66	80
Pain in thorax	60	75	90
Fatigue on exertion	50	44	41
Dyspnea on exertion	48	46	50

^oRefer to effect of operation on B.P.

There are no serious or unpleasant sequelae from this operation except a loss of ejaculatory function which may render the male sterile.

The Mayo Clinic group has been particularly interested in establishing criteria by which cases favorable for surgical treatment may be selected. They have found that sex, age and the known duration of the hypertension do not significantly influence the effects of operation on the blood pressure. All but one of their patients were Group II or III hypertension; the results were not significantly different in the two groups. The one group IV (malignant hypertension) patient was not benefitted. The degree of retinal arteriolar sclerosis was found to influence greatly the result of operation on the blood pressure, the degree of benefit decreasing as the degree of sclerosis increased. (Table III).

Table III

Influence of Degree of Sclerosis of Retinal Arteries on Effect of Operation on Blood Pressure

No sclerosis	Good or fair results = 83%
Sclerosis 1	52%
Sclerosis 2	53%
Sclerosis 3	22%

Chief reliance in selecting patients for operation has been placed on studies of the response of the blood pressure level to various depressants (rest, sodium amytal, intravenous pentathal sodium, carotid sinus pressure). When the diastolic pressure can be reduced by such means to below 110 mm. Hg. and retinal arterial sclerosis is slight a good result is "probable." When the diastolic pressure cannot be brought below 120 mm. Hg. and retinal arterial sclerosis is advanced the chances of a good result are small. It has been found that poor results can be predicted with much greater certainty than can good results.

As a result of their experience Allen and Adson believe that operation should be performed on "patients whose hypertension is mild, particularly if blood pressure is progressively elevated." They stress the prophylactic value of operation.

The most extensive studies of the results of the surgical treatment of hypertension have come from the clinic of Max Peet at the University of Michigan. Peet believes that in essential hypertension there is present a functional Goldblatt clamp as the result of increased vasomotor tone in the renal arteries. He seeks by operation to release this "neurogenic clamp." The operative procedure which he has employed for six years is a bilateral supradiaphragmatic resection of the splanchnic nerves and the sympathetic trunk from the tenth to the twelfth thoracic levels.

Believing that he had no rational basis for the selection of cases favorable for surgery, Peet has operated upon any patient under fifty who had a severe hypertension (over 200 mm. Hg. systolic) and whose cardiac and renal function were not seriously impaired. His patients include many with "malignant" hypertension.

The technic of the postoperative studies in these patients is deserving of some comment. The patients were recalled to the hospital for a period of study, during which they were housed outside the hospital and examined as ambulatory patients in the various out-patient clinics

and laboratories. All of the preoperative studies and tests of kidney and cardiac function, etc., were repeated and certain additional data were gathered. In every instance the examinations were performed by the personnel of the departments concerned, never by the surgeons who had operated upon the patients. The patient's blood pressure levels were checked in standing, sitting and recumbent positions three times each day for three days; the mathematical average of all these readings was regarded as the best available figure. Rigid criteria for the evaluation of improvement were established; these will be referred to later in connection with the analysis of the results. The various data thus gathered were assembled on punched cards for the purpose of analysis, thus rendering the evaluation as objective as possible.

A total of 264 patients had been operated upon during a six year period. There were 9 operative deaths (3.4%) and 61 patients had died subsequent to operation. These are being made the subject of a separate study, not yet reported. Of the 194 patients living, 173 were available for study. One half of the patients were in the fifth decade. All had severe hypertension, as is indicated by a summary of their preoperative condition. (Table IV).

Table IV

Preoperative Status of Patients

Average duration hypertension	58 mo.
Average blood pressure level	218 / 133
	<u>Per cent^o</u>
Abnormal eyegrounds	98
Vessel changes only	49
Vessel changes plus retinitis and/or edema	49
Concentration below 1.029	86
Urea clearance below 75%	40
Abnormal Addis counts	83
Heart enlarged 15%	63
Abnormal electrocardiogram	64
Distressing symptoms	99
Marked incapacitation	48

^oOf patients thus examined

Table V

Duration of Postoperative Period

<u>Months</u>	<u>Cases</u>
6	19
9	28
12	20
15-21	63
24-33	37
36-60	43
	<u>210</u>

The result of operation on the blood pressure levels is summarized in Table VI. A change in blood pressure of at least 40 points systolic and 15 points diastolic was necessary before being regarded as significant. The cases with reduced blood pressure levels were equally divided between the sexes and distributed through all of the decades of life included in the series.

Table VI

Result of Operation on Blood Pressure

No data	14 cases
Unchanged	103
Reduced	90 (43%)
Increased	1
	<u>208</u>

Table VII

Changes in Eyeground Findings

<u>Preoperative</u>	<u>Postoperative</u>		
	<u>Imp.</u>	<u>Unch.</u>	<u>Worse</u>
4 Normal	-	3	1
70 Vessel changes	7	59	4
69 Retinitis and edema	56	13	0
<u>143</u>			

Recheck of the kidney function showed that the concentrating ability had improved (3 points or more) in 44 of 101 cases in which it had been decreased, was unchanged in 51 cases and worse in 6 cases.

The urea clearance had improved in 21 (45%) of 45 cases in which it had been decreased (below 75%), was unchanged in 21 cases and worse in 5 cases.

The heart size had remained normal in 25 of 27 cases in which it had been normal prior to operation, and had enlarged in 2 cases. It had been reduced by at least 10% in 19 (58%) of the 33 cases in which it had been enlarged preoperatively, was unchanged in 11 and worse in 3. Abnormal electrocardiograms had been noted in 40 of 68 cases so studied before operation. After operation 19 (48%) of the abnormal electrocardiograms showed improvement and none of the normal electrocardiograms had become abnormal.

Relief of subjective symptoms was striking. One hundred sixty-three (87%) of the patients regarded themselves as improved, only 3 as worse. Of the 119 patients who had been incapacitated prior to operation 100 (84%) reported an increased capacity for work. Of the 37 patients without incapacitation before operation only 2 had become incapacitated subsequently.

In evaluating these results in Peet's cases and comparing them with those reported by other authors the relative severity of the disease in most of his patients must be borne in mind.

Davis and Barker have operated on 6 patients (by the supradiaphragmatic technic of Peet) having a severe but fluctuating hypertension without evidence of renal disease. All had been found resistant to treatment by potassium sulphocyanate. The results, so far as reduction of blood pressure is concerned, were poor in every case. However, it was discovered that following splanchnicectomy 4 of the patients had become more sensitive to potassium sulphocyanate and responded in a favorable manner to its administration. It may be noted that none of Davis and Barkers' cases fulfilled the criteria for operability which have been set up by the Mayo Clinic group.

Page and Heuer operated upon 9 patients

with various types of hypertension by the Peet technic. The blood pressure levels were reduced in each instance but had regained their preoperative levels within 9 months. There was no change in the reaction to the "cold pressor test." They felt that the present operations could be improved upon but did convince themselves that their results were due to the operation and not to psychic factors. Page believes that operation is most valuable in young individuals with what he terms the "hypertensive diencephalic syndrome" (predominantly "nervous" symptoms) and in the early stages of malignant hypertension.

Smithwick, at the Massachusetts General Hospital, has operated upon about 150 patients with hypertension employing both supra- and infra-diaphragmatic types of splanchnicectomy. He believes that the splanchnic vascular bed is man's mechanism for maintaining his blood pressure at a nearly constant level in the lying, sitting and standing positions, and therefore, that if this splanchnic vascular bed is completely denervated there should result in every patient with hypertension a characteristic change in the blood pressure, namely, a fall in the blood pressure as the patient changes from a lying to a standing position. Because he could not consistently produce such a change with the older methods of splanchnicectomy Smithwick has experimented with a series of increasingly extensive sympathectomies seeking to determine the minimum procedure which will assure a favorable result. The procedure which he finally chose was a bilateral removal of the entire great splanchnic nerve with division of all its aortic branches coupled with interruption of the communicating rami of D9, D10, D11, D12, and L1, (and perhaps L2) together with excision of the sympathetic trunk over this area. This is a combination and extension of Peet's supradiaphragmatic and Adson's infradiaphragmatic operations. It permits an examination of the kidney and adrenal gland and denervates both those organs. The procedure is done in two stages. It has been carried out in 20 cases without serious complication. Ten of the patients were classed as Group II, 4 as group III and 6 as Group IV

(malignant) hypertension. Ten obtained a "marked" postural fall of blood pressure postoperatively, 7 a "moderate" postural fall and 3 (in whom the communicating rami of L2 were severed) a "profound" postural fall. The distribution of fair and good results was about the same in the various Groups. In no case did the pressure fail to fall. These patients have been followed only a few months and Smithwick notes that several years will be required to evaluate the procedure.

Goldblatt, in a discussion of the surgical treatment of hypertension, admitted that there may be in man a functional clamp of the renal arteries and concluded that whatever virtue operations for hypertension may have is due to their increasing the blood flow through the kidney. He further suggested the obvious expedient of trying to increase the collateral circulation of the kidney in patients with renal ischemia, but had not carried out such a procedure himself.

Chabanier, Gaume and Lobo-Orell, having a similar purpose in mind, have decapsulated the kidneys, in conjunction with other procedures such as splanchnic resection and adrenal denervation, in cases of hypertension accompanying nephrosclerosis and chronic glomerular nephritis. Their results were given in rather general terms. Reduction in blood pressure was of short duration but the patients were relieved of such subjective symptoms as headache, palpitation and dizziness. Many of their patients were in uremia at the time of operation.

Abrami, Islein and Wallick have sought to revascularize the kidney by means of omental transplants but failed to produce any improvement in the patient's condition. DeTakats and Beck have performed similar operations in three patients with equally negative results.

Cergua and Gamaan have recently reported the "cure" of Goldblatt hypertension in several dogs by decapsulation of the kidney for the promotion of collateral circulation.

Summary and Conclusions

Essential hypertension remains one of the great medical problems, for it afflicts 15% of the adult population and causes the death of a quarter of those who reach fifty. These facts in themselves justify a thorough trial of all therapeutic measures of any promise.

The etiology and pathogenesis of essential hypertension are still the subject of dispute. Strong evidence of an hereditary factor is accumulating. A few years ago it was the fashion to regard essential hypertension as a neurogenic disorder; today's fashion is to ascribe it to renal ischemia. Both etiologies are as yet unproven.

Present surgical attacks on hypertension center about a resection of the splanchnic nerves and various portions of the sympathetic trunk. Suprarenalec-
tomy and ventral rhizotomy have been largely abandoned.

Against splanchnicectomy it may be reasonably urged:

- 1) It is not a cure and often fails to lower the patient's blood pressure.
- 2) It has not been proven that the operation increases the patient's life expectancy.
- 3) It is least effective in those who need help the most - those with malignant hypertension.
- 4) It is impossible to predict the effect of operation with certainty.

In favor of splanchnicectomy it may be said:

- 1) There is very little risk to life. The Adson operation has the best record in this respect.
- 2) Even when unsuccessful it imposes no serious handicap on the patient.
- 3) It lowers the blood pressure level significantly in a large number of patients and this improvement may be

maintained for some years. It is difficult to compare the results obtained by the supra- and infradiaphragmatic technics of splanchnicectomy since they have been applied to different types of patients.

- 4) It produces marked symptomatic relief in a high percentage of cases including many in whom the blood pressure level is not altered. However, the same has been claimed for many forms of therapy.

We may conclude that present methods of surgical treatment of hypertension are most applicable to patients with a labile but progressive hypertension who have not yet developed marked organic arteriolar changes, and particularly to those with an angiospastic type of hypertension (Group III) since their prognosis is so serious. It offers definite benefit both in lowered blood pressure levels and in freedom from distressing symptoms to a considerable number of these patients.

Improvements in surgical technic in the form of more extensive sympathectomies and possibly other procedures designed to increase the blood flow through the kidney by development of collateral circulation, hold definite promise for even better results in the future and are deserving of continued investigation and trial.

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V. - - - - - SPRING SESSION
Mid-Western Section

AMERICAN CONGRESS OF PHYSICAL THERAPY

University of Minnesota Hospitals
(Eustis Amphitheatre)
Thursday, March 7, 1940

Morning Session -- 10 A.M.

1. Fever Therapy - Earl C. Elkins, M.D., Consultant in Physical Medicine, Section on Physical Therapy, Mayo Clinic, Rochester, Minnesota
2. Iontophoresis - Disraeli Kobak, M.D., Assistant Clinical Professor of Medicine (Physical Therapy) Rush Medical College of the University of Chicago, Chicago
3. Advantages of Institutional Care and Physical Therapy in Chronic Arthritis - John Frampton Wyman, M.D., Director, Physical Therapy, Sacred Heart Sanitarium, Milwaukee, Wisconsin

Afternoon Session -- 2 P.M. - Symposium on Physical Therapy in General Practice

1. Physical Therapy in the Treatment of Fractures - M. E. Knapp, M.D., Director of Physical Therapy, University of Minnesota Hospitals and Minneapolis General Hospital, Minneapolis
2. Physical Therapy in Eye, Ear, Nose and Throat Diseases - Frederick L. Wahrer, M.D., Staff, Evangelical Deaconess, and Mercy Hospitals, Marshalltown; Otolaryngologist to Iowa Training School for Boys, Eldora, Iowa, Marshalltown, Iowa
3. Physical Therapy in the Treatment of Fibrositis - Frank H. Krusen, M.D., Head of Section on Physical Therapy, Mayo Clinic; Associate Professor of Physical Medicine, The Mayo Foundation, University of Minnesota, and Robert L. Bennett, Jr., M.D., Fellow in Physical Medicine, Section on Physical Therapy, Mayo Clinic, Rochester, Minn.
4. Some Technical Aspects of Short Wave Diathermy - Charles O. Molander, B.S., M.D., Associate, Physical Therapy, Northwestern University Medical School, Chicago.
5. Advantages of Short Wave Diathermy in Pneumonia - Milton G. Schmitt, M.D., Director of Physical Therapy, Garfield Park Hospital, Chicago

6:30 P.M. - Dinner at the Center for Continuation Study, University of Minnesota

Toastmaster: William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, Minneapolis

Speaker: William H. Schmidt, M.D., President, American Congress of Physical Therapy, Assistant Professor of Physical Therapy, Jefferson Medical College, Philadelphia

Subject: Electrosurgery.

VI. GOSSIP

Henry Van Meier, Stillwater, Minnesota is proudly displaying a new tweed suit which was made from cloth which was woven by him. It is a very striking diagonal pattern. Henry, who attends staff meetings whenever he is in the cities purchased the wool in Virginia. He dyed it himself and, after he had made 15 yds. of cloth, washed the material in the bath tub, and allowed it to drip until dry. Anyone interested in weaving may obtain the details from Dr. Van Meier or join one of the classes offered by the University....E. Sidney Boleyn, also of Stillwater, relative of the famed Ann, attended the County Officers' Medical Conference at the St. Paul Hotel last Saturday. He is 76 years old and told us that his mother and father are still living in India, where they are retired civil service employees of the British Government. Dr. Boleyn's mother is 104, and his father is about 10 years older. Greatest record for longevity in the family is an aunt who died at 124 and an uncle at 127. These tales were told during the earlier part of the day.....Hospital steward Robert Schenck crashes the headlines again, as one of the star students of a course in astronomy. The other evening he was supposed to have located some new stars, but this could not be substantiated.....It is estimated that more than 23 million persons or more than one person in six in the United States have some chronic disease, orthopedic impairment, or serious defect of hearing or vision. The outstanding cause of disability is nervous and mental diseases with rheumatism second, heart disease third, tuberculosis fourth, and arteriosclerosis and hypertension fifth. Considered in another way, as to estimated prevalence, the order of frequency is rheumatism, heart disease, arteriosclerosis, hypertension, hay fever, asthma, hernia, hemorrhoids, and varicose veins. Over half the cases of chronic disease or impairments are reported in individuals under 45, with over 70% under 55. Medical social service workers now taking a continuation course at the Center for Continuation Study are finding a great field of usefulness in the chronic disease problem. These figures are taken from the much-discussed national health survey of the United States Public Health Service made in 1935-36, published in 1938.....The American College of Physicians announces a series of post-graduate courses which will immediately precede the annual meeting to be held in Cleveland, April 1-5. These courses will be given in Ann Arbor, Detroit, New York, Columbus, and Iowa City.... "Functional" aging of the brain is said to start at 65, but the symptoms may not be complete until after 85. One of the most important symptoms is narrowing of the horizon of interests and activities. Studies indicate that there is even a rearrangement of our interests as we grow older. If this is true, some of our younger men are beginning to show signs of senility.....Dean Eben James Carey of Marquette University School of Medicine was a visitor this week. He was here to address the annual convention of the Minnesota State Dental Association. Another visitor was Ralph H. Major, Professor of Medicine, University of Kansas. A group from the faculty entertained him at luncheon yesterday at the Center for Continuation Study. Dr. Major was here to address the Medical History Society. He is well known for his many worthwhile publications, not the least of which is "Classical Descriptions".... ..Dean H. S. Diehl, who has been ill at his home is reported to be much improved. ...Pharmacologist Arthur D. Hirschfelder made many significant contributions before he was thirty years old, including the publication of a book on "Diseases of the Heart and Aorta." His first interests were in clinical medicine, but he turned to pharmacology because of the difficulty in establishing effective therapy....Urologist Franklin D. Wright is confined to his home because of illness. Frankie, who retired a few years ago, is one of our best-known faculty members. He enjoyed a splendid reputation as a teacher and, whenever former Minnesotans gather, he is always remembered with great affection....Nurses May J. Wahlberg and Lillian K. Christensen are now airline hostesses. There have been many Minnesota girls in the service including Miss Church who organized the corps. Our latest entries will not have to take second place to anyone when it comes to pulchritude and ability to please the public.