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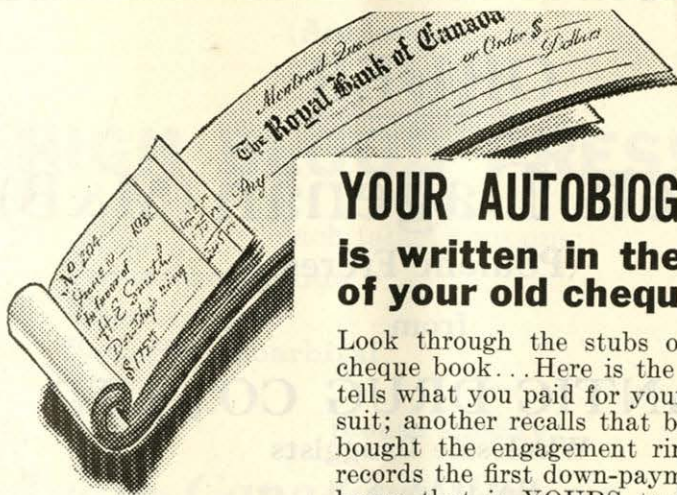
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*Medical Care Plans for Low Income Farm Families

Developed by the Farm Security Administration

R. C. WILLIAMS, B.S., M.D.

Chief Medical Officer, Farm Security Administration, Washington D.C.

THROUGH the co-operation of state medical associations, the Farm Security Administration has developed plans under which more than 112,000 low income farm families in 23 states are being helped to obtain medical care at a cost which they can afford.

The Farm Security Administration found it necessary to help provide such medical care in the course of its efforts to rehabilitate more than 700,000 low income and destitute farm families. Quite aside from any humanitarian purposes it has, as a lending agency, found that a family in good health is a better credit risk than a family in bad health. It has developed plans for medical care because it has found that good health is a necessary part of a family's economic rehabilitation.

The rehabilitation program grew out of the relief problem. More than a million farm families were on relief in 1933. Instead of carrying these families on relief indefinitely, the government seeks to get them back onto their feet, so they can become independent, self-sustaining units in the social and economic life of the community.

Advice is offered by trained agricultural and home management supervisors. Together with the farmers and the farm-wives, they work out plans for the successful operation of the farms and homes. Then loans are made to them by the government so that they can finance the program.

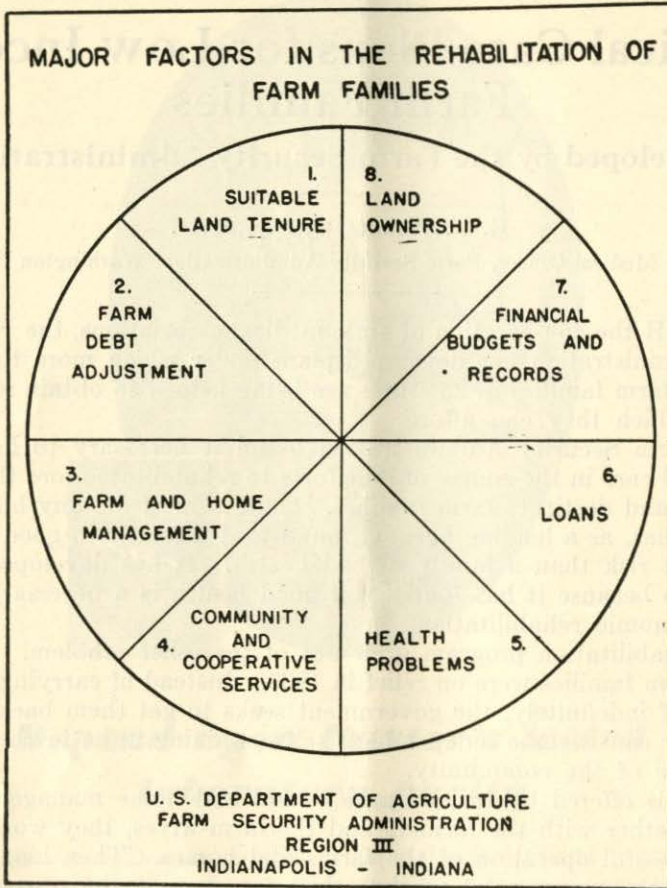
Rehabilitation loans usually average about \$300 annually. They are chiefly used to buy farm equipment, livestock, work animals, fertilizer, seed and the like. The loans carry interest at five per cent and are secured by crop liens and mortgages on livestock. Experience has shown that they are generally repaid.

Only farmers who cannot obtain adequate credit elsewhere are eligible for this kind of help. In most cases they are at the end of their rope. At best, they are poor credit risks from the ordinary business standpoint, and the government's security is dependent upon their success.

Borrowers, in order to repay their loans, must be in reasonably good physical condition. They must be able to do ordinary farm work. Provision for medical and dental care is often an important and necessary part of their rehabilitation.

Before any medical care plan is set up, agreements outlining the general provisions are reached with the State Medical Association and local medical societies. Then local medical societies in areas where the need seems greatest, work out with the Farm Security Administration representatives the details of a medical care plan for borrower families.

*Presented at the annual meeting of the Medical Society of Nova Scotia, "The Pines", Digby, Nova Scotia, July 5, 1939.



In general, the medical care plans are simple. They are based on the borrower's ability to pay for medical services, as determined by his farm plan; on free choice of participating physicians and on the setting aside of funds, in the hands of a trustee, at the beginning of the operating period.

The amount paid for participation varies in different localities. The usual payment is between \$15 and \$30 a year per family. When necessary, the Farm Security Administration will increase the size of its loan to enable a borrower family to participate. The details vary, but under the plan in most general use, a part of the pooled funds held by the trustee is allocated for hospitalization and emergency needs, including surgical care, at the beginning of each period. The remaining fund is then divided into equal monthly allotments for the period covered.

Physicians submit monthly statements to the trustee for services rendered. If the total bills for a given month exceed the amount available, all bills are proportionately reduced and each physician paid his pro rata share of the month's allotment. If the allotted funds for the month are sufficient, the bills are paid in full; if a balance remains, it is carried forward to the next

month or to the end of the period, and then used to complete paying bills for months in which funds were not adequate.

Under an alternative plan in limited use, funds in the hands of the trustee are kept separate for each family. The physician chosen by the family agrees to provide medical care for a certain period. If the bills for medical care are less than the sum set aside, the remainder is refunded to the family. If the cost of medical care exceeds the amount set aside by the individual family, the physician continues his attendance during that period without additional compensation. This plan ordinarily does not provide for hospitalization. Occasionally it is varied to provide for the pooling of a certain amount from all families to meet hospitalization and other emergency needs.

Experience with the two plans clearly indicates that for low income families the first plan is preferable, that is, a plan providing for pooling the individual loans in one general fund. In case of catastrophic illness it is impossible for any family in this income group to pay individually for hospitalization and special medical care without financial ruin or without destroying the hope of solvency for years to come; yet, it is unfair to ask a physician to handle such a case for a fee which does not anticipate such long and special attention. The pooling of funds serves as a form of voluntary insurance against disaster for the farmer and against unreasonable hardship for the doctor.

Both plans embody principles worthy of note. By establishing funds for medical care in advance, they encourage a sane acceptance of preventive medicine. In many areas, local physicians previously have served Farm Security Administration borrowers with little or no compensation. Most families, owing the doctor or unable to pay, have postponed requests for medical care as long as possible, perpetuating minor disabilities or allowing illness to become serious.

In both plans, payment for medical care is based on the expected income of the family. The physicians utilize a uniform fee schedule as the basis for their charges, but they agree to accept a pro rata reduction in payment of bills when available funds are insufficient to pay the bills in full. Many physicians were at first distrustful of this deviation from customary procedure, but learning that families embraced under this plan have total net incomes averaging from \$20 to \$300 a year, they have realized that the families would be unable to pay heavy fees, even in an emergency.

Some doubts were also expressed about the workability of plans which call for advance payment for medical care when no illness may occur to the family during the year. Experience has cleared up doubts. Most families feel that the security of the plan is worth the investment.

Fears were voiced that participating families would abuse their privilege by requesting unnecessary medical attention. In most of the counties where the plans have been understood and adopted this expected abuse has failed to materialize. Often it happens that families will visit their physicians or summon them during the first few weeks more or less for the novelty of the thing—to see if the plan really works. When they find that the physicians do render service as agreed, they are satisfied. In those rare instances where families are unreasonable in requesting an excess amount of service, the local representative of the Farm Security Administration tries to adjust matters—generally with success. If this fails, the family may be dropped from the program.

Physicians are, in general, pleased with the program. Most of the families aided under the plan, have been able to pay very little or nothing in the past, but are now able to pay at least a substantial part, if not the full amount, of their sickness bill.

**Extent of the Medical Care Program of The Farm Security Administration,
as developed through County and State Groups based on reports as of
May 31, 1939.**

State	No. of Counties	No. of Families	No. of Persons	Type of Service	Average Annual dues per family
All States	494	112,533	.....	.....	.....
1. Alabama.....	24	9,582	33,807	MD, Hosp., Drugs	\$16.30
2. Arkansas.....	65	12,500	62,500	MD, Hosp., Drugs	15.60
	*40	*2,000	.....	DDS (Restricted)	5.00
3. Colorado.....	2	106	521	MD, Hosp., Drugs	31.25
4. Florida.....	5	650	2,193	MD, Hosp., Drugs	15.00
5. Georgia.....	104	13,639	42,356	MD, Hosp., Drugs	15.00
6. Indiana.....	5	105	.....	MD	22.31
7. Idaho.....	2	143	.....	MD	.....
8. Iowa.....	4	193	.....	MD	22.30
9. Kansas.....	18	2,000	.....	MD, Hosp., DDS, Drugs	30.00
10. Louisiana.....	14	1,000	5,500	MD	15.00
11. Mississippi.....	40	7,000	55,000	MD	18.00
12. Missouri.....	12	841	.....	MD	27.57
	*1	*57	.....	DDS	.....
13. New Jersey.....	1	84	.....	MD, Drugs	17.00
14. New Mexico.....	4	260	.....	MD, Hosp., DDS, Drugs	30.00
15. North Carolina...	6	433	2,296	MD, Drugs	15.00
16. North Dakota...	53	29,133	149,001	MD, Hosp., DDS, Drugs	24.00
17. Ohio.....	11	510	.....	MD	27.42
18. Oklahoma.....	9	737	.....	MD, Hosp., Drugs	21.00
19. South Carolina...	18	3,681	13,423	MD, Hosp., Drugs	15.00
20. South Dakota...	69	27,964	132,844	MD, Hosp., DDS, Drugs	24.00
21. Tennessee.....	6	226	1,291	MD	21.00
22. Texas.....	12	879	.....	MD, Hosp., Drugs	24.00
23. Virginia.....	8	336	.....	MD, Hosp.	21.67

*Families participating in both medical and dental program.

Agreements for county medical care plans have been reached with the state medical associations of Kentucky, Wisconsin, Utah, Colorado, Maine, Vermont, New Hampshire, Kansas and West Virginia. Plans are under discussion with local medical societies in these states.

The financial report of a typical county group health association will demonstrate how the program works. The association, the report of which is given below, was sponsored by the Farm Security Administration but is now conducted by borrower families. It is operating in a county in a Southern state in which more than 300 farm families are Farm Security Administration borrowers; 307 families are members of the association, paying an average of approximately \$27 per year. The financial report for 1938 follows:

Financial Report for the Year 1938
 Membership Fees: 307 Members at Average Fee—\$27.15—\$8,334.00.

Medical Fund \$5,278.20—63.3% Monthly allotment \$439.85				Hospital Fund \$2,639.10—31.7% Monthly allotment \$289.92		
	Bills Presented	Bills Paid	Per cent Payment	Bills Presented	Bills Paid	Per cent Payment
January	\$ 427.13	\$ 427.13	100%	\$ 10.00	\$ 10.00	100%
February	671.03	439.85	66%	251.00	219.92	88%
March	516.59	439.85	86%	79.00	79.00	100%
April	649.91	439.85	68%	296.00	219.92	74%
May	492.40	439.85	89%	188.50	188.50	100%
June	599.23	439.85	74%	327.50	219.92	67%
July	825.30	439.85	53%	192.50	192.50	100%
August	612.97	439.85	72%	224.50	219.93	98%
September	521.88	439.85	84%	200.00	200.00	100%
October	617.40	439.85	71%	378.50	219.93	58%
November	493.95	439.85	89%	190.00	190.00	100%
December	827.49	439.85	53%	276.00	219.93	80%
ANNUAL DISTRIBUTION OF SURPLUS						
Accumulated balances				\$12.72		
Hospital fund surplus				433.95		
Administration surplus				25.60		
				76.07		
TOTALS	\$7,255.28	\$5,379.87	74%	\$2,613.50	\$2,613.50	100%

ADMINISTRATION

\$416.70—5%

Salaries	\$172.50	Postage	\$24.00
Supplies	73.13	Bond Premium	37.50
Equipment	33.50	To Medical Fund	76.07
No. of family members	307		
No. of persons	1,653		
No. of families having one or more persons receiving medical care	291		
No. of persons receiving medical care	913		
Per cent of families having one or more persons receiving medical care	95		
Per cent of persons receiving medical care	55		
No. of persons receiving hospitalization, or surgery, or both	78		
Home visits	918		
Office calls	1,717		
No. of physicians participating	16		

*Bills Incurred

TOTAL	\$9,868.78
Medical Service	7,255.28
Hospital Services	2,613.50
Average bill incurred per member family	32.16
Average medical bill per person receiving medical care	7.95
Average hospital bill per person receiving hospitalization (and surgery)	33.51

*Bill were presented for medical and hospital care and surgery on the basis of a fee schedule which was reduced 25% or more from regular fee rates.

There is a somewhat different approach to the problem of medical care in homestead projects established by the Farm Security Administration. In most of these communities, from 100 to 200 families have settled on adjoining farms. When these projects are located some distance from cities, the problem of medical care for the homesteaders is often an acute one. In a few instances, they have employed a physician living nearby on a part-time basis. Occasionally, it has been necessary to attract a resident physician to

the project, by setting up a program providing a basic guaranteed income. In most cases, however, the services of all nearby physicians are utilized. Medical care programs have been organized on 30 projects, and programs are now being set up on 8 other projects.

In several communities the homesteaders have themselves organized voluntary beneficial associations which have worked out special agreements with physicians and hospitals. In some instances the families pay regular membership dues in cash, without help from the FSA. In certain other projects the Farm Security Administration loans money to the homesteaders for this purpose, and these loans are later repaid when the crops are sold. A wide variety of arrangements for medical care are in effect in these community projects.

A few facts regarding a typical project program will illustrate how the medical care needs of the homesteaders are being met. Every one of the 141 families on this project became a member of the health association, paying in advance \$18 per family for general practitioner care for one year. All five physicians living nearby participated, agreeing upon a uniform fee schedule which represented a moderate reduction in their usual fees. An average of 83.5% payment was made on medical bills throughout the first year, the monthly payments ranging from 64.5 per cent to 100 per cent. Of the families in the association, 96 per cent had one or more of their members receiving service during the year, and 47 per cent of the families received service for which the charges exceeded the \$18 membership fee. The physicians and the families alike expressed themselves as pleased with the results of the program which is now being expanded, with an increase in dues to \$30, to include limited hospitalization and specialists' services.

Aside from placing public health nurses on about 25 of the projects, The Farm Security Administration is avoiding subsidizing medical care programs whenever possible. In most of the projects the families carry the full financial burden themselves. In four projects the program represents an interesting combination of subsidy and voluntary support from those families who wish to avail themselves of extra services not covered by the subsidy.

Special medical care plan, made necessary by local conditions, are in operation on a state-wide basis in North and South Dakota, California and Arizona.

In North and South Dakota, a special plan of medical care was needed because of the large number of farm families impoverished by repeated droughts. State-wide medical programs were inaugurated in these two states November 1, 1938, for all families receiving help, or who had received help in the past from The Farm Security Administration.

In South Dakota 25,000 families took part in the program. In North Dakota, about 29,000 families participated. These families were members of the North Dakota Farmers' Mutual Aid Corporation or the South Dakota Farmers' Aid Corporation. They paid in advance \$2 per month per family for a minimum period of six months. Families lacking this money received loans from The Farm Security Administration to enable them to become members of the Corporation.

The funds were used to pay for emergency medical care, emergency dental care, emergency hospitalization, for prescribed drugs and for home nursing. The North and South Dakota plan rendered service only for *acute* or emergency conditions, and not for chronic illness.

Each farm family that participates in this plan was given an identification card upon which are listed all the dependent members of the family who are entitled to emergency medical care under this plan. The family had the free choice of any participating physician licensed to practise medicine in the state.

The charges made for medical service were based on a special schedule of fees that have been agreed upon in an understanding worked out by the Inter-Allied Professional Council of South Dakota and the respective State Medical, State Dental, State Hospital and State Pharmaceutical Associations in North Dakota.

In North Dakota the funds were distributed as follows:

For Physicians.....	51%
For Hospitalization.....	37%
For Dentists.....	8%
For Drugs and Medical Supplies.....	4%

In South Dakota the distribution differed slightly, as follows:

For Physicians.....	51%
For Hospitalization.....	30%
For Dentists.....	15%
For Drugs and Medical Supplies.....	3%
For Nursing Care (Home).....	1%

At the end of each month all physicians, dentists, hospitals and pharmacists who have rendered services to participants in this plan submitted their bills before the 5th of the following month to the State office of the North Dakota Farmers' Mutual Aid Corporation at Bismarck, or the South Dakota Farmers' Aid Corporation at Huron. The bills were then reviewed and totalled. If the total amount of these bills was less than the amount set aside for that period, all bills were paid in full. If the total amount of the bills was in excess of the amount of money set aside for that period, each bill was cut proportionately.

As in any new program, difficulties have arisen at times in the North and South Dakota plan, but both doctors and patients agreed to co-operate in working out these problems. The state-wide programs in both North and South Dakota were discontinued on June 30, 1939. It is probable that county or local plans will be worked out for certain areas in those states.

In California and Arizona, a different type of medical care program was undertaken, to meet the needs of migratory agricultural workers who required medical attention, but rarely could afford to pay for such aid. The influx of migrants into California and Arizona since 1935 has created a serious public health problem in these two states. Most of them have a low and uncertain income, and live in roadside "jungles" in patched tents or hastily-improvised shelters with no sanitary facilities.

The constant movement of migrants from one farming area to another, sometimes more than 300 miles away, contributed to the rapid spread of communicable diseases. Despite the vigilance of the California State Department of Health, outbreaks of smallpox or typhoid in widely separated counties were a potential threat.

In February, 1938, The Farm Security Administration, with the cooperation of the California Medical Association, the State Department of Health

and the State Relief Administration, formed the Agricultural Workers' Health and Medical Association, incorporated under state laws. Each of the agencies has a representative on the Board of Directors of this non-profit association.

Migrants make applications for medical treatment at the association's district offices or camp treatment centres. A certificate of membership in the health association, which serves as an identification card, is issued to the applicant.

He then selects his doctor from a list of participating physicians or is treated by the local part-time physician in charge of the treatment centre. The Agricultural Workers' Health and Medical Association is billed for the medical services or hospital services rendered. In many treatment centres, local physicians work in the clinics at designated hours on alternate days. The personnel of the typical treatment centres consists of a part-time doctor, a nurse and a clerk.

Although the migrant-workers are obligated to repay the cost of services "if so requested", their economic status precludes any expectation of repayments in most cases. Some workers, however, have been able to repay a few dollars. In view of the savings effected in the health of the two states under this program, it seems probable that adequate financial support will continue. Similar conditions prevailed in Arizona, and similar measures were undertaken.

There are at present 13 medical care centres in California.

There has not been sufficient experience with any of these various plans to perfect them. Adjustments and changes will be necessary in many of the programs. These programs are not a final answer to all the problems of medical care in rural areas; but it is felt that they are worthwhile examples of methods which may be used in approaching these problems.

SOUTH DAKOTA FARMERS' AID CORPORATION, NOVEMBER, 1938

Professional services rendered Corporation members during November, showing number of new cases, costs, relation of costs for each type of service to the total cost, proportion of membership receiving service, and cost per case per family and per person.

Kind of Service	No. of new cases	Approved charges	Per cent of total costs	Illness rate per 1000 persons	Cost per case	Cost per family	Cost per person
Total.....	.....	\$74,654.10	100.00	.....	.....	\$3.08	\$.62
Physicians.....	3607	29,590.30	53.04	29.7	\$10.98	1.63	.33
Hospital.....	724	22,478.90	30.11	6.0	31.05	.93	.19
Nursing (Home)....	5	69.00	.09	.....	13.80	.003	.....
Dental.....	1996	10,014.00	13.41	16.5	5.02	.41	.08
Drugs.....	1376	2,501.90	3.35	11.3	1.82	.10	.02

Some of the more frequent diagnoses among the cases listed below as receiving physicians' and hospital care, showing the number of cases under each diagnosis by hospitalization, the average days hospitalized per case, the charges per case for hospital and physicians' service to hospitalized cases, the average number of days each non-hospitalized case was under physician's care and the average physicians' charges per case for non-hospitalized cases.

Diagnosis	Number of Cases			Hospitalized Cases			Non-hospitalized cases		
	Total	Hospitalized	Non-hospitalized	Days hospitalized per case	Approved charges per case			Days under Physician's care per case	Aver. Physicians' approved charges per case
					Hospital	Physicians	Total		
Bronchitis.....	132	3	129	4	\$15.40	\$19.73	\$35.13	7.8	\$ 5.29
Tonsillitis, Adenoids, Quinsey:									
—Non-surgical.....	104	10	94	1.6	6.93	12.00	18.93	4.1	4.85
—Surgical.....	42	27	18	1.2	10.75	14.21	24.96	9.2	18.39
Pneumonia.....	63	24	39	12.0	38.28	21.45	59.73	13.2	41.18
Diarrhea, Enteritis, Colitis	109	5	104	5.6	23.42	12.78	36.20	6.0	5.70
Appendicitis:									
—Non-surgical.....	44	7	37	3.3	19.00	30.85	49.85	6.3	5.29
—Surgical.....	111	101	10	11.3	48.49	62.76	111.25	12.6	47.90
Abortions, Miscarriages, Stillbirths.....	37	15	22	7.3	26.21	20.39	46.60	7.4	19.36
Live births.....	151	65	86	12.2	37.16	25.00	62.16	10.3	33.10
Complications of pregnancy and childbirth.....	227	94	133	10.0	34.89	24.09	58.98	13.9	12.33
Accidents.....	340	42	298	12.1	40.76	34.74	75.50	9.6	17.71

Dental services listed below in summary table, by type of service showing age group and sex of patient, total approved charges and average charge for patient for each type of service.

Kind of Service	No. of patients by age group and sex								Approved Charges	Average Charge per patient service
	All ages		Under 20		20-44		45 and over			
	M	F	M	F	M	F	M	F		
Tooth extraction.....	704	616	225	243	285	294	194	79	\$4,757.50	3.60
Removal of impacted teeth.....	6	6	1	1	4	5	1	..	134.00	11.17
Pre-operative treatments.....	45	42	10	11	21	27	14	4	133.50	1.53
Vincent's infection.....	36	33	6	3	16	27	13	3	229.00	3.32
Cement fillings.....	467	533	208	275	211	224	48	34	4,043.50	4.04
Denture repair.....	36	35	1	...	9	23	26	29	716.50	10.09

The Diagnosis of Chronic Arthritis

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EMPHASIZING the general nature of the problem, one begins by considering the patient with chronic arthritis as a "rheumatic patient" in preference to "arthritic patient". Consequently, after careful history and physical examination, a decision can be made whether the skeletal symptoms are due to articular or non-articular disease. The non-articular group includes myositis, bursitis, neuritis, tenosynovitis, and allied conditions, all of which can be included in the general term "fibrositis."

Using the modern classification of arthritis, the articular conditions may then be grouped with the idea of placing the patient with chronic arthritis in a definite category.

I. Arthritis due to known cause.

1. Arthritis due to trauma.
2. Specific infections, with metastatic localization in the joint; e.g., gonorrhoeal arthritis, tuberculous arthritis, pneumococcal arthritis
3. Arthritis as a manifestation of:
 - (a) Metabolic disturbance; e.g., gout.
 - (b) Constitutional abnormality (haemophilia).
 - (c) Neuropathic disorder, syringomyelia, tabes dorsalis, after hemiplegia.
 - (d) Serum disease or allergic disease.

II. Arthritis due to unknown or no specific cause.

1. Rheumatic fever.
2. Rheumatoid arthritis.
3. Osteoarthritis (osteoarthrosis).

(The above clinical grouping was suggested by Russell L. Haden).

In a paper of this length, it is not possible to discuss in any detail all the above conditions. Since the two large groups Rheumatoid Arthritis and Osteo-Arthritis constitute more than two-thirds of all cases of chronic arthritis, these will be considered in greater detail.

The essential pathology differs markedly in these two groups which formerly were considered to be different manifestations of the same disease.

Rheumatoid Arthritis begins as a proliferation of the synovial membrane with pannus formation (essentially a granulation tissue) which erodes and destroys the cartilage and is followed by fibrous or bony ankylosis.

Osteoarthritis is essentially a degenerative condition characterized by splitting, softening, and degeneration of the joint cartilage and the formation of osteophytes or bony spicules at the joint margins.

Considering the symptomatology of chronic arthritis, there are some *pre-disposing factors* which are common to both types. Arthritis is more prone to develop in persons who exhibit easy and excessive fatigue, disturbances in alimentation and disturbances in the circulation, especially the peripheral circulation. Among the pre-disposing factors, may be considered certain body

type susceptibility. In rheumatoid arthritis, the patient is as a rule slender, overworked, overworried, may show evidence of ptosis with vasomotor changes in the hands and feet. Usually the patient is in the young group under forty and, as a matter of fact, the condition begins more often before the age of thirty.

Osteoarthritis, on the other hand, does not, as a rule, show its presence until later life, beginning probably after forty, and more frequently in patients of fifty and over. The individual is usually stocky, well nourished, vigorous, overweight, and, consequently, there is a greater stress and strain on the joints. It frequently follows an occupation which subjects the joints to further trauma. At the other extreme, osteoarthritis is also prone to develop in the individual who leads a leisurely life, eats like a laborer, and pays no attention to elimination.

As a rule, the phalangeal joints and the knee joints are the first affected in both forms of arthritis. The knee joint changes appear first with about equal frequency in both conditions. In osteoarthritis, the terminal phalangeal joints are first affected; while in rheumatoid arthritis, the proximal phalangeal and metacarpo-phalangeal and wrist joints bear the brunt of the attack earlier. The elbow and shoulder are more likely to be attacked early in rheumatoid arthritis, while the hip joint may be the earliest manifestation of osteoarthritis.

Marie Strumpell syndrome and osteoarthritis of the spine are manifestations of the two types of arthritis under discussion. In the former, ossification of the anterior vertebral ligament leads to the severe deformity noted. In the latter, ossification of the osteophytes often takes place in an irregular manner, in this respect differing from the same condition elsewhere in the body.

The clinical evidence of rheumatoid arthritis may show its manifestations in varying degrees, sometimes developing insidiously. Stiffness, pain and tenderness, swelling and heat, all vary from vague sensations to the extreme acute condition of abrupt onset and often of symmetrical involvement simulating a rheumatic fever. The patient may run the course intermittently with recurrent attacks, or may show a steady downward course, with the final emaciated, crippled individual manifesting marked deformity of joints with atrophy of muscles, weakened and impaired nervous and physical vigor and characteristic skin changes, such as psoriasis and terminal nail changes.

In osteoarthritis, the onset, as a rule, is more gradual and vague pains and stiffness may have been present in several joints for many years. The onset is rarely abrupt. Some form of trauma involving a joint and causing an exaggeration of symptoms is more liable than any other factor to cause the individual to seek advice. Redness and heat are rarely present. Stiffness, pain, and tenderness are variable, and as symptoms are liable to be more prominent when the patient exerts beyond reasonable limits—in other words, following overuse of the joints, and applying particularly to the weight-bearing joints.

Disability rather than deformity is the late manifestation, any deformity resulting rather from relaxation of ligaments and irregular changes in the articular cartilage and articular ends of the bones.

Laboratory aids of most value are the blood picture, the red cell sedimentation rate, and the roentgenologic findings. Other laboratory tests, such as agglutination reactions, blood cholesterol, metabolic rate, and special urine and stool examinations, are of doubtful value and frequently give no helpful information. The blood picture and sedimentation rate in rheumatoid arthritis

usually suggest an infectious element. In osteoarthritis, they are usually normal or show very slight variation. As a matter of fact, all laboratory tests in osteoarthritis resemble the normal, while in rheumatoid arthritis, they suggest the possibility of infection.

The X-Ray findings are of the greatest value, and since these joints rarely are studied after surgical investigation, the essential recognizable changes can probably be best followed by a careful program of X-Ray investigation, especially of repeated study of films and frequent stereoscopic views when dealing with the larger joints.

In rheumatoid arthritis, infection is the greatest irritating and also the greatest aggravating factor. Rheumatoid arthritis, which might be called the younger of the two, is the more serious, but with proper management is possible to arrest and frequently can be cured. In osteo-arthritis the condition is progressive when once established. There is at present no known cure and with careful management, retardation may possibly result. Trauma is the greatest irritating as well as the greatest aggravating influence.

Spontaneous Pneumothorax and the Pleural Gases

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DURING the course of an artificial pneumothorax, a spontaneous pneumothorax may supervene. This of course is a serious matter as the opening of a smaller or larger bronchus to the pleural cavity is apt to lead to an infected pleura. Unfortunately the diagnosis of such a development is often difficult, and indeed if the fistula is not valvular or large enough to cause gross pleural pressure changes, the first inkling of the trouble may be the onset of an empyema.

From time to time^{1,2,3,4,5,6} for many years the analysis of the pleural gases has been done with a view to clarifying this diagnosis, but the procedure never has come into general use. The idea however seems to be a good one and was thought worthy of investigation. Normally, the pneumothorax is in a closed cavity surrounded by the moist pleura and the vascular thoracic walls and lung. It is reasonable to suppose then that if the pneumothorax is induced with air (which contains nearly 21% oxygen and practically no carbon dioxide), oxygen will diffuse through the pleura into the blood and carbon dioxide from the blood into the pleural cavity, until the pressures in blood and cavity are balanced. Not knowing the exact degree of oxygenation of blood leaving the pleural capillaries, the equilibrium level cannot be precisely foretold but simple calculations show that the pleural gases would be expected to have a composition of something less than 8-10% oxygen and about 6-8% carbon dioxide. By allowing pure air to enter the cavity, a broncho-pleural would therefore increase the oxygen concentration and lower the carbon dioxide. Accordingly if an analysis of pleural gases revealed the presence of but little carbon dioxide and of 10-20% oxygen, the presence of a bronchial fistula would be strongly suggested. Harpoth and Gad⁷ in 1938 recommended the sudden withdrawal of several hundred c.c. gas from a pneumothorax with analyses at the time and half an hour later in order to demonstrate a latent fistula. Much the same method had been proposed by Grass and Meiners⁸ in 1922.

Preliminary experiments were carried out with dogs, and fifteen pneumothoraces induced. Within about half an hour in the case of carbon dioxide and 8-10 hours in the case of oxygen, equilibrium was reached and further delay revealed no further change in composition. This was true⁹ whether the pneumothorax was induced with air or nitrogen, the final composition of pleural gas being the same. This averaged in the 15 cases, CO₂ 5.8% and O₂ 10.2%.

Following this, some three hundred analyses in 62 human cases of artificial pneumothoraces have been done. The specimens were taken when the

1. Demarquay and Leconte, *Compt. Rend. de l'Acad. des Scien.*, Vol. 56 Paris, 1860.
2. Ewald, *Chariteannalen*, Berlin 1875.
3. Tobiesen, *Hospitalsted*, 1911, 4, 90.
4. L. Hill and J. A. Campbell, *Br. Med. J.*, 1923, 752.
5. P. N. Coryllos and G. L. Birnbaum, *Am. J. Med. Sc.*, 1932, 183, pages 317, 326, 347.
6. P. N. Coryllos, H. Konterwitz and E. R. Levine, *Am. Rev. Tuberc.*, 1932, 26, 153.
7. H. Harpoth and U. Gad, *Br. J. Tuberc.*, 1938, 32, 338.
8. Grass and Meiners, *Beit. zur Blin*, Tübeck 1922, 51, 134.

subjects came in for refills; ample time had thus been allowed for the pleural gases to have reached equilibrium and a stable composition. The analyses of these 62 cases are shown in Table I in which the distribution of the cases into classes is shown.

In our work, a standard type of Haldane apparatus was used for the determinations and most of the specimens were taken in an oiled Luer syringe fitted with a three-way stopcock. It may be mentioned here that each analysis takes a matter of fifteen or twenty minutes and that it is an accurate and fairly simple procedure. However this is only true when the apparatus is available and is in regular use. If the apparatus needs cleaning and putting together etc., the first analysis may easily take an hour or two even by a person accustomed to the procedure.

TABLE I
Number of Cases

% O ₂		% CO ₂	
0-2.9	20	7.1M	22
3- 4.9	27	7.5	33
5-10	9	4.9-0	7
10.1	6	.....	..

The contrast between these human figures and those of the dogs, is striking. The great majority of the humans contained a smaller concentration of oxygen in their pleural gases than did any of the dogs. In regard to carbon dioxide the contrast is in the other direction. The reason for this low oxygen and high carbon dioxide is not quite clear but it seems definitely to be related to the pleural inflammatory process. In work reported elsewhere⁹ it was shown that only when pleural inflammation was present, could the figures in dogs be brought into line with the human results. Coryllos¹⁰ has reported that an analysis of less than 1% O₂ indicates a pyopneumothorax, of 1-2% a seropneumothorax, and of more than 3% a dry pneumothorax. In our series it is certainly true that there is a tendency for the empyema cases to have the low oxygen concentrations but many exceptions, both ways, are found so that Coryllos' classes would seem to be too rigidly defined. For example, five of our cases with definite pus consistently gave analyses greater than 3% O₂, and four cases without any pus gave analyses of less than 1% O₂. Of these latter cases, three eventually became purulent, but one did well and had no pus at any time. Probably some feature of the pleural inflammatory process other than that simply of the presence or absence of pus or fluid is primarily concerned.

However the chief subject under discussion in this paper is the relationship of the analyses with a pleural fistula. This focuses our interest towards those cases with the higher oxygen and lower carbon dioxide figures.

Six of our cases have shown an oxygen concentration in their pleural gases of more than 10%. On the basis of the analysis these should be fistula cases. One of these was an extrapleural pneumothorax with an external fistula, one had been a spontaneous case but at the time of the analyses was

9. C. B. Weld, Proc. N. S. Inst. Sc., 1938-1939 (in press).
10. P. N. Coryllos, J. Thorac. Surg., 1937, 7, 48.

a pus case and was not thought to be fistulous, and the remaining four were unsuspected clinically as having fistulae. Nevertheless, in view of the uncertainty of the clinical indications, and the difficulty of interpreting the chemical evidence in any other way, the possibility of their being fistulous must still be considered. Two of these are of particular interest as they have been further studied by the reduced pressure (gas withdrawal) method of Harpoth and Gad⁷ already described. The original analyses were done in the latter part of 1938 and later when the results were being assembled and their significance better realized, the cases were re-examined in April 1939. The full results in these cases are given in Table 2.

TABLE 2

Mrs. C.			J. S.		
Date	% CO ₂	% O ₂	Date	% CO ₂	% O ₂
Dec. 10	3.4	12.1	Oct. 25	6.5	4.5
Dec. 24	2.0	15.8	Oct. 31	4.1	8.9
April 2	A-8.0	0.8	Dec. 27	5.0	12.1
April 2	B-7.6	1.5	April 2	A-6.2	5.0
			April 2	B-5.0	8.8

It would seem that the unsuspected fistulae in these cases closed or nearly closed following the December analyses. On April 2nd after preliminary analysis (A), 400 c.c. gas was removed from the pleural space and the intrapleural pressures reduced somewhat. Then, half an hour later further specimens (B) were taken and in each case the oxygen concentration was slightly higher and that of the carbon dioxide lower. According to the hypothesis of Harpoth and Gad this is because the fistulae were reopened, with the admission of some bronchial air.

Two cases which were clinically believed to be fistulous (both old empyema cases) consistently gave low oxygen figures. From the analyses no indication of an open fistula is given. A discussion of this and of the arithmetic involved is in order at this point. Let us suppose that the pneumothorax contains 1000 c.c. of gas consisting of 5% oxygen, 6% carbon dioxide and 89% nitrogen. That is, there would be 50 c.c. O₂, 60 c.c. CO₂ and 890 c.c. nitrogen present. The admission of 50 c.c. of air to the pleural gases would raise the concentration of oxygen to about 6% while it would hardly affect the intrapleural pressures at all. This is the reason for believing that the analysis method is a more sensitive indication of an open fistula than pressure measurements. However it must be remembered that the oxygen of this added air would be absorbed from the pleural cavity within a few hours probably, certainly within a day. It is obvious then that a high oxygen figure indicates a fistula actually open and not one which may have been open even a few days before. Furthermore if the admission of the 50 c.c. of air to the pleural gases of our example were slow enough, its absorption would keep pace with its entry and no appreciable change in the analysis would be shown. Let us suppose again that the oxygen (about 10 c.c.) in this 50 c.c. air is absorbed in three hours which is a reasonable enough assumption from animal results⁸. This is at the rate of about 3 c.c. oxygen (representing 15 c.c. air) an hour. Accordingly it would appear that in our fairly typical example, a fistula could be allowing some 15 c.c. air to leak into the pleural cavity per hour, without

appreciably changing the composition of the pleural gases. The size of the fistula which would allow this volume of air to pass into the pleural space would depend on many circumstances and the amount of leak required to affect the analysis would vary with the case, but it seems clear that even this sensitive analysis method has its limits and that it will not detect very minute fistulae. To revert now to the cases mentioned at the beginning of this paragraph, though the gas analyses of these cases failed to confirm the clinical diagnosis of an open fistula, the diagnosis is not ruled out.

Three interesting examples of the rapidity with which an open fistula can change the composition of the pleural gases are shown in Table 3 below. The first two of these are humans and the third is that of a dog. After obtaining a specimen for analysis the needle (18 gauge) was left in place and open—i.e. without stylet—for the 2-4 minutes indicated after which a second specimen was taken.

TABLE 3

Needle Open		% CO ₂	% O ₂
2 mins:	before	5.9	3.7
	after	5.0	6.3
3 mins:	before	6.9	3.5
	after	4.2	10.1
4 mins:	before	6.1	11.7
	after	2.8	17.8

From these results it is seen that an open external fistula of the size of an 18 gauge hypodermic needle of only 2-3 minutes duration will cause a pronounced change in the composition of the pleural gases.

Another interesting conception has been rendered more probable from a survey of our human records. The results of two cases are given in Table 4 as examples of the phenomenon to be discussed.

TABLE 4

G. S.			P. M.		
Date	% CO ₂	O ₂ %	Date	% CO ₂	% O ₂
Dec. 23	6.2	5.0	Dec. 16	5.9	2.8
Dec. 28	4.3	9.0	Dec. 19	5.5	4.4
Jan. 3	6.2	3.8	Dec. 23	3.5	10.8
March 7	10.0	2.1	Dec. 27	6.2	3.7
March 8	6.9	8.4	Dec. 31	7.3	2.1
April 2	9.5	2.6	Jan. 12	7.1	2.6

In the case of p.m. it is seen that the percentage of oxygen usually found was about 3% but that on one occasion it was far out of line, being 10.8%, and at the same time the carbon dioxide figure was low. Similarly, in the case of G.S., the value for O₂ was unduly high and that for CO₂ low, on two occasions. What interpretation is to be placed upon this phenomenon, these abrupt temporary changes in the composition of the pleural gases? It was at first thought that it was merely due to an experimental error, that there

had been some break in technique in the collection or handling of the specimen whereby it had become contaminated with ordinary air. This could easily happen. However, despite great care and increased vigilance in respect to technique the phenomenon continued to show itself, and consequently it is believed that these results indicate actual changes within the pleural gases. Having reached this conclusion the most reasonable interpretation is that they indicate new fistulae or fistulae intermittently open only for brief periods.

Such transient jumps in oxygen and drops in carbon dioxide concentration have been observed in no less than eleven of our sixty-two cases. In seven of those it occurred only once, in three cases twice and in one it was seen four times. If each of these 17 instances, then, represents the temporary opening of a new or an old fistula, it would appear that a broncho-pleural fistula is a common concomitant of an artificial pneumothorax. There is evidence on clinical grounds that two of these instances were actual examples of the development of a spontaneous fistula. One of them the case G.S. of Table 4 was suspected during the afternoon of March 7th of being a spontaneous case and the specimen was taken for analysis on March 8th because of this clinical observation. The other instance was that of O.C. who had been followed for five months. She had a dry pneumothorax and her analyses were consistently 3-4% O₂. In early December she developed a clear pleural fluid and on Dec. 22 her oxygen figure was 8.4%. Shortly afterward the fluid became purulent.

Summary

Observations have been made of the composition of pleural gases in a series of 15 pneumothoraces in dogs, and in sixty-two human patients. The low oxygen and high carbon dioxide content in the ordinary human pneumothorax as compared to that of the dog is pointed out and briefly discussed.

The significance of high oxygen and low carbon dioxide concentrations in relation to the occurrence of spontaneous pneumothorax is shown and is discussed in more detail.

Conclusions

The analysis of the gaseous content of a pneumothorax is a procedure which may give useful information concerning the progress of the case.

Low concentrations of oxygen are indicative of pleural inflammation. Concentrations of oxygen much above the ordinary level of the individual and in any event above 10% are highly suggestive of an open fistula even in the absence of clinical signs. Low concentrations of oxygen do not rule out the diagnosis of an open fistula.

The routine use of the method in institutions where the technical procedures are possible, will probably reveal a greater number of transient or temporary open fistulae than has been heretofore suspected.

Marrow Anaemias

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IN thinking of anaemia it is of interest to refresh one's memory of blood formation and to gain thereby a better understanding of some of the problems of blood disease. The red cells develop intravascularly from the endothelial lining of intersinusoidal capillaries in the bone marrow. White cells, on the other hand, develop extravascularly and pass actively through the lining wall of the capillaries into the circulation.

In foetal life the liver and spleen are important sites of blood formation but after birth their function in this respect disappears and the bone marrow undertakes the formation of all the red and granular white cells. In childhood the marrow of all the bones is red but each year it gradually recedes from the fingers and toes toward the trunk so that in the healthy adult only the flat bones have the red marrow of active blood formation.

The red cell lives a month or so and then undergoes fragmentation and is finally broken down by the cells of the reticulo-endothelial system. The first stage in the formation of the red cell is the protrusion of an endothelial cell into the lumen of a marrow capillary. This rounds off and becomes free and is called a megaloblast. The megaloblast divides into erythroblasts and they into normoblasts. The nucleus of the normoblast is extruded forming the reticulocyte and finally, with the disappearance of the reticulum, the mature red cell is allowed to leave the capillary and appear in the general circulation, where it carries out a highly specialized almost mechanical function, buffeted about the vascular system and subjected to such wear and tear that in the course of a month it is literally torn to pieces.

The point of interest here is that erythropoiesis may be absent altogether as in aplastic anaemia, or may be arrested at any of the stages preceding maturity due to some congenital abnormality, or to the loss of specific factors from disease, or to dietary deficiency, either actual (low in iron), relative (diarrhoea) or conditioned, as when achlorhydria interferes with normal iron absorption. Actually no congenital factor is known to arrest red cell formation, but it does allow an abnormal cell to be delivered into the circulation as in acholuric jaundice or the rare sickle cell anaemia of negroes.

Absence of the liver principle or vitamine B arrests blood formation at the megaloblastic stage giving rise to an anaemia of large cells with good colour and resultant high colour index—the so-called primary anaemia with evidence of immature cells in the peripheral circulation and evidence on bone puncture of intense activity in the marrow. Such is the pernicious anaemia group. The machinery for manufacture is in good running order, but shortage of raw material leads to an incomplete article appearing on the market.

Absence of iron, vitamine C, and normal thyroxin tend to arrest the process at the normoblastic level giving rise to the so-called secondary anaemia, with small cells of poor colour and no evidence of immature cells in the peripheral circulation. Such anaemias are as specific and primary as the pernicious anaemia group; are curable only by iron in the metal deficiency cases, by

vitamine C in the anaemia of scurvy or by correction of the thyroid diseases in the metabolic cases. Iron or liver will have no effect on these last two conditions, and they are therefore deprivation anaemias similar to pernicious anaemia, except that blood formation is arrested at a different level.

Aplastic anaemia is due to arrest at the capillary endothelium due often to exhaustion and occurring as the end result of an anaemia of hyperplastic type where the constant, futile over-activity of the marrow finally wears it out. Pernicious anaemia may terminate in this way as may the anaemia of acholuric jaundice. Aplasia may also result from the toxic or destructive action of some poison upon the marrow, notably radium and most particularly ingested radium which is stored in the bones and bombards the marrow on the spot. It was common in England among women painting the dials of luminous watches before the practice of pointing the fine brush with the lips was stopped.

Considering anaemia it is apparent that it may result from diseases or deficiencies at the immature end, some of which we know and probably some, the nature of which we are still unaware. Or it may be the result of loss or destruction at the mature end. The loss may be a sudden and severe haemorrhage from which recovery will be prompt after the bleeding is stopped unless a deficiency of food or iron hinders repair and leads to chronic anaemia. The blood loss may be small and unnoticed yet persistent enough to lead to anaemia even in those on adequate diets. Hence the importance of searching for haemorrhoids or other source of blood loss in every case of normoblastic anaemia. Destruction of peripheral blood may occur when the cells are abnormally fragile as in acholuric jaundice, or when they are rendered abnormally fragile by intercurrent disease such as syphilis or malaria. Toxins circulating in the blood, whether they be ingested chemical poisons or the products of severe bacterial infection may, if they be in sufficient concentration, give rise to haemolytic anaemia.

It is to the marrow and the anaemias resulting from disturbance of its function that attention is drawn in this paper. The marrow, its cells and the peripheral blood have been considered as a distinct organ of the body, as large and as important as the liver and like it subject to injury by poisons, the effects of disease, and the results of improper diets. It is easy to understand the anaemias of infections and nephritis and malignancy if one remembers the susceptibility of the erythron. It is dangerous to consider anaemia as anything but a symptom.

Of these marrow anaemias I would mention particularly two types—(1) The pernicious anaemia group and (2) Idiopathic hypochromic anaemia. It must not be forgotten that various marrow abnormalities may shade into one another so that blood pictures may change suddenly and inexplicably, microcytic anaemias suddenly showing macrocytosis or macrocytic anaemia shade into aplasia. It is not surprising that continuous calls for excessive work may play it out and rest, in the form of blood transfusion, be the best therapy.

In spite of this flexibility of the marrow certain conditions, among which are the ones mentioned above, occur with sufficient clarity and constancy to be recognized as disease entities.

The pernicious anaemia group, where arrest occurs at the megaloblastic level are known variously as megaloblastic, macrocytic or hyperchromic anaemias. They all refer to the same condition and its various names are merely confusing. The tremendous amount of work done on this group in

recent years still leaves many unsolved problems. In this megaloblastic group are a number of conditions—

- (1) True pernicious anaemia.
- (2) Anaemia of sprue.
- (3) Anaemia of *dibothriocephalus latus* infestation.
- (4) Pernicious anaemia of pregnancy.
- (5) Anaemia of chronic steatorrhoea.

In all this group there is a similar blood picture and similar pathology in the erythron but widely differing etiological factors. Certain facts are definitely known in pernicious anaemia. It is due to failure of gastric secretion and the loss of the substance made by the gastric mucosa and stored in the liver and which is usually designated as "liver principle." The causes of the gastric failure may be numerous and such failure usually, but not always, follows a certain progression, first a diminution in acid, and an increase in mucous with no change in pepsin or liver principle, and still maintaining a response by increased acid when histamine is injected. The next stage in failure is marked by a greater diminution of acid, less mucous, less pepsin and a poorer response to histamine, with still no change in the liver principle, the so-called haemopoietin.

The third stage of gastric failure shows absent acid and pepsin, a little mucous, haemopoietin still present and no increase in either acid or pepsin after histamine injection.

The final stage of failure known as achylia gastrica is marked by the presence in the resting juice of a flocculent precipitate of epithelial cells shed from the mouth and oesophagus which would normally be digested. There is no acid, pepsin, mucous or haemopoietin and absolutely no change either in acidity or volume of juice when histamine is injected.

It is this last total failure which is usually found in pernicious anaemia, but sometimes, though rarely, the liver principle may fail before the acid is completely absent. What are the causes of this gastric failure? It may be congenital and familial, achylia gastrica being present from birth either with normal haemopoietin secretion, so that the individual may never develop pernicious anaemia, or with such secretion so diminished that it gives out in middle life from sheer fatigue, or as a result of the increased trauma to which these achylic stomachs are subjected.

Families are on record in which as many as four and five siblings have died of pernicious anaemia between the ages of thirty and fifty.

In other cases the gastric failure may be the result of severe gastritis with consequent complete destruction of mucosa, or it may follow gradual atrophy from chronic gastritis, the result of alcohol or some other irritant. Again the gastric failure may be surgically produced by removal of too much secreting tissue in an effort to cure an ulcer. Lastly, it may not uncommonly be produced by the destruction of secreting tissue in extensive cancer of the stomach. The frequent confusion in times past in diagnosis between cancer of the stomach and pernicious anaemia was due to the fact that both diseases coexisted, the former having brought on the latter.

The exact nature of the liver principle so lost is not known. That it consists of several fraction each requiring the complementary action of the others for complete formation in the typical cases is clearly shown. That there are some cases in which there is only fractional loss of liver principle is

shown by the fact that no response is obtained from the most refined product such as anahaemin, while a typical response will follow the administration of a more crude extract such as campolon. More recent work seems to show that the various fractions bring the blood along stage by stage, each fraction being responsible for a definite step toward maturity. However that may be, true pernicious anaemia is definitely tied to failure of the stomach to secrete one or all of the liver principle fractions.

The specific treatment of pernicious anaemia is too well known to require detailed consideration here. Much could be done in the way of prophylaxis if the sibilings of individuals with the disease were to have their gastric secretions examined and liver ordered frequently in the diets of those showing achylia or some degree of gastric failure. Or courses of liver extract by mouth could be given at intervals to safeguard their store of haemopoietin and scrupulous gastric hygiene enjoined for the protection of what secreting tissue they may have. Of the general care of patients with this disease it may be safely said that very few cases receive adequate treatment. There are two reasons for this, carelessness on the part of patient or doctor and expense. A recovery to 75% of normal red cell and haemoglobin values is not adequate. The patient may feel well and look well, but he is in constant danger of subacute combined degeneration of the cord, the slightest damage to which is permanent and irrecoverable. There is only one safe course to follow, that is a red cell count of five million and haemoglobin of over 90%, maintained by administration of sufficient active material regardless of expense and checked by blood studies at least every three months until definite stability is reached, and never at longer intervals than six months.

I once heard the late Dr. Fraser Harris say that the fault of Canadians as a nation was untidiness and neglect of detail. It may be that trait which allows us so readily to accept the ingenious combinations of enterprising drug houses and leads to the treatment of undiagnosed cases of pernicious anaemia with inadequate doses of liver principle mixed with unneeded and quite useless iron, or in reverse the treatment of undiagnosed simple achlorhydric anaemia with a very costly mixture of inadequate iron and totally useless and unneeded liver principle. Probably not more than one case in three or four thousand cases of anaemia would require the combined administration of liver and iron, yet the sale of such combinations is high. The need therefore is for more accurate diagnosis and more thoughtful treatment.

There is space only to mention the other diseases in the pernicious group. The blood picture of the anaemia of sprue, fortunately not encountered in this country, is identical with that of pernicious anaemia. Yet gastric secretion is unimpaired and the anaemia will respond to vitamin B as well as to liver extracts. The answer probably lies in faulty absorption from the bowel as it must also in those cases of chronic fatty diarrhoea in which the blood picture of megaloblastic anaemia develops. These latter cases also respond to vitamin B as well as to liver.

The anaemia of fish tapeworm infestation must be linked either to destruction of liver principle in the bowel or failure of absorption therefrom. It will give a typical response to liver therapy, but will relapse unless the worm is destroyed. If the worm is successfully eradicated the anaemia will repair itself and not recur.

The pernicious anaemia of pregnancy is rare in Canada and England but occurs in the United States with increasing incidence toward the deep south.

It is common in India and China where the first complete studies were made. It occurs in those whose diets are unbelievably poor in most of the elements required to maintain health and is usually well advanced when the patient reports for treatment. It is characterized by such gastro-intestinal symptoms as sore mouth, nausea, vomiting and diarrhoea. There is little tendency to natural repair after delivery in the untreated case, the anaemia remaining moderately severe until the next pregnancy when a serious relapse can be expected. Management is difficult and numerous transfusions may be required.

In the normoblastic group of marrow anaemias the blood cells are small in size and poor in colour, a low colour index being characteristic.

Certain known etiological factors have already been mentioned. Iron deprivation, absence of vitamine C and abnormal thyroid secretion.

The iron deprivation group is the most common and therefore the most interesting. They have been designated the "Idiopathic hypochromic anaemias" and include the nutritional anaemia of infants and children, the simple achlorhydric anaemia of adults, the Plummer-Vinson syndrome, and the many cases resulting from chronic blood loss. It does not include the anaemias of chronic infection or malignancy or nephritis. The appearance of such anaemias depends on (1) inadequate iron intake and, or (2) inadequate iron absorption. Certain factors regarding iron metabolism are known. The daily requirement for a healthy normal is about 4 mgms. an amount present in the diets of most people including the poor. It is not, however, sufficient to meet the emergencies of infection, haemorrhage or childbirth. It is absorbed best in the ferrous state, in an acid medium from the upper part of the small bowel and is excreted by the colon. Iron is carried to the bone marrow, taken up by the megaloblasts and used there in the formation of Hbo. The occurrence of these idiopathic hypochromic anaemias is a straight iron balance phenomenon. It is common in infants and in women of child bearing age, but is rare in men. In infants such anaemia appears a few months after birth when the storehouse has been emptied and no extra iron supply is given. It is worse in bottle fed babies since cow's milk contains less iron than the mother's. It is readily curable by iron added to the feeds and may be prevented by the early addition of iron to the diet. Respiratory and other infections are more readily contracted by these anaemic babies, and the infection in turn aggravates the anaemia. It can be treated by a solution of iron and ammonium citrate gr. 1½ to the dracham beginning by adding a few drops to the feeds t.i.d., and increasing till one teaspoonful t.i.d. is reached. It is recommended that eggs and greens be added by the end of the first year.

In women it is most common toward the end of the child bearing age but may occur before or after that period. There may be an intake of iron too small to meet the needs of normal menstruation or intercurrent infection. There may be a normal intake of iron, but insufficient to meet the loss from menorrhagia or repeated childbearing, or there may be a normal intake of iron but diminished absorption resulting from achlorhydria.

Whatever the reason for the negative iron balance the clinical picture is the same in all cases, varying only in degree. The haemoglobin may be as low as 20%, but is often between 50% and 60%. Pallor may approach the greenish tint of chlorosis and oedema of the face and extremities be noted. The tongue is usually rough coated but glossitis and smoothing may occur. The angles of the mouth may be fissured, the hair and nails brittle, the latter

often ridged or cracked and sometimes spoon shaped. The spleen is sometimes palpable. Cord symptoms are not encountered. The gastric analysis in the simple achlorhydric cases will show an absent or diminished acid secretion, and dyspepsia is frequently a distressing complaint.

Sources of haemorrhage, infection and malignancy must be sought for in every case.

Treatment consists in the administration of iron in adequate dosage, and adequate dosage is a matter of individual peculiarity, requiring observation and experiment in many cases. Many patients will show no improvement whatever on the usual dose of iron, but will improve by leaps and bounds when the dose is doubled. Others will improve perhaps from 50% to 70% on the usual dose, but will remain stationary there unless the dose is doubled or trebled. Contrary to general opinion iron does not usually cause indigestion or constipation though patients beginning its use may often think so. If the dose is maintained they find themselves taking it without trouble in the course of a few days.

The choice of iron is important. Ferrous sulphate, iron and ammonium citrate and fresh Blauds pill, the latter crushed before taking are the best. Ferrous sulphate may be used in doses from nine to twenty or more grains daily, iron and ammonium citrate from sixty to one hundred and eighty grains daily and Blauds up to one hundred and fifty grains daily if required.

Iron intoxication is very rare and there need be no fear of over dosage, the consequences of inadequate treatment are more pregnant with danger.

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It is to be distinctly understood that the Editors of this Journal do not necessarily subscribe to the views of its contributors, except those which may be expressed in this section.

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JULY, 1939

No. 7

GROW OLD ALONG WITH ME

(Before Your Time)

THE art of growing old before your time begins really with your parents. Whether it is that they are urged by the desire to see you get an early start in life, or by some subconscious wish to advance the day which will at last see you taken off their hands—the fact remains that shortly after you have taken your first uncertain steps, one or other of your adoring parents will point your feet in the direction of the first grade and with the aid of a little gentle pressure from the rear you find your education begun while you are still too weak to resist.

It matters little that your gray fibres have scarcely completed their medullation, or that you are doomed to years of dazed and uncomprehending study—a bewildered infant in a class whose average age may be almost twice your own—your parents' bosoms will swell with pride to think of their clever little darling in the same grade with the neighbours' louts. And so you sit through years of wide-eyed wonder at the brightness of the boy across the aisle, scratching into your brain with that first spluttery pen such an inferiority complex as no over compensation, however obnoxious, will ever cure. Each year as your education advances, the consciousness of your ungainly youth becomes more acute, until at last your proving ground is reached and you enter the wilderness of university life to find your way as best you can. Shorn of the ties, the protection and the guidance of home you find yourself lifted from the shelter of your local academy and set down in the smoking room of some medical school to begin a futile struggle against beery, pokerish influences which will sweep like a swollen river over the fairest peaks of your home training.

One opens ones eyes and sees the need of ageing ten years in a day and such a feat is usually accomplished on schedule—in the dissecting room. Much progress can be made toward growing old during your undergraduate years by the study of senior class men, (the venerable age of your teachers is something almost spiritual and as yet unthinkable). The world weary stoop of the fourth year man, the pale cynical glance of the interne—these are things to

be analysed and studied and practised, if one is ever to become hallowed by the miracle of graduation. Knowledge? a mere trifle! It will grow like a weed if the mulch is old and the form is good!

The first years of practice bring a need for age so pressing that it hurts. The stoop and cynicism of the interne seem puling in the face of this extremity. The need now is for hoary age, for sags and lines and greying hair to frame the mirror of a vast experience as yet unsilvered. So once again the facile clay is bent and moulded with painful consciousness toward the semblance of revered antiquity.

As year follows year a real success impends upon our efforts, aided by the stealthy hand of long hours spent in worry, by nights of vigil and by days of unordered haste and strain. Then one day when we scarce have reached our prime and wisdom borrowed has become a gift to keep, we seek to throw away the disguise we no longer need. But lo! The well bent back will not come straight, the lax and mal-opposed joints have lost their spring, the lines so dearly sought for can't be rubbed away, and in the glass we see in image framed the vision of a sad experience in living, a man, grown old to order—years before his time.

It seems a pity that medicine must still continue to destroy the youthful outlook which might add so much to the usefulness of doctors if it could live long enough to be tempered by the strength of true experience. Unfortunately, it is the gaining of that experience which kills the youth before his time and so the perfect blend is seldom, if ever, achieved.

Perhaps group medicine, with its inevitable sharing of responsibility, will do much to keep alive the youthful spirit of medical men, or a senior consultation service properly organized and made available to assist the worried general practitioner in difficult cases could go far toward completing the much desired union of experience with enthusiasm.

However distant from Nova Scotia such idealistic trends may yet be, the fact remains doctor, that you are still alive, albeit old, and summer is here, and this province is a paradise for tired men who need a rest. So pack your bag and take that long vacation you have promised yourself, these twenty years back. Perhaps—who knows—you may find something of that youth you said good bye to on the campus so many years ago—or was it someone else?

J. W. R.

CASE REPORTS

Renal Glycosuria.

The following case is interesting because it is an uncommon condition. However it is a condition, which, unless remembered, may lead to an erroneous diagnosis, and a resulting inconvenience to the patient.

My introduction to this family came when one child was brought to the clinic to have her urine tested, because her two sisters were thought to be diabetics. There was no specific complaint. The following case history concerns two sisters, twins, Marie and Jean, 12 years old, and one brother Fred, aged 14 years.

Presenting Symptom: Sugar in the urine.

Family History: Father at present suffering from a severe cardiac lesion. Mother apparently well. Neither show sugar in the urine by ordinarily used tests. The father's family are apparently all sugar free. On the mother's side there are some brothers and sisters who show glycosuria, but the mother was able to give me very little more information about them. The important point, though, is the presence of glycosuria in the family of one of the parents. The youngest child, Dorothy, aged 11 years, is also sugar free.

Past History: The children have been healthy, having had only some of the infectious diseases, and minor infections.

Present Conditions: The parents did not know that the children showed any glycosuria until it was accidentally discovered while one child (Marie) was in hospital for an infection around the elbow joint. On her discharge from the hospital, she was referred to the clinic for observation and any necessary treatment for the presenting glycosuria. A blood sugar estimation, done while in hospital, was normal, but the sugar tolerance test was not carried out.

Physical Examination: All of the children were well developed, and showed no abnormalities.

Laboratory Work: Urinalysis done on admission and after are as follows:

	Nov. 28/38	Nov. 30	Dec. 1	Dec. 5	Jan. 5/39	Feb. 16	May 22
Jean	++	+	++	+	++	++	++
Marie	+	+	++	++	++	+	+
Fred		+++	++	++	++	Trace	++

Acetone in each case was negative.

Although we did not know how long these children had been excreting sugar, the fact that three in the family were doing so, that all the children were physically well and symptomless and in view of Marie's known blood sugar, the possibility of a simple renal glycosuria seemed the more probable diagnosis. Blood sugar tolerance tests were therefore done on each of the children.

	Jean	Marie	Fred
Fasting	.0802%	.0913%	.0752%
½ hr. after Glucose	.1031%	.1176%	.0885%
1 hr. " "	.1047%	.1064%	.0643%
1½ hrs. " "	.0930%	.0909%	.0694%
2 hrs. " "	.0766%	.0833%	too low to read

In each case the levels are low normal being most marked in Fred's case, with Marie's being nearest the more normal level.

Blood chemistry examinations done at the same time were perfectly normal.

Separate voidings for 24 hours were obtained from Jean and Marie. Each specimen showed glucose, each varying in its amount, and in each case the amount was largest on the last voiding of the day. The total glucose in the urine for 24 hours for Marie was 4.80 gms., and for Jean 5.73 gms. Unfortunately we never received Fred's, but from a simple comparison with Jean's and Marie's one would expect his total daily glucose output to be between 6.5-8 gms.

The osazone test was done on each case to determine the type of sugar, and in all instances was found to be glucose.

These children then are cases of Renal Glycosuria, or as sometimes called Renal Diabetes. This type of glycosuria is one in which the renal threshold for glucose is low, so that it is excreted with the blood glucose level within a normal range. There is no evidence of the inability to utilize sugar, and hence ketosis does not occur. The presence of glucose may be either occasional or continuous. The former is the more common. The condition is permanent, but offers no resistance to normal growth and development. It is practically always hereditary.

No treatment is required. The children should be kept on a normal diet. There is no need to increase the carbohydrate intake, but, certainly, no attempt should be made to reduce it.

N. BARRIE COWARD.

An Interesting Case of Lead Poisoning.

H. L. an infant born on July 25/38, after a normal delivery and breast fed up to the time of my first visit. Examination at this time showed an apparently normal male infant.

I first saw the patient on September 6/38, because he was apparently not satisfied with his feedings, and was becoming rather irritable. At that time I complemented the infant with an evaporated milk mixture. About ten days later the baby was weaned, because the mother was giving insufficient milk as determined by a.c. and p.c. weighings. During this time the baby seemed more satisfied, but still remained irritable. The bowels were good, although a little on the constipated side, but the baby was beginning to vomit occasionally. As the baby continued to be increasingly irritable during the ensuing days, I thought that, in view of the stools and vomiting, that the feeding was unsatisfactory. On October 6/38 the feedings were changed to a lactic acid whole skim milk. The stools became quite normal, and the vomiting ceased considerably, but the baby was still very irritable.

I noticed about this time that the baby was becoming increasingly pale, although he was gaining well.

Since the Mother was a very sensible young woman, and not one who became easily upset, I thought it highly improbable that she herself was a factor to be considered as a cause of the baby's irritability. As the baby continued to be irritable and pale, and being satisfied that neither the Mother nor the feedings were at fault, another cause was searched for.

The baby's irritability, pallor and vomiting suggested a possible lead poisoning, although the baby was not yet old enough to put things in his mouth, or to chew his crib or toys. Examination of the blood showed a secondary anaemia but no stippling or other abnormality.

As the family lived in one of the older houses in Halifax, I examined the plumbing and found it to be of lead, old, always breaking and having to be repaired. A sample of the water was then sent to the Public Health Laboratories for examination, and lead was found to be present in the water. (Qualitative test only)

The Mother was advised to bring in water from a cleaner source for the baby's use. Following this procedure, the baby's irritability rapidly subsided, and he became a normal happy infant.

In reviewing the facts certain points stand out. There was no doubt that, at first, part of the trouble was infant feeding. While on the complement feeding, and later when on a complete artificial feeding, the baby was taking a large supply of this water, when one considers that water was also given in the orange juice and for drinking purposes. At that time he was at his worst. On the change to a whole lactic acid skim milk feeding there was a marked reduction in the water intake as the feedings were not diluted. The only water intake at this time was with the orange juice and for drinking. With this change there was a marked improvement. Later when given none of this water the baby showed sudden and steady improvement.

The lack of stippling in the blood smear does not rule out lead poisoning, as many cases do not show this feature.

The baby was not X-Rayed for evidence of lead in the bones, but a fluorescent examination showed a thin dense band.

The intake of lead was no doubt small, as many of the typical symptoms were missing, and the fluoro-scope showed a thin dense band instead of the heavy band so often found in cases of lead poisoning.

N. BARRIE COWARD.

PROGRAMME

TUBERCULOSIS REFRESHER COURSE
NOVA SCOTIA SANATORIUM
Kentville, N. S.

August 2, 3, 4, 1939

WEDNESDAY—AUGUST 2nd.

- 12.00- 2.15 p.m. Registration.
Afternoon Meeting. Chairman: Dr. P. S. Campbell.
- 2.30- 3.00 p.m. "The Sanatorium: Its Place in the Work of Tuberculosis Control."
—Dr. A. F. Miller.
- 3.00- 3.30 p.m. "Some Observations on Practical Tuberculin Testing."—Dr. C. J. W. Beckwith.
- 3.30- 4.00 p.m. "Problems in the Diagnosis of Tuberculosis."—Dr. J. E. Hiltz.
- 4.00- 4.20 p.m. "Portable X-ray and Field Work."—Dr. J. J. MacRitchie.
- 4.20- 4.40 p.m. General Discussion of Papers.
- 4.40- 5.15 p.m. Moving Pictures—"Diagnostic Procedures in Tuberculosis."
- 7.00 p.m. Informal Dinner at Cornwallis Inn. Chairman: Hon. F. R. Davis, Minister of the Public Health, Halifax, N. S.
- Short addresses by:—
Dr. P. S. Campbell, Chief Health Officer, Department of the Public Health, Halifax, N. S.
Dr. R. J. Collins, President, Canadian Tuberculosis Association, Saint John, N. B.
Dr. G. J. Wherrett, Secretary, Canadian Tuberculosis Association.
Dr. H. G. Grant, Dean of Medicine, Dalhousie University, Halifax.

THURSDAY—AUGUST 3rd.

- 9.30-12.30 p.m. Diagnostic Demonstrations including: (a) Physical examinations of the Chest. (b) X-ray films. (c) Tuberculin Testing. (d) Pathological Specimens.
Afternoon Meeting. Chairman: Dr. J. G. MacDougall, Halifax.
- 2.15- 3.15 p.m. "What the Practitioner Should Know Concerning the Selection of Cases for Surgical Collapse Therapy."—Dr. Edward Archibald, Montreal.
- 3.15- 4.00 p.m. "Surgical Treatment of Tuberculosis" (continued)—Dr. V. D. Schaffner.
- 4.00- 4.20 p.m. "Anaesthesia in Chest Surgery."—Dr. E. M. Found.
- 4.30 p.m. Moving Pictures—Surgical.
- 6.00 p.m. Buffet Supper at Residence of Medical Superintendent.
- 8.00 p.m. Round Table Discussions—(a) Medical (b) Surgical. Chairman: Hon. F. R. Davis.
Open Discussion of Tuberculosis Problems: Leaders—Dr. H. K. MacDonald, Dr. V. O. Mader, Dr. G. J. Wherrett.

FRIDAY—AUGUST 4th.

- Chairman: to be announced.
- 9.30-10.15 a.m. "Artificial Pneumothorax Treatment in Tuberculosis."—Dr. A. F. Miller—(a) Selection of Cases (b) Re-expansion of the Lung.
- 10.15-11.30 a.m. Practical Demonstrations of Technique Employed in Pneumothorax Therapy.

11. 30-12. 30 p.m. Symposium—"Tuberculosis in Childhood."—(a) Clinical—Dr. J. S. Robertson. (b) X-ray—Dr. H. R. Corbett. (c) Treatment—Dr. R. J. Collins.
2. 30- 4. 30 p.m. (1) Surgical Clinics.—Drs. Archibald and Schaffner.
(2) Medical Clinics.—to be announced.
(3) Ward Rounds through the Sanatorium.
- Guest Speaker:** Dr. Edward W. Archibald, Hon. F.R.C.S. (England and Australia), Emeritus Professor of Surgery, McGill University, Montreal.

Arrangements are being made to have twelve instructors present to assist in demonstrations and examinations. These physicians have all had special training in tuberculosis.

Seven years ago there was conducted at the Nova Scotia Sanatorium a "Refresher Course in Tuberculosis", to which came some fifty physicians, eager to benefit by its instruction. That they did benefit greatly we know from the tangible results of the course, which is best exemplified by the unanimous request of those attending that the course be repeated.

This year it was decided that the time had come for the Sanatorium to take up the role of teacher once more and plans were laid for a second Refresher Course. "Plans were laid" is a casual statement which gives but a slight idea of the work both of mind and body which the preparation for such a programme entails. The presentation of so great a field of study in the brief space of three days was a problem that called for the utmost in untiring and skillful planning. The final programme, which appears above, shows in its completeness and conciseness the splendid results of the labours of Dr. Miller and his staff.

And for what purpose, one might well ask, is all this extra effort on the part of people whose time is amply taken up with the ordinary routine of the day? What do they hope to accomplish by it? To answer these questions one must go back many years, to the time when the plan for such a course first evolved in the mind of the medical superintendent, then to the time when a legacy left for any purpose of his choice enabled him to prepare and carry out, with the approval of the Medical Society of Nova Scotia and the Government Minister of Public Health, the first Refresher Course in 1932. Then, as now, the great purpose of the programme was to refresh the minds of practitioners of the province in relation to the specialized diagnosis and treatment of tuberculosis with first-hand observation and study of the latest methods now accepted and in use. Here at the Sanatorium during the second, third and fourth of August, the physicians may learn from demonstrations by those specially trained how to make the all-important early diagnosis of tuberculosis, and see in a well-directed schedule, the forms of treatment the varied cases require.

The study of tuberculosis is, happily, a progressive science and it will be no doubt a source of much amazement to those who attended the first refresher course and are present at the second to note the growth of the Sanatorium; buildings have been altered and renovated to accommodate many more patients, staffs have been increased, and invaluable equipment that was only a long-cherished dream in 1932 has been added. Especially in the matter of surgery immense strides have been made and this progress will be demonstrated in the most competent manner during the Course,

The days are well filled, for there is much to see and learn, as is shown by the carefully planned programme which appears on Page 395.

Although the second refresher course is still an event of the future at the time of writing, the hopes for its success and high achievement seem reasonably assured. The heartening response as shown in the approval and assistance from the Department of the Public Health, and the enthusiastic cooperation and interest of the doctors of the province and the generosity of time and knowledge on the part of the guest speakers and demonstrators augurs well for a conference of great and lasting good, such as the efforts of the Medical Staff of the Sanatorium richly merit.—“*Health Rays*”, N. S. Sanatorium.

CORRESPONDENCE

“The Pines”, Digby, N. S.,
July 6, 1939.

My dear Dr. Grant:

Before I leave may I ask you to convey to the President and members of the Nova Scotia Division my heartfelt gratitude for the very kind reception you have given to the President of the C. M. A. on the first of his official visits to Divisions on his Presidential round. If all of them only half approximate the pleasure of this visit, then the sacrifice of time and leisure which they entail, will be gladly offered up.

With acknowledgment of your own efforts to make my visit a particularly pleasant one, I am

Very sincerely yours,
(Sgd.) F. S. PATCH.

Accidents and Injuries

The month of August witnesses more outdoor accidents than any other single month of the year, which, of course, is easily explained by the fact that the summer is at its height then and vacations are in full swing. A physician's summer patients, therefore, are often very largely made up of those suffering from sprains, strains, cuts, puncture wounds, bruises, sunburn, plant-dermatitis, insect stings, and various other lesions resulting from falls, knocks, automobile accidents and sports of all kinds.

The choice of an all-round desirable surgical dressing for the treatment of accidents and injuries is sometimes a difficult one for the physician to decide. The majority of injuries require a dressing which, although antiseptic, is not also caustic; one which does not pain on application and is easily removed, and which is antiphlogistic, detergent, protective and repair-stimulating. A dressing embodying all these qualities is to be found in Antiphlogistine. The physician using it will find it to be practically the ideal application and surgical dressing for direct application to open wounds and raw surfaces, for dermatitis, sprains, strained ligaments and other injuries. He will find it one of the most generally useful surgical dressings to have always ready at hand during the hot weather months of the year.

Children's Memorial Hospital Montreal

Fourth Annual Post Graduate Course in Children's Diseases September 25—October 4th, 1939

A comprehensive and intensive course is offered to physicians in the modern practice of Paediatrics, including lectures and demonstrations in Medicine, Surgery, and the Specialties, as applied to children. Demonstrations of Physical, Recreational and Vocational Therapy, common procedures, etc., will be given.

Registration fee is \$25.00 which includes luncheons at the Hospital for the duration of the course, and an informal dinner at the Faculty Club during the course.

Apply to **Dr. J. E. de Belle**, Superintendent, Children's Memorial Hospital, Cedar Avenue, Montreal.

PROGRAMME

Monday, Sept. 25

General Introduction:

9.30	Co-Relation of Medical and Surgical Problems in Paed-	} <i>Dr. R. R. Struthers</i> <i>Dr. Dudley Ross</i>
	iatrics.....	
10.30	Nutritional Diseases.....	<i>Dr. Graham Ross</i>
11.30	Therapeutics in Children.....	<i>Dr. A. Goldbloom</i>
12.30	Ward Rounds.	
1.30	Lunch.	
2.00	Burns.....	<i>Dr. R. R. Fitzgerald</i>
3.00 - 4.00	Discussion of Anaesthetics in Children.....	<i>Dr. Wesley Bourne</i>

Tuesday, Sept. 26

Symposium on Childhood Tuberculosis:

9.30	The Evolution of Primary to Secondary Tuberculosis....	<i>Dr. R. R. Struthers</i>
10.00	Gastric Lavage in the Diagnosis of Childhood Tuberculosis.	<i>Dr. P. N. MacDermot</i>
10.15	Tuberculin Tests.....	<i>Dr. H. L. Bacal</i>
10.30	Value of Sedimentation Test in Estimating Progress....	<i>Dr. J. B. Scriver</i>
11.00	Compression Therapy.....	<i>Dr. S. G. Baxter</i>
11.30	Pathology of Tuberculosis.....	<i>Dr. L. J. Rhea</i>
12.30	Ward Rounds.	
1.30	Lunch.	
2.00	Acute and Chronic Bone Infections.....	<i>Dr. R. R. Fitzgerald</i>
3.00 - 4.30	Combined X-ray and Pathological Demonstration: The Bone Lesions in Rickets, Scurvy and Congenital Syphilis.....	<i>Dr. A. E. Childe</i> <i>Dr. F. W. Wiglesworth</i>

NOTE:—All lectures 45 mins. with 15 mins. for discussion.

Wednesday, Sept. 27

- 9.30 Nephritis and Nephrosis..... *Dr. Graham Ross*
 10.30 Genito-Urinary Infections in Childhood..... *Dr. A. B. Hawthorne*
 11.30 Diabetes..... *Dr. Alan Ross*
 12.30 Ward Rounds.
 1.30 Lunch.
 2.00 Pneumonia in Children..... *Dr. L. M. Lindsay*
 3.00 - 4.00 Empyema, Lung Abscesses and Bronchiectasis.... *Dr. Dudley Ross*
 Lecture Room
 8.30 **Demonstration** by departments of Physical, Occupa-
 p.m. tional, and Recreational Therapy.
 Refreshments.

Thursday, Sept. 28

Symposium—Department of Rheumatism:

- 9.30 The Relationship of Rheumatic Fever and Infection..... *Dr. R. R. Struthers*
 10.00 The Relationship of Chorea to Rheumatic Fever..... *Dr. S. J. Usher*
 10.30 The Determination of Activity of Rheumatic Fever..... *Dr. H. L. Bacal*
 11.00 The Pathology of Rheumatic Carditis..... *Dr. F. W. Wigglesworth*
 11.30 The Significance of Cardiac Murmurs and Changes in the
 Electrocardiogram in Rheumatic Fever..... *Dr. J. H. Palmer*
 12.30 Ward Rounds.
 1.30 Lunch.
 2.00 Acute and Chronic Otitic Conditions..... *Dr. Keith Hutchison*
 3.00 - 4.00 Epilepsy and Convulsions..... *Dr. A. W. Young*

Friday, Sept. 29

- 9.30 Diarrhoea..... *Dr. L. M. Lindsay*
 10.30 Diagnosis and Treatment of Congenital Syphilis..... *Dr. H. S. Mitchell*
 11.30 Bacteriology..... *Dr. N. W. McLellan*
 12.30 Ward Rounds.
 1.30 Lunch.
 2.00 Posture..... *Dr. J. G. Shannon*
 3.00 - 4.00 Infant Feeding..... *Dr. A. Goldbloom*
 8.30 **Clinic evening will be held on the wards of the
 Hospital.**
 Refreshments.

Saturday, Sept. 30

Golf will be arranged for those who wish to play on Saturday afternoon.

Monday, Oct. 2

- 9.30 Common Types of Fractures in Childhood..... *Dr. Dudley Ross*
 10.30 Blood Conditions Common to Childhood..... *Dr. E. S. Mills*
 11.30 Difficult Feeding Problems and Feeding of Older Children. *Dr. A. Goldbloom*
 12.30 Ward Rounds.
 1.30 Lunch.
 2.00 Skin Conditions Common to Childhood..... *Dr. L. P. Ereaux*
 3.00 - 4.00 Acute Inflammatory Abdominal Conditions..... *Dr. R. R. Fitzgerald*

NOTE:—All lectures 45 mins. with 15 mins. for discussion.

Tuesday, Oct. 3

- 9.30 Acute Anterior Poliomyelitis..... *Dr. H. B. Cushing*
 10.30 **Medical Demonstration:**
 Care of Premature Infants..... *Dr. A. K. Geddes*
 11.30 Acute Intestinal Obstruction..... *Dr. Dudley Ross*
 12.30 Ward Rounds.
 1.30 Lunch and afternoon session at Alexandra Hospital.
 2.00 - 4.00 Contagious Diseases..... *Dr. H. B. Cushing*
 7.30 Informal dinner at the Faculty Club.

Wednesday, Oct. 4

- 9.30 **Medical Demonstration:**
 Blood Transfusions, Lumbar Punctures Fluid Therapy *Dr. Alan Ross*
 10.30 Bone Tuberculosis..... *Dr. N. T. Williamson*
 11.30 Allergy in Childhood..... *Dr. H. L. Bacal*
 12.30 Acute Infections of Childhood..... *Dr. R. R. Struthers*
 1.30 Lunch.
 2.00 Diseases of the Eye Encountered in General Practice.... *Dr. B. Alexander*
 3.00 - 4.00 Deficiency Diseases..... *Dr. Graham Ross*
 NOTE:—All lectures 45 mins. with 15 mins. for discussion.

Children's Memorial Hospital

MONTREAL, CANADA

The Staff of the Children's Memorial Hospital, Montreal, announce their Fourth Annual Post Graduate Course in the Diseases of Children. The Course will extend from September 25th to October 4th, 1939 inclusive. It is intended to review in this time the field of paediatrics from the medical and surgical points of view. Due attention will be given to behaviour and psychiatric problems as they occur in childhood. There will be lectures by members of the Staff, each particularly qualified in his special field. Demonstrations of common procedures will be given and ward rounds held during each day of the course. Special evening demonstrations and lectures will also be arranged. A clinical evening, long a feature of the Children's Memorial Hospital, will be arranged for the members of the course. Luncheons will be served at the hospital and a dinner given to the participants at the conclusion. The inclusive fee is twenty-five dollars. Registration is limited.

Applications, accompanied by remittance, should be addressed to
Dr. J. E. deBelle, Superintendent, Children's Memorial Hospital,
 Montreal, Canada.

REGISTRATION

86th Annual Meeting Medical Society of Nova Scotia,

July 5th and 6th, 1939,

"THE PINES", DIGBY, N. S.

- Dr. C. M. Bethune, Halifax, N. S.
Dr. J. E. LeBlanc, West Pubnico, N. S.
Dr. C. B. Smith, Goldboro, N. S.
Dr. Dan Murray, Tatamagouche, N. S.
Dr. R. A. MacLellan, Rawdon, N. S.
Dr. H. D. O'Brien, Halifax, N. S.
Dr. H. D. Hebb, Halifax, N. S.
Dr. F. A. Little, Halifax, N. S.
Dr. H. G. Grant, Halifax, N. S.
Dr. F. L. Hill, Parrsboro, N. S.
Dr. J. S. Brean, Mulgrave, N. S.
Dr. Angus Morton, Halifax, N. S.
Dr. W. D. Forrest, Halifax, N. S.
Dr. J. H. L. Simpson, Springhill, N. S.
Dr. A. B. Campbell, Bear River, N. S.
Dr. R. C. Williams, Washington, D. C.
Dr. J. A. Noble, Halifax, N. S.
Dr. C. L. MacMillan, Baddeck, N. S.
Dr. K. P. Hayes, Halifax, N. S.
Dr. A. L. Yates, Halifax, N. S.
Dr. A. L. Murphy, Halifax, N. S.
Dr. G. H. Murphy, Halifax, N. S.
Dr. K. A. MacKenzie, Halifax, N. S.
Dr. J. J. MacRitchie, Halifax, N. S.
Dr. D. J. MacKenzie, Halifax, N. S.
Dr. H. Robertson, Halifax, N. S.
Dr. J. B. Reid, Truro, N. S.
Dr. S. W. Williamson, Yarmouth, N. S.
Dr. J. S. Munro, North Sydney, N. S.
Dr. T. R. Johnson, Great Village, N. S.
Dr. R. A. Moreash, Berwick, N. S.
Dr. A. A. Giffin, Kentville, N. S.
Dr. G. R. Mahaney, Granville, N. S.
Dr. C. A. Webster, Yarmouth, N. S.
Dr. F. O'Neil, Sydney, N. S.
Dr. B. S. Bishop, Kentville, N. S.
Dr. P. S. Campbell, Halifax, N. S.
Dr. H. W. Schwartz, Halifax, N. S.
Dr. N. H. Gosse, Halifax, N. S.
Dr. C. C. Archibald, Truro, N. S.
Dr. G. D. Donaldson, Mahone Bay, N. S.
Dr. H. A. Farris, Saint John, N. B.
Dr. W. R. Dickie, Digby, N. S.
Dr. H. V. Kent, Truro, N. S.
- Dr. E. I. Glenister, Dartmouth, N. S.
Dr. F. R. Davis, Halifax, N. S.
Dr. H. F. Sutherland, Glace Bay, N. S.
Dr. L. J. Lovett, Bear River, N. S.
Dr. C. C. Ross, Toronto, Ontario.
Dr. F. S. Patch, Montreal, Quebec.
Dr. T. C. Routley, Toronto, Ontario.
Dr. E. DuVernet, Digby, N. S.
Dr. G. A. Dunn, Pietou, N. S.
Dr. W. C. Harris, Barton, N. S.
Dr. C. J. W. Beckwith, Sydney, N. S.
Dr. C. E. A. deWitt, Wolfville, N. S.
Dr. J. S. Robertson, Yarmouth, N. S.
Dr. A. L. Sutherland, Sydney, N. S.
Dr. G. V. Burton, Yarmouth, N. S.
Dr. J. P. McGrath, Kentville, N. S.
Dr. W. H. Eagar, Wolfville, N. S.
Dr. A. L. McLean, Halifax, N. S.
Dr. J. R. Corston, Halifax, N. S.
Dr. H. K. MacDonald, Halifax, N. S.
Dr. J. G. D. Campbell, Halifax, N. S.
Dr. W. L. Muir, Halifax, N. S.
Dr. L. M. Morton, Yarmouth, N. S.
Dr. J. R. McCleave, Digby, N. S.
Dr. H. J. Pothier, Weymouth, N. S.
Dr. V. D. Schaffner, Kentville, N. S.
Dr. F. E. Rice, Sandy Cove, N. S.
Dr. M. R. Elliott, Wolfville, N. S.
Dr. I. R. Sutherland, Annapolis Royal,
N. S.
Dr. C. K. Fuller, Yarmouth, N. S.
Dr. C. F. Messenger, Middleton, N. S.
Dr. G. A. Winfield, Halifax, N. S.
Dr. V. O. Mader, Halifax, N. S.
Dr. G. K. Smith, Hantsport, N. S.
Dr. T. A. Lebbetter, Yarmouth, N. S.
Dr. C. O'Connell, Yarmouth, N. S.
Dr. H. J. Melanson, Weymouth, N. S.
Dr. C. E. Kinley, Halifax, N. S.
Dr. W. K. House, New Waterford, N. S.
Dr. P. E. Belliveau, Meteghan, N. S.
Dr. W. G. Poirier, Cheticamp, N. S.
Dr. W. G. Colwell, Halifax, N. S.
Dr. C. R. Trask, Sheet Harbour, N. S.

The Golf Tournament

The annual golf tournament of the Medical Society of Nova Scotia was held at "The Pines", Digby, N. S., on July 6th, 1939. The weather for the tournament was ideal, with the exception of the fact that a strong southwest wind was blowing in off the Bay of Fundy, and in consequence of this wind the scores as will be seen, could have been better. The entry list was small, only twelve taking part.

Dr. L. M. Morton of Yarmouth, as was expected, won the tournament, with a gross of 87. Dr. W. G. Colwell of Halifax was second with a gross of 96. In the senior group Dr. W. L. Muir of Halifax had the lowest gross with Dr. H. G. Grant of Halifax runner-up. The chairman of the golf tournament was Dr. W. G. Colwell and the prizes were presented by Mrs. W. L. Muir in the presence of the competitors and several of the ladies.

The prize list with the scores follows:

Low Gross (87)—Dr. L. M. Morton, Yarmouth: Golf trophy; Candid Camera, presented by the Anglo-Canadian Drugs, Ltd.; 1 dozen golf balls.

2nd Low Gross (96)—Dr. W. G. Colwell, Halifax: Golf brassie, presented by the Imperial Publishing Co., Ltd.

Low Net—Dr. W. L. Muir, Halifax: Birk's Cup; 1 dozen golf balls.

2nd Low Net—Dr. C. C. Ross, Toronto: 6 golf balls.

Seniors:

Low Gross (104)—Dr. W. L. Muir, Halifax: Cut glass flower bowl, presented by the E. B. Shuttleworth Chemical Co., Ltd.

2nd Low Gross (109)—Dr. H. G. Grant, Halifax: Donation of goods from Ingram & Bell, Ltd.

Low Net—Dr. L. J. Lovett, Bear River: 10 golf balls.

2nd Low Net—Dr. M. R. Elliott, Wolfville: 6 golf balls.

Sealed Holes—Dr. W. G. Colwell, Halifax: 1 dozen golf balls.

Longest Drive (230 yds.)—Dr. H. G. Grant, Halifax: Bard-Parker Haemotological Case, presented by The J. F. Hartz Co., Ltd.

Highest Drive—Dr. G. D. Donaldson, Mahone Bay: 1 4-lb. tin Ovaltine; presented by A. Wander, Ltd.; 1 golf ball.

Highest Net—Dr. J. A. Noble, Halifax: 1 1-lb. tin Ovaltine, presented by A. Wander, Ltd.; 1 golf ball.

One dozen Silver King golf balls were presented by Charles E. Frosst & Company, and the others were purchased by donations of cash received from E. R. Squibb & Sons of Canada, Ltd., National-Canadian Drugs, Ltd., Laboratory Poulenc Freres of Canada, Ltd., Mead Johnson & Company of Canada, Ltd., Frank W. Horner, Ltd., and MacLeod-Balcom, Ltd. Stock packages of toilet preparations, Shaving Cream, Lilac Vegetal and Liquid Shampoo, which were received from Parke, Davis & Company, were distributed as favours to the golf players.

Abstracts from Current Journals

MEDICINE

Effects of Dagenan.

I. H. MacLean, K. B. Rogers and A. Fleming writing in the Lancet, March 11, 1939, page 562, reach the conclusion that the diverse effects of Dagenan on pneumococci are due to the strain and not to the type of micro-organism. They find also that infected animals soon acquire resistance to this drug and hence initial doses must be large.

We may infer from this experiment that to give Dagenan for minor state of improved pneumococcal inflammation may, if the patient should later develop a pneumonia or other acute infection due to pneumococci, deprive the patient of the benefit that this drug brings in acute infections with the pneumococcus.

A Possible Method of Spread of Infantile Paralysis.

S. D. Kramer, B. Hoskwith and L. H. Grosman (J. of Exper. Med. Jan. 1939, p. 49.)

These authors have shown that the virus of infantile paralysis may be detected in convalescent patients not only in the nose and throat, but in the faeces. A possibility of an excremental source of infection is thus suggested.

Effects of Overdosage of Vitamin A in Animals.

L. Cornil, A. Chevalier, J. E. Pallas report in the Annals d'Anatomie Pathologique, Jan. 1939, page 74, that when a great excess of Vitamin A was received by guinea pigs which were denied green vegetables, the animals rapidly lost weight and appetite and when killed showed degeneration of the cells at the centre of the lobules of the liver. There was also marked hyperplasia of the islets of the pancreas and formation of giant islets. Green vegetables added to the diet prevented the appearance of this hypervitaminatosis.

Juvenile Diabetes Mellitus. H. M. Feinblatt (J. of Lab. & Clin. Med., Jan. 1939, P. 337) reports that the results of a new compound of insulin and Hexamethalene Tetramine are superior to those of Protamine Insulin.

INTERNE WANTED

Applications will be received immediately for the position of intern in the Montreal Children's Hospital for one year to fill a vacancy caused by illness. The hospital is a well equipped institution of sixty-five beds with paediatric and surgical services approved for internship. Gratuity is fifty dollars per month and maintenance. Apply to Dr. F. W. Shaver, Secretary of the Medical Board of the Montreal Children's Hospital, 1620 St. Antoine Street, Montreal, or 1374 Sherbrooke Street W, Montreal.

Society Meetings

Western Nova Scotia Medical Society

The annual meeting of the Western Nova Scotia Medical Society was held in Yarmouth on May 31st when the following officers were elected:

President: Dr. G. V. Burton, Yarmouth, N. S.

Vice-Presidents: Dr. H. H. Banks, Barrington Passage, for Shelburne County; Dr. L. M. Morton, Yarmouth, for Yarmouth County; Dr. H. J. Pothier, Weymouth, for Digby County.

Secretary-Treasurer: Dr. T. A. Lebbetter, Yarmouth, N. S.

Representatives to the Executive of the Medical Society of Nova Scotia: Dr. P. E. Belliveau, Meteghan, N. S.; Dr. A. B. Campbell, Bear River, N. S.

At this meeting the following motion was passed:

"Resolved that it is the unanimous opinion of the Western Counties Medical Society that some suitable form of compulsory Health Insurance would be beneficial to the medical profession in this Province, particularly a type of Insurance which would take care of the medical care of the indigent."

Cape Breton Medical Society

An enthusiastic well attended meeting of the Cape Breton Medical Society was held in the Hamilton Memorial Hospital, North Sydney, on June 1st. The meeting was called to order by the Vice-President, Dr. L. R. Meech, and after paying respects to their late President, Dr. Dan MacLeod, proceeded with the order of business.

Dr. A. P. Magonet read a paper on the acute abdomen, and Dr. Hugh Martin followed with a paper on spinal anaesthesia, and a few interesting cases were presented by the staff of the Hamilton Hospital.

The following officers were elected:

President: Dr. L. R. Meech, North Sydney.

Vice-President: Dr. J. F. Bates, Glace Bay.

Secretary-Treasurer: Dr. M. J. Macaulay, Sydney.

Cape Breton Executive: Dr. D. W. Archibald, Sydney Mines; Dr. B. F. Miller, New Waterford; Dr. A. L. Sutherland, Sydney.

Representative to the Executive of the Medical Society of Nova Scotia:

Dr. J. S. Munro, North Sydney; Dr. M. G. Tompkins, Dominion; Dr. J. J. Roy, Sydney.

The Cape Breton Medical Society plan on having meetings on the second Thursday of each month, the next to be at New Waterford, July 13th, and a cordial invitation is extended to any outside physician who happens to be in Cape Breton on the second Thursday of a month to attend these meetings.

Department of the Public Health

PROVINCE OF NOVA SCOTIA

Office—Hollis Street, Halifax, N. S.

MINISTER OF HEALTH - - - - HON. F. R. DAVIS, M.D., F.A.C.S., Halifax

Chief Health Officer - - - - DR. P. S. CAMPBELL, Halifax.
 Divisional Medical Health Officer - - - DR. C. J. W. BECKWITH, D.P.H., Sydney.
 Divisional Medical Health Officer - - - DR. J. J. MACRITCHIE, Halifax.
 Divisional Medical Health Officer - - - DR. J. S. ROBERTSON, D. P. H., Yarmouth.
 Statistician and Epidemiologist - - - DR. HAROLD ROBERTSON, C. P. H., Halifax.
 Director of Public Health Laboratory - - DR. D. J. MACKENZIE, Halifax.
 Pathologist - - - - DR. R. P. SMITH, Halifax.
 Psychiatrist - - - - DR. ELIZA P. BRISON, Halifax.
 Sanitary Engineer - - - - R. DONALD MCKAY, B.Sc., A.M.E.I.C.
 Superintendent Nursing Service - - - MISS M. E. MACKENZIE, Reg. N., Halifax.

OFFICERS OF THE PROVINCIAL HEALTH OFFICERS' ASSOCIATION

President - - - - DR. R. A. MACLELLAN - - - Rawdon Gold Mines
 1st Vice-President - - - DR. H. E. KELLEY - - - Middleton
 2nd Vice-President - - - DR. R. C. ZINCK - - - Lunenburg
 Secretary - - - - DR. P. S. CAMPBELL - - - Halifax

COUNCIL

DR. HARVEY F. SUTHERLAND - - - - Glace Bay
 DR. L. B. W. BRAINE - - - - Annapolis Royal
 DR. H. E. WALSH - - - - Springhill

MEDICAL HEALTH OFFICERS FOR CITIES, TOWNS AND COUNTIES

ANNAPOLIS COUNTY

Hall, E. B., Bridgetown.
 Braine, L. B. W., Annapolis Royal.
 Kelley, H. E., Middleton (Mepy. & Town).

Murray, R. L., North Sydney.
 Townsend, H. J., Louisbourg.
 Gouthro, A. C., Little Bras d'Or Bridge,
 (Co. North Side).

COLCHESTER COUNTY

ANTIGONISH COUNTY
 Cameron, J. J., Antigonish (Mepy)
 MacKinnon, W. F., Antigonish.

Eaton, F. F., Truro.
 Havey, H. B., Stewiacke.
 Johnston, T. R., Great Village (Mepy).

CAPE BRETON COUNTY

Densmore, F. T., Dominion.
 Fraser, R. H., New Waterford.
 Francis, Bernard, Sydney Mines.
 Sutherland, Harvey, Glace Bay.
 McLeod, J. K., Sydney.
 O'Neil, F., Sydney (County, South Side).

CUMBERLAND COUNTY

Bliss, G. C. W., Amherst.
 Gilroy, J. R., Oxford.
 Hill, F. L., Parrsboro, (Mepy).
 Cochrane, D. M., River Hebert (Joggins).
 Withrow, R. R., Springhill.
 Stuart, C. E., Parrsboro.

DIGBY COUNTY

Belliveau, P. E., Meteghan, (Clare Mepy).
 DuVernet, Edward, Digby.
 Rice, F. E., Sandy Cove, (Mepy).

GUYSBORO COUNTY

Chisholm, D. N., Port Hawkesbury
 (Mulgrave).
 Sodero, T. C. C., Guysboro (Mepy).
 Moore, E. F., Canso.
 Monaghan, T. T., Sherbrooke (St. Mary's
 Mepy).

HALIFAX COUNTY

Morton, A. R., Halifax.
 Forrest, W. D., Halifax (Mepy).
 Payzant, H. A., Dartmouth.

HANTS COUNTY

Bissett, E. E., Windsor.
 MacLellan, R. A., Rawdon Gold Mines
 (East Hants Mepy).
 Reid, A. R., Windsor, (West Hants Mepy).
 Shankel, F. R., Windsor, (Hantsport).

INVERNESS COUNTY

Chisholm, D. N., Port Hawkesbury.
 Grant, T. E., Port Hood.
 Proudfoot, J. A., Inverness.
 McNeil, A. J., Mabou, (Mepy).

KINGS COUNTY

Bishop, B. S., Kentville.
 Bethune, R. O., Berwick, (Mepy).
 de Witt, C. E. A., Wolfville.
 Moreash, R. A., Berwick.

LUNENBURG COUNTY

Marcus, S., Bridgewater (Mepy).
 Donkin, C. A., Bridgewater.
 Donaldson, G. D., Mahone Bay.
 Zinck, R. C., Lunenburg.
 Zwicker, D. W. N., Chester, (Chester
 Mepy).

PICTOU COUNTY

Blackett, A. E., New Glasgow.
 Chisholm, H. D., Springville, (Mepy).
 Bagnall, P. O., Westville.
 Crummey, C. B., Trenton.
 Dunn, G. A., Pictou.
 Parker, V. H. T., Stellarton.

QUEENS COUNTY

Ford, T. R., Liverpool.
 Smith, J. W., Liverpool, (Mepy).

RICHMOND COUNTY

Deveau, G. R., Arichat, (Mepy).

SHELBURNE COUNTY

Corbett, J. R., Clark's Harbour.
 Fuller, L. O., Shelburne, (Mepy).
 Dinsmore, J. D., Port Clyde, (Barrington
 Mepy).
 Lockwood, T. C., Lockeport.
 Churchill, L. P., Shelburne, (Mepy).

VICTORIA COUNTY

MacMillan, C. L., Baddeck, (Mepy).

YARMOUTH COUNTY

Hawkins, Z., South Ohio, (Yarmouth
 Mepy).
 Caldwell, R. M., Yarmouth.
 Lebbetter, T. A., Yarmouth, (Wedgeport).
 LeBlanc, J. E., West Pubnico, (Argyle
 Mepy).

Those physicians wishing to make use of the free diagnostic services offered by the Public Health Laboratory, will please address material to Dr. D. J. MacKenzie, Public Health Laboratory, Pathological Institute, Morris Street, Halifax. This free service has reference to the examination of such specimens as will assist in the diagnosis and control of communicable diseases: including Kahn test, Widal test, blood culture, cerebro spinal fluid, gonococci and sputa smears, bacteriological examination of pleural fluid, urine and faeces for tubercle or typhoid, water and milk analysis

In connection with Cancer Control, tumor tissues are examined free. These should be addressed to Dr. R. P. Smith, Pathological Institute, Morris Street, Halifax.

All orders for Vaccines and sera are to be sent to the Department of the Public Health Metropole Building, Halifax.

Report on Tissues sectioned and examined at the Provincial Pathological Laboratory, from June 1st., to July 1st., 1939.

During the month, 257 tissues were sectioned and examined, which with 46 tissues from 7 autopsies, makes a total of 303 tissues for the month.

Tumours, simple.....	27
Tumours, malignant.....	39
Tumours, suspicious of malignancy.....	4
Other conditions.....	187
Tissues from 7 autopsies.....	46

Province of Nova Scotia Division of Vital Statistics
Provisional Monthly Report—May 1939

	May, 1939				April, 1939
	Total	Male	Female	Rate	Rate
No. of live births.....	1,010	530	480	22.4	22.3
No. of stillbirths.....	24	8	16	23.2**	38.2**
No. of deaths.....	565	321	244	12.5	13.7
No. of deaths under 1 year of age.....	71	41	30	70.3*	75.6*
No. of deaths from puerperal causes.....	3	...	3	3.0*	6.0*

Causes of Death	Int. List No.	May, 1939				April, 1939
		Total	Male	Female	Rate	Rate
Typhoid Fever.....	1	1	1	..	..	..
Measles.....	7	2	1	1	..	..
Scarlet Fever.....	8	..	..	..	..	..
Whooping Cough.....	9	5	4	1	11.1	13.3
Diphtheria.....	10	1	..	1	..	11.1
Influenza.....	11	30	13	17	66.6	155.4
Pulmonary Tuberculosis.....	23	38	18	20	84.4	88.8
Other forms of Tuberculosis.....	24-32	4	4	..	8.9	13.3
Cancer and other Malignant tumors.....	45-53	69	48	21	153.2	144.3
Cerebral hemorrhage, thrombosis and embolism.....	(82a) (82b)	21	11	10	46.7	66.6
Diseases of the Heart.....	90-95	66	43	23	146.6	213.1
Diseases of the Arteries.....	96, 97 99, 102	43	22	21	95.5	111.0
Pneumonia (all forms).....	107-109	46	20	26	102.1	88.8
Diarrhea and Enteritis under 2 yrs. of age.....	119	..	..	..	..	..
Nephritis.....	130-132	47	23	24	104.3	71.0
Diseases of Early Infancy.....	158-161	38	21	17	37.6*	30.8*
Accident.....	176-195	26	17	9	57.8	51.1

* Rate expressed as number of deaths per 1000 live births.
**Rate expressed as number of stillbirths per 1000 total births.

Provisional Monthly Report of Births and Deaths May, 1939.

	BIRTHS						DEATHS																																	
	Total Births	Live Births				Still Births		Total	All Causes		Maternal Deaths	Under 1 year of Age	Influenza	Pulmonary Tbc.	Other forms of Tbc.	Cancer	Cerc. hem. Eritholism Thrombosis	Heart Disease	Disease of the Arteries	Pneumonia All Forms	Diarrhea under 2 years	Nephritis	Diseases of Infancy	Accident																
		Total	Legit-imate		Illegit-imate		Total		M.	F.															M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
			M.	F.	M.	F.																																		
Nova Scotia	1034	1010	492	440	38	40	24	8	16	565	321	244	3	71	30	38	4	69	21	66	43	46	47	38	26															
Annapolis...	30	26	10	14	1	1	4	2	2	39	18	12	1	3	2	2	4	4	1	4	5	3	3	1	1															
Antigonish...	23	23	8	12	1	2	..	..	..	39	16	14	1	2	1	1	1	5	5	1	1	1	2	2	1												
Cape Breton	208	204	106	87	4	7	4	2	2	105	64	41	1	18	4	1	18	4	11	15	4	11	5	5	9															
Colchester...	52	51	28	19	3	1	1	1	1	23	8	15	..	4	..	..	4	3	3	3	3	3	3	3	3													
Cumberland	83	80	39	36	3	2	3	1	2	36	19	17	..	6	..	..	6	4	3	3	3	3	3	3	3													
Digby.....	48	48	24	17	5	2	..	..	..	22	15	7	..	4	..	..	7	1	1	1	1	1	1	1	1										
Guyshoro...	24	24	9	11	1	3	..	..	..	11	8	3	..	4	..	..	4	1	1	1	1	1	1	1	1										
Halifax.....	187	184	89	81	5	9	3	2	1	93	55	43	10	11	11	2	11	2	7	11	8	8	7	7	4															
Hants.....	51	51	29	19	1	2	..	..	..	21	16	5	..	1	..	..	4	1	4	1	1	1	1	1	1										
Inverness...	30	30	18	11	..	1	..	..	..	27	13	14	..	1	..	..	1	1	3	3	3	7	6	6	1										
Kings.....	42	41	12	27	2	..	1	..	1	27	14	13	..	3	..	..	5	1	1	1	1	1	1	1	1													
Lunenburg...	47	46	25	14	4	3	1	..	1	37	20	17	..	8	..	..	10	1	3	3	3	3	3	3	3													
Pictou.....	105	99	44	45	6	4	6	..	6	38	17	21	..	3	..	..	4	1	6	3	3	4	2	1	1													
Queens.....	24	24	12	12	..	..	..	..	..	17	10	7	..	1	..	..	3	1	1	1	1	1	1	1	1								
Richmond...	8	8	6	2	..	..	..	..	..	8	4	4	..	1	..	..	1	..	..	..	..	..	..	..	..							
Shelburne...	23	22	10	12	..	..	1	1	..	15	11	4	..	1	..	..	2	1	2	2	2	2	2	2	2											
Victoria...	11	11	6	3	1	1	..	..	..	6	5	1	..	1	..	..	2	1	1	1	1	1	1	1	1										
Yarmouth...	38	38	17	18	1	2	..	..	..	14	8	6	..	1	..	..	1	1	2	3	..	..	..	..	1						

Note: These figures are based on the Birth and Death certificates received by the Division of Vital Statistics, Halifax, N. S., up to and including June 10, 1939 and represent the number registered with the Division Registrars during the month of May, 1939.

OBITUARY

The death occurred in Saskatoon on July 9th of Dr. Alexander MacGillivray Young, Liberal member of Parliament for Saskatoon, at the age of sixty. Dr. Young was born at Millsville, Pictou County, Nova Scotia, July 30th, 1878, of Scotch-Canadian parentage, and was educated at Pictou Academy, Dalhousie University, from which he received his B.A. in 1903, and at McGill University. Dr. Young was a member of the Medical Council of Canada from 1912 to 1937, and was President in 1925-26. He was also a member of the Canadian Medical Association.

His first political venture was in the civic field and he was Mayor of Saskatoon for five years. He was elected in the House of Commons first in 1925 and re-elected in 1926. In the 1930 general election he was defeated by F. R. MacMillan, Conservative, but was returned to the House in 1935, in a five-cornered contest.

Dr. Young was registrar of the Saskatchewan College of Physicians and Surgeons from 1919 to 1936 when he resigned.

Dr. Young is survived by his wife, the former Alyce Maud Stanley of Montreal, and three children.

The BULLETIN extends its sincere sympathy to Dr. O. R. Stone of Bridgetown on the death of his wife on July 1st.

PHYSICIAN WANTED

There is a vacancy for a physician at Port Maitland, Yarmouth County, twelve miles from Yarmouth, on a paved road, where there is a good hospital. For further particulars write Dr. E. L. Eagles, c/o Nova Scotia Sanatorium, Kentville, N. S.

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Dr. G. W. F. Farish of Yarmouth, N. S. is considering offering his practice for sale and his offices for rental.

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Personal Interest Notes

THE Hospital Association of Nova Scotia and Prince Edward Island held its annual meeting at Amherst on June 30th. The Hon. F. R. Davis and Dr. G. A. MacIntosh took an active part in the proceedings. The latter part of the meeting was held at Sackville in conjunction with the Hospital Association of New Brunswick, when Dr. S. R. D. Hewitt of Saint John, President, welcomed the visiting delegates. About one hundred delegates were present.

Dr. G. A. Barss of Rose Bay, accompanied by Mrs. Barss, has sailed for England where he will do post-graduate work. During his absence his practice is being taken by Dr. J. Haimowitz, recent Dalhousie graduate.

Dr. R. W. M. MacKay of Dartmouth, addressing the Rotarians at Wolfville the end of June, stressed the increase of mental diseases in this Province and stated that the recently launched campaign to check the unnecessary advance of mental disorders and the growth of institutions, such as Wolfville's rest home, would go far toward improving conditions.

Dr. and Mrs. H. B. Atlee of Halifax have returned from a tour of the European continent, and Dr. Atlee has been greatly in demand as a club speaker to relate his many interesting experiences and opinions he has formed from them as to European conditions.

Dr. H. G. Grant of Halifax in addressing the graduates in nursing of the Nova Scotia Hospital, during June, stressed the necessity of educating the public in the proper application of medical science, pointing out that the nurse is in an advantageous position to forward the prevention of disease in this way as well as through more direct channels.

Dr. R. W. Maclellan of Mill Village, Queens County, has gone to Cleveland where he will do post-graduate work at St. Vincent's Hospital.

Dr. and Mrs. W. C. Harris of Barton have returned from a trip to Boston.

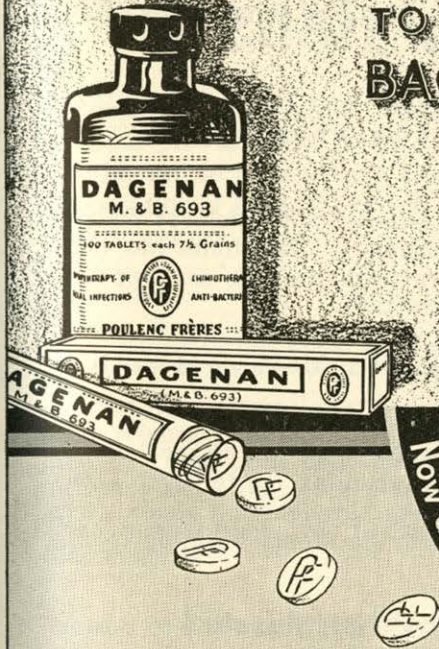
Dr. L. R. Teasdale of Dartmouth who has been in England doing post-graduate work in otology and laryngology has gone to North Carolina.

Dr. G. L. Covert of Halifax who was stricken with pneumonia, is making a speedy convalescence.

Dr. D. A. Forsyth of Dartmouth has moved to Hillsdale, Ontario, where he will take up his practice.

Dr. B. K. Coady of the staff of the Victoria General Hospital is at the Crile Clinic, Cleveland, where he has been awarded a fellowship in pathology.

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Recent Canadian References:

P. H. Greey, D.B. MacLaren and C. C. Lucas,
Can. Med. Assoc. Jour. April 1939, P. 319.

Duncan Graham, W. P. Warner, J. A. Dauphinee
and R. C. Dickson, Ibid. P. 325.

J. C. Meakins and F. R. Hanson, Ibid. P. 333

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Congratulations to Dr. and Mrs. D. M. MacRae of Halifax on the birth of a daughter on June 17th, and to Dr. and Mrs. H. E. Wilson of Ship Harbour on the birth of a son on July 5th.

The BULLETIN extends to Major-General G. Foster of Wolfville its wishes for his rapid convalescence following his recent illness.

Dr. H. S. Smith of Caledonia, Queens County, and Dr. J. W. Smith of Liverpool, have returned from a trip to New York, where they took in the World's Fair.

Dr. R. O. Jones, Dalhousie '37, has been awarded a Rockefeller Fellowship to the Phipps Institute of Psychiatry, Baltimore. Dr. Jones has been studying Psychiatry in England, and will return to take up his new appointment in the fall.

Dr. Grace Cragg of the Medfield State Hospital, Medfield, Mass., is at present spending a vacation in Halifax.

Dr. C. C. Ross of Toronto addressed the Nova Scotia Branch of the Canadian Society for the Control of Cancer at Halifax on July 7th. Dr. Ross gave an analysis of the work of the Society throughout Canada since its formation last Fall. Dr. Ross also attended the annual meeting of the Medical Society of Nova Scotia at Digby.

Dr. and Mrs. S. H. Keshen of Halifax have returned from a trip to Boston and New York where Dr. Keshen attended clinics. They also visited the World's Fair in New York.

A presentation of crystal to Dr. Pearl Hopgood of Dartmouth was made by the members of the H.M.S. Shannon Chapter First Aid Group of the I.O.D.E. on July 6th at the Nova Scotia Hospital, in appreciation of her work as their instructor.

Dr. Evelyn F. H. Rogers who has been studying at Johns Hopkins University during the past year has been awarded her diploma as Master of Public Health. Dr. Rogers has been accepted as Epidemiologist and Supervisor of Maternal and Child Hygiene in New York State. Dr. Rogers received her B.A. at Dalhousie in 1924, her M.D.,C.M. at Dalhousie in 1927, and her L.M.C.C. the same year.

Adrenal-Gland Products

Adrenal Cortical Extract contains the active principle of the adrenal cortex and has proved useful in the treatment of certain cases of Addison's disease. In the course of extensive research in the Connaught Laboratories on the preparation of Adrenal Cortical Extract, a highly effective product was evolved for clinical use.

Adrenal Cortical Extract

Adrenal Cortical Extract is supplied as a sterile solution in 25 cc. vials. It is non-toxic, is free from pressor or depressor substances and is biologically standardized.

During the preparation of Adrenal Cortical Extract, Epinephrine is obtained as a separate product. This is the active principle of the adrenal medulla and has long been used for many purposes including stimulation of heart action, raising the blood-pressure and relieving attacks of bronchial asthma.

Two preparations of Epinephrine are available from the Connaught Laboratories:

Epinephrine Hydrochloride Solution (1:1000)

Every physician is familiar with the use of epinephrine hydrochloride (1:1000). It is supplied by the Connaught Laboratories in 30 cc. rubber-capped vials instead of in corked or stoppered bottles. Thus, individual doses may be readily withdrawn from the vials aseptically without occasioning any deleterious effects upon the solution left in the vials for later use.

Epinephrine Hydrochloride Inhalant (1:100)

Recently considerable success has been secured in the alleviation of attacks of bronchial asthma by spraying into the mouth this more concentrated solution of epinephrine hydrochloride. This solution is supplied in bottles containing 1/5 fl. oz. (approx. 6 cc.), each bottle being provided with a dropper fastened into its stopper so that small amounts of the solution may be transferred for inhalation from an all-glass nebulizer.

Prices and information relating to the use of these adrenal-gland products will be supplied gladly upon request.

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Vienna Medical Faculty Has Lost Heavily

Approximately fifty per cent of the assistant professors and instructors on the medical faculty of the University of Vienna at the time Austria was seized by Nazi Germany have lost their positions, it is reported in a survey published by *Science*. A number of internationally known members have disappeared from what was once a medical faculty renowned for the ability of its members. The group that has been forced to leave includes a considerable number of Aryans as well as Jews.

Prof. Egon Ranzi, director of the surgical clinic, has been forced to relinquish the directorship of the clinic and has been retired on a pension because he had been a supporter of Schuschnigg, according to the journal, which quotes the Berlin correspondent of *The Journal* of the American Medical Association.

Professors Leopold Arzt and Wilhelm Kerl, both Aryans and both ranking dermatologists, have met the same fate and for the same reasons. Prof. Ernest P. Pick, pharmacologist, was forced to retire because he is a Jew. Dr. Arnold Durig, a physiologist, has been retired for reasons unknown. Prof. Otto Lowei, of Graz, Nobel Laureate, has been stripped of his post and was in custody until a short time ago. The psychiatrist, Otto Kinders, has been dismissed, probably on racial grounds. Sigmund Freud is in London; Hans Hoff, in the United States. Prof. Otto Marburg, noted neurologist, and Erwin Stransky have both lost their posts.

Jews were prominent among the instructors and assistant professors, whereas few Jews have held full professorships in recent years. This, the journal points out, accounts for the large number of victims in this group. —*The Diplomat*, January, 1939.

Summer Diarrhea in Babies

Casec (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quickly effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 8 level tablespoonfuls of Casec. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextrin-Maltose may safely be added to the formula and the Casec gradually eliminated. Three to six teaspoonfuls of a thin paste of Casec and water, given before each nursing, is well indicated for loose stools in breast-fed babies. Please send for samples to Mead Johnson & Company, Evansville, Indiana.

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Palm-Print Is Best Birth Certificate

A palm-print taken of baby's hand is the best birth certificate he can have, Dr. Gilbert P. Pond, of the West Suburban Hospital, Oak Park, Ill., told members of the American College of Surgeons meeting in New York at the Hospital Standardization Conference.

If new-born babies get mixed up in the hospital, as they sometimes do, in spite of bracelets or other identifying tags, palm-prints taken at birth would provide conclusive evidence of the baby's identity. It is a method of identification that will stand the test of the highest courts, Doctor Pond said. Foot-printing, once popular for this purpose, is definitely out, Doctor Pond indicated, because it is not reliable and not lasting.

Besides preventing baby mix-ups, when the wrong parents take home the wrong baby, palm-prints have other important uses. If universally adopted, it would, Doctor Pond said, provide an incontrovertible proof of birth and identity for the life of the infant; a means of identifying abandoned children and foundlings (and would consequently deter child abandonment); a means of identifying returned, kidnaped children regardless of time and even after death; a means of identifying unknown children after such major disasters as earthquakes or extensive conflagrations; a means of identifying cases of amnesia, unconsciousness, and unknown dead after a generation of prints were on file; a record of relationship between the infant and its mother if her finger-prints are placed on the same card as the infant's palm-prints.

Broken Bones Set with Chicle

Doctors of the Jivaro head-hunting tribe on the Amazon use casts of chicle—the basis of chewing gum—to hold broken bones in place, according to a report by Matthew W. Stirling, chief of the Bureau of American Ethnology, who ventured successfully into their supposedly dangerous communities.

A Jivaro doctor, called a wishinu, has to study one month before he is considered ready to practise, but there are only six kinds of disease spirits supposed to cause most human troubles. He also has to learn to treat colds, fever, and dysentery with specific herbs. His rigid code of medical ethics requires him to answer a sick call at any hour of day or night through trackless jungle. If he fails to cure, he may be "sued" for malpractice, which in Jivaro legal machinery means he may lose his head or be required to pay the value of the lost patient's life.

Jivaro doctors are able, honest, and idealistic, Mr. Stirling found. And more often than not they are wealthy.—From *The Diplomat*, March, 1939.

"Depression or No Depression"

Since 1930, month after month, a unique series of education-to-the public advertisements have appeared on the first page of Hygeia. The sponsor's name, Mead Johnson & Company, has to be looked for with a magnifying glass, and appears only for copyright purposes. Not a product is ballyhooed. Instead, appears good, clean, convincing reasons, with choice illustrations, why mothers should seek pediatric advice from their physician.

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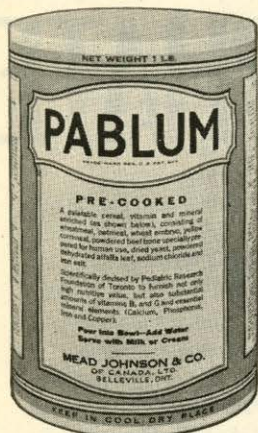
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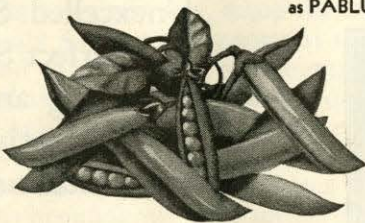
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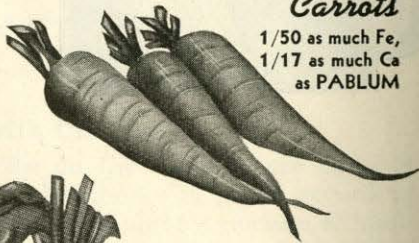
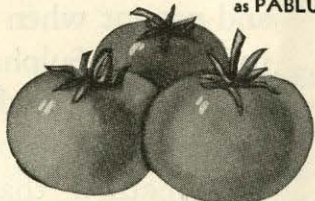
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1/27 as much Ca
as PABLUM

	Mg. per Oz.	
	Iron	Calcium
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Beets	0.67	6.8
Carrots	0.17	13.1
Peas	0.50	8.0
Spinach	1.13	21.8
String Beans	0.27	14.2
Tomatoes	0.12	3.1

Tomatoes

1/70 as much Fe,
1/71 as much Ca
as PABLUM

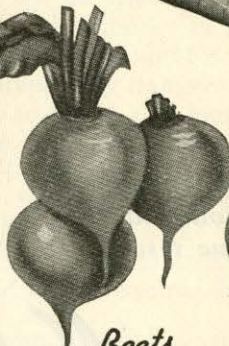


Carrots

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1/17 as much Ca
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Beets

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1/32 as much Ca
as PABLUM

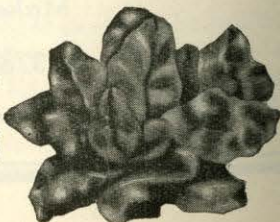


String Beans

1/31 as much Fe,
1/15 as much Ca
as PABLUM

Spinach

1/12 as much Fe,
1/10 as much Ca
as PABLUM



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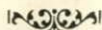
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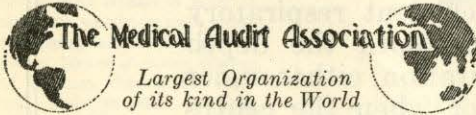
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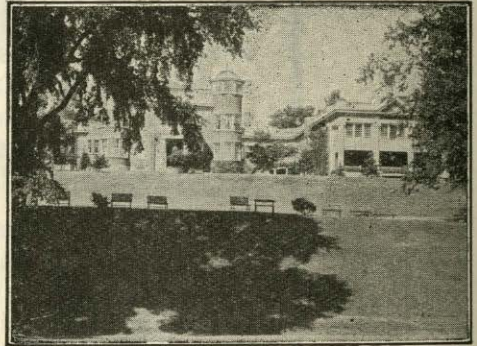


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