



THE
JOURNAL
OF THE
JAFFNA
CLINICAL SOCIETY



VOL. V.

AUGUST, 1968

GROW MORE FOOD

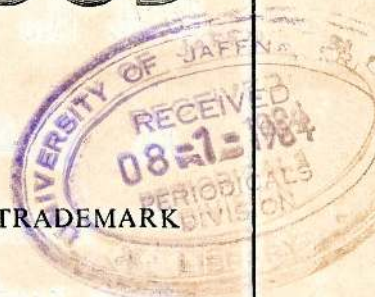
WITH

GROMORE
TRADEMARK
FERTILISER
AUTOS LIMITED

HOSPITAL ROAD,
JAFFNA.

Phone : 496.

Grams : AUTOS.



THE BLUE RIBBON

FOR THE FINEST IN
COMFORT
CUISINE
&
SERVICE

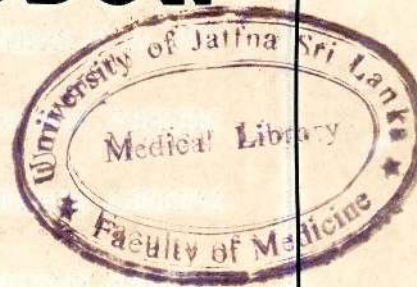
THE TWO-STAR HOTEL OF THE NORTH

The Blue Ribbon Hotels Co.

JAFFNA.

TELE : 7178

GRAMS : "RIBBON"



With the compliments of:

A. BAUR & CO., LIMITED

SOLE IMPORTERS & DISTRIBUTORS
FOR THE PHARMACEUTICAL SPECIALITIES

OF

MESSRS. CIBA LIMITED, BASLE, SWITZERLAND.

MESSRS. SANDOZ LIMITED, BASLE, SWITZERLAND.

MESSRS. F. HOFFMANN-LA ROCHE & CO.,
LIMITED COMPANY, BASLE, SWITZERLAND.

MESSRS. J. R. GEIGY S. A., BASLE, SWITZERLAND.

DR. A. WANDER S. A., BERNE, SWITZERLAND.

MESSRS. RHONE-POULENC, PARIS, FRANCE.

MESSRS. SCHERING CORPORATION, NEW JERSEY, U. S. A.

MESSRS. HAUSMANN LABORATORIES INC., ST. GALLEN,
SWITZERLAND.

62, Jetawana Road,
COLOMBO-14.

Telephone : 25035-25036.



THE
JOURNAL
OF THE
JAFFNA
CLINICAL SOCIETY

Joint Editors :

K. E. de S. KARUNARATNE, M.D. (Cey.), M.R.C.P. (Lond.), M.R.C.P. (Edin.)
S. VARATHARAJAN, M.B.B.S. (Cey.), F.F.A.R.C.S. (Eng.)

VOL. V,

AUGUST, 1968

CONTENTS

	PAGE
Editorial	1
Some Iron Kinetic Studies by T. W. Wikramanayake	5
An Evaluation of Intravenous Iron-Dextran Therapy in Obstetrics and Gynaecology by W. S. E. Perera	17
Supernumerary Teeth in the Maxillary Sinus by P. Shanmugarajah	25
A Case of Ascending Myelitis Following Chicken Pox by P. Rajasingham	28
Review of the Activities of the Jaffna Clinical Society in the Last Academic Year	31
Jaffna Clinical Society	32

Editorial....

Patterns of Disease

THE four year transfer scheme of Government Medical Specialists poses its own individual questions—housing, schools, distance from home town, and Consultation Practice being some of them. It also affords the opportunity of working in different parts of Ceylon, and noting the difference in incidence of disease. Clinical impressions are notoriously fallacious, but nevertheless should not be totally ignored. In Jaffna, for instance, it appears very likely that the pattern of disease is different from that in other provinces.

Some of these differences have been pointed out earlier. Oesophageal carcinoma appears to be commoner than in other parts of Ceylon. Even the young woman who comes with intermittent dysphagia and appears anxious may have a neoplasm, and not a 'globus hystericus'. A fruitful field for research?

Renal calculi, with all their complications, are seen frequently. It may be an oversimplification to visualise the calcium in our hard water being deposited in the urinary tract. Perhaps it is related to the tomato season; perhaps it is the hot weather; perhaps it is something else.

A number of children in Jaffna Hospital have shown blood films suggestive of 'Chronic Lymphatic Leukaemia', a disease of old men according to the text books. With so much in the literature on the virus

etiology of leukaemia, no doubt, there is room for work in this field too. (1)

In every Medical Clinic there are more than a few patients coming up for their prescriptions of thyroxine. Any tendency to doubt the clinical acumen of previous Consultants is soon dispelled by the numbers of 'fresh' myxoedematous patients referred from the Out Patient Department. Hypothyroidism, which is popularly associated with hilly districts and lack of iodine, is common in Jaffna. But so is thyrotoxicosis. It is interesting to think up theories why both hypothyroidism and hyperthyroidism should occur in Jaffna and a recent hypothesis may be pertinent (2). It has been postulated that there may be a genetically determined disposition to thyroid disease and that iodine may stimulate or depress thyroid function.

Pericarditis seems to be cropping up with fair regularity in children and young adults. It is tempting to send away the teen-agers who come complaining of chest pain, with some phenobarbitone and plenty of reassurance. However they merit careful examination and investigation. A pericardial rub may be heard, and changes seen in the ECG. Another intriguing clinical picture is that of acute heart failure in young adults. The etiology is obscure, and may be due to some form of myocarditis, possibly viral. A gallop rhythm is a common finding, together with

(1) Leading Article—*Lancet* Vol. II 1966 p 210.
'Epidemics of Acute Leukaemia'.

(2) Hypothesis—*Lancet* Vol. I 1968 p 671.
'Pathogenesis of Hyperthyroidism'.

T wave inversion in the ECG. With treatment the symptoms and signs clear up rapidly. These illnesses appear to be commoner in Jaffna than in the Central Province.

There appeared to be an epidemic of 'coronaries' in Jaffna during the months of March—April 1968, followed by a series of cerebrovascular accidents in May 1968. Heart attacks have been found to occur more commonly during heat waves in America; but why did the infarcts come before the 'strokes' in Jaffna? Did this happen in previous years? Will it happen in the future?

These are mere musings, unsupported by any statistics. However, the admissions to one unit are no reflection of the admis-

sions to the entire Hospital; the admissions to Hospital do not indicate the incidence in the population. An efficient and accurate system of records is important as a first step so that reliable statistics of morbidity and mortality will be readily available. This should be followed by population studies if the geographical incidence of disease is to be adequately investigated.

For the moment, then, we can observe and theorise, though these are not always harmless pastimes.

'Men who have excessive faith in their theories or ideas are not only ill-prepared for making discoveries; they also make very poor observations' (3).

(3) Bernard C (1957) *An introduction to the study of experimental medicine*.
Dover Publications : New York.

Rights and Responsibilities

A Special Article in the *New England Journal of Medicine* recently dealt with the 'Rights of Patients'. The author, Assistant Dean of an American Medical School, discussed the 'Right to Privacy', 'The Right to Pain', 'The Right to Truth', and the 'Right to Die'. There was considerable comment in the correspondence columns subsequently, but it is unlikely whether the average patient in a Ceylon Government Hospital would be interested in such arguments.

The Ceylon patient hopes he has just one Right—that a reasonable concern be

shown for his life, if not his health, by the people inside the Hospital who are entrusted to look after him. Our Free Health Services is perhaps not really fit to perform all the tasks demanded of it. May be in the context of the society we live in, a patient seeking free treatment does not have the right to a comfortable bed, good toilet facilities, palatable food, plenty of nurses to minister to all his wants. But any patient, anywhere, has the Right to expect that the doctor who looks after him show adequate regard for his life and health.

The insecurity he feels about this Right in Ceylon is perhaps reflected in the activity of the Consultation Secretariat. No more need be said. Our Free Health Services have filled plenty of columns in the *Daily Press*, and will continue to do so.

If there are the Rights of patients, what of his responsibilities?

The first, surely, is to furnish as accurate a history as possible.

Doctor—"What is the trouble?"

Patient—"That is for you to find out, doctor?"

Doctor—"I am sorry you have come to the wrong person. I will put you in touch with my friend, the Vet. He is able to diagnose without asking questions."

At the other end of the scale is the patient who tells all, and more. This may be done in an attempt to stir up the doctor to more energetic therapeutic efforts. The patient with fever of 4 days duration may extend it to two weeks. Such deception usually brings its own retribution in delayed diagnosis and inappropriate treatment. Some patients seem disinterested in giving a reasonably consistent account of their symptoms. Perhaps a belief exists that diagnosis rests chiefly on the stethoscope, the Xray, and the blood test—that the 'clever' doctor need not ask so many questions, or be given so much information by the patient.

The history includes not only the patient's symptoms, but whatever details he can provide re previous treatments, previous hospital admissions, previous medical opinions expressed regarding his condition. Such clues may be vital. What the Father of Medicine said 25 centuries ago still holds:

"Life is short, Science is long, opportunity is elusive, experiment is dangerous, judgement is difficult" (1).

In arriving at the difficult judgement, the doctor needs all the help the patient or his relatives can give him.

The patient has other responsibilities. The onus is on the patient to follow the doctor's instructions regarding his diet, his medicines, his way of life. Unless the Diabetic patient lives the Diabetic Life, the doctor can do little to help him. Refusing admission, refusing surgery, leaving hospital against medical advice, are familiar activities of patients who do not realise their obligations to themselves and to their doctors.

With the tremendous pressure on Government Hospital beds, the majority of sick patients have to be looked after outside the Hospitals, in the various clinics, and in the outpatients department. The responsibility is so much more on the patient to look after himself on the lines advised by the doctor. A reasonable doctor-patient relationship, which is essential for effective treatment, can be based only on care and attention by the doctor, and faith and trust on the part of the patient.

All this was familiar to the famous Physician from Cos, whose first Aphorism continues—

'It is not enough for the Physician to do what is necessary, but the patient and the attendants must do their part as well, and circumstances must be favourable' (1)

Another translation of this well-known aphorism of Hippocrates reads

'The Physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals co-operate'. (2)

The responsibilities of the patients, then, are the responsibilities of the doctor. Perhaps this was so in Greece—5th Century B. C. It is certainly true of 20th Century Ceylon.

(1) The Medical Works of Hippocrates. Chadwick & Mann. Blackwell Scientific Publications—Oxford.

(2) Source Book of Medical History. Dover Publications—New York.

Respiratory Care

ARTIFICIAL ventilation as a method of treatment in several conditions both medical and surgical is well established. Provision of facilities for respiratory care of patients and institution of artificial ventilation in every provincial hospital is fast becoming a necessity.

Within the last six months in General Hospital, Jaffna, two patients were ventilated artificially, one for five days and the other for three days. The first patient had an ascending myelitis with respiratory insufficiency, the second had a stove-in-chest.

In this same institution over the same period there have been between eighty to ninety patients with tetanus with a mortality of approximately 10%. If adequate facilities were available to ventilate some of these patients, morbidity and mortality could have been reduced further. During the same period there were many patients with respiratory insufficiency due to poliomyelitis, polyneuritis, etc. who would have fared better if facilities were available for intensive care and artificial ventilation when needed.

It may be uneconomical to provide costly equipment to every hospital if it will remain idle for most of the year. In Jaffna there does not appear to be a lack of

patients requiring respiratory care. Concentrating all patients needing respiratory care in one place enables the staff in the unit to gather more experience in management. In an institution like General Hospital, Jaffna, where large numbers of such patients are seen, the staff will be able to gain this experience in a very short time and this would undoubtedly benefit the patients in this institution in the long run.

Providing facilities for artificial ventilation of patients in General Hospital, Jaffna, is an urgent matter. Whether a separate respiration unit should be formed or whether it should be part of an intensive care unit, is debatable. Most of these patients need intensive nursing and medical care and hence justify being kept in the intensive care unit. On the other hand there would be a few patients who may need artificial ventilation for long periods, e. g. poliomyelitis. Intensive nursing care may not be very essential in some of these patients. If kept in the I. C. U. they may block beds and increase the work load of the staff, thus depriving more ill patients of the attention they require.

Whatever the type of unit, providing facilities for respiratory care viz. equipment, space, and staff, is an urgent necessity for this institution. For a start it is wise to incorporate it in the proposed intensive care unit, and later on if a need arises, have it as a separate respiration unit.

Some Iron Kinetic Studies*

By

T. W. WIKRAMANAYAKE,

(Faculty of Medicine, Peradeniya.)

THE availability of radioactive iron of high specific activity has greatly facilitated the study of the movement of iron within the body. Observations on the rate of fall of radioactivity of Fe ⁵⁹ labelled plasma transferrin, the movement of iron into organs such as the liver, bone marrow and spleen, and the appearance of Fe ⁵⁹—labelled red blood cells led Pollycove and Mortimer (1961) to propose mathematical models for iron kinetics in the normal in-

dividual as well as in patients with abnormal deposition of iron in stores and/or with a haemolytic process.

The main pathways of normal iron kinetics and the amounts of iron involved in various compartments of plasma iron exchange, as proposed by Pollycove (1958), are shown in figure 1. The main flow of iron is from plasma to marrow to erythrocytes and back to plasma on the death of the erythrocyte. Plasma iron exchange

NORMAL IRON KINETICS

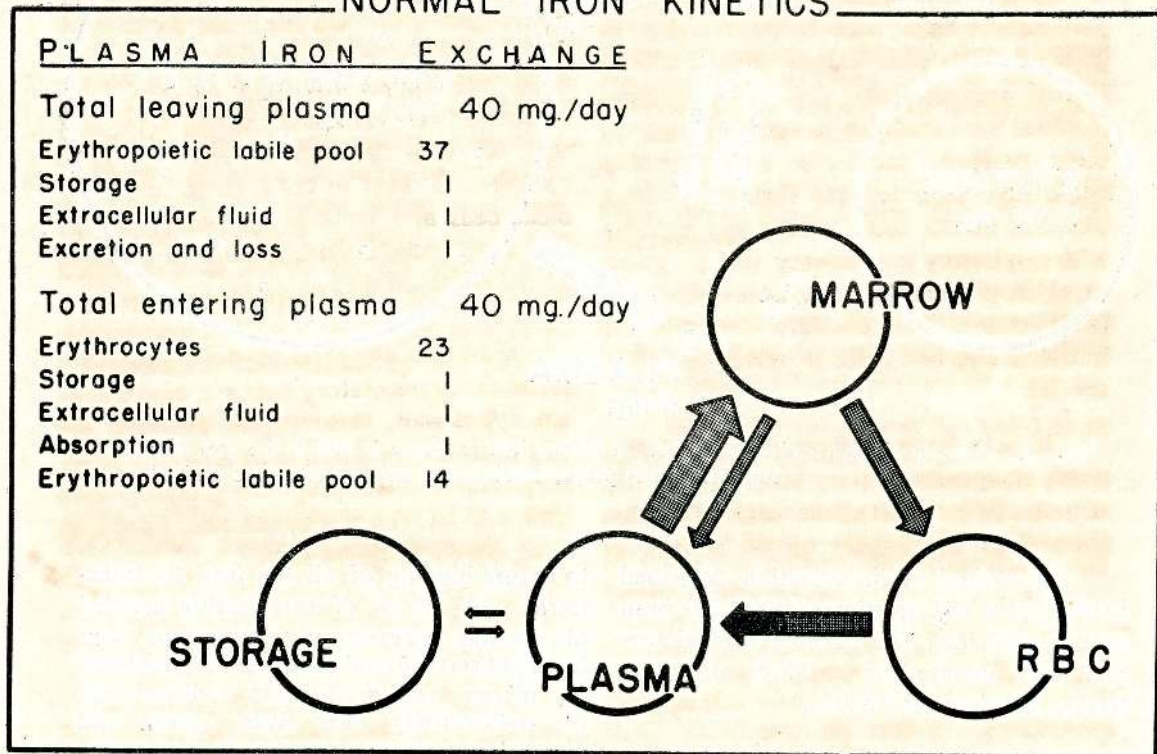


Fig. 1. Diagram of main pathways of normal plasma iron exchange. Storage iron exchange, though small, is included because of its importance in many disorders.

*From a paper on "Recent Progress in the study of Iron Metabolism" presented before the Kandy Society of Medicine, on 20.3.67.

also occurs from intestinal absorption and excretion in bile, urine and by desquamation of cells, amounting to about 1 mg./day. There is also an exchange with extracellular fluid, myoglobin and the haem enzymes, also about 1 mg./day. All these other exchanges, however, amount to less than 10% of the amount of iron going daily into the bone marrow. Only two-thirds of the iron going to the marrow is utilised for haemoglobin synthesis. The remainder re-

enters the plasma. The feed-back of iron from marrow to plasma is designated a "labile-pool", in contrast to the relatively fixed iron in stores. In Fig. 2 the area of each compartment corresponds to the amount of iron in it. It shows that the plasma iron exchange is not proportional to the amount of iron in it. Though the storage iron reserve is about 25% of the total body iron, yet storage iron exchange is less than 5% of the total iron exchange.

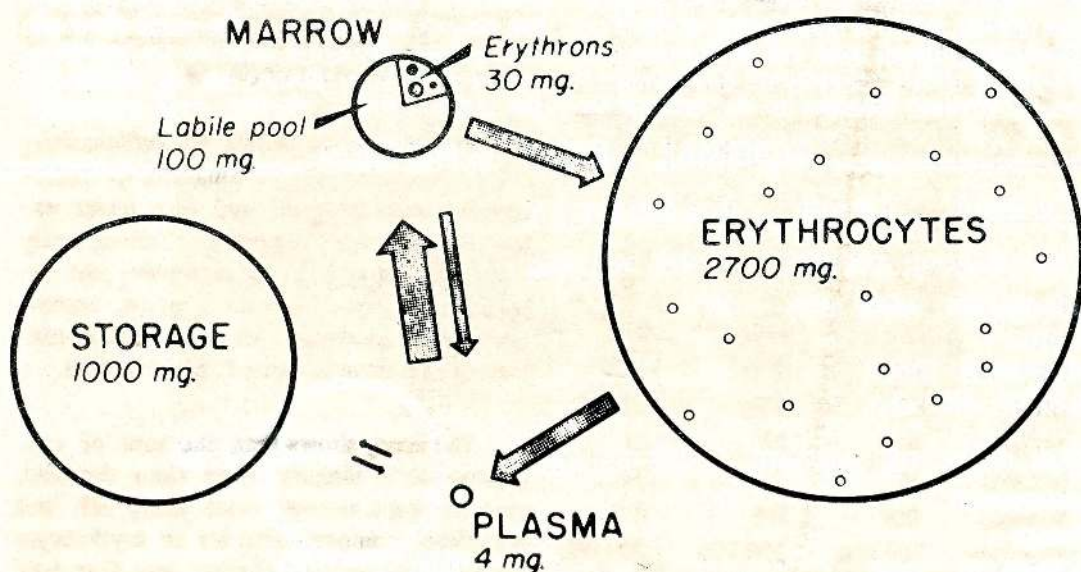


Fig. 2. Diagram of main pathways of normal plasma iron exchange in which the area of each compartment is proportional to the amount of iron contained.

The method of investigation described by Pollycove and Mortimer (1961) has been used in studying a few patients with abnormal iron metabolism. Three of these studies are described below.

Each case had been referred for the iron kinetic studies after a clinical and haematological assessment had been made. Fe^{59} as ferrous citrate was incubated at $37^{\circ}C$ for 30 mins. with the patient's plasma

to ensure binding of all the iron to transferrin. 10–30 ml. of this freshly labelled plasma was injected i. v. During the next fortnight serial blood samples were analysed for plasma and erythrocyte radioactivity, the radioactivity over liver, spleen and sacral bone marrow measured, concentrations of plasma iron and TIBC determined, and the plasma and red cell volumes measured. For measuring red cell volumes the patient's red cells, labelled with P^{32} , were used.

Case 1.

Patient T. G. male, age 52 years.

Complaints: Weight loss, lack of pep and diminished libido.

On examination, there was increased pigmentation with marked bronze discolouration of forearms, face and genital area. No cyanosis. Skin was dry, with multiple telangiectasis.

Heart: Apex beat not felt. Dullness extends 6 cm. from left sternal border in the 4th interspace. No enlargement to the right. Sounds regular, B. P. 135/80.

Liver: Half-way between right costal margin and umbilicus, smooth, firm, moves with respiration. Prostate enlarged.

Haematology:

	6/5	11/5	22/5
Hb	13.4	13.5	13.0
PCV	38.5	43.0	38.5
RBC	4.44	4.95	4.80
MCV	87	87	80
MCH	30	27	27
MCHC	35	31	34
Retics	0.5	0.6	0.7
Platelets	200,000	190,000	200,000
WBC	10,450	6,300	6,100

Biochemistry:

Total plasma proteins	5.95g. %
A/G	1.96
Bilirubin	0.57 mg. %
Creatinine	1.93
non-protein nitrogen	27.3
Serum Iron	197 ug/100 ml.
	(normal range 70—170).
TIBC	224 ug/100 ml.
	(300—400).

Results of Iron kinetic study:

Gross turnover of Fe in plasma is increased to 0.63 mg./hr./L of blood (normal range 0.2—0.4).

Net incorporation of radioiron in circulating erythrocytes, as shown in Fig. 3, was slow and attained a maximum net incorporation of only 62% (85—100).

Analysis of plasma radioiron for 14 days showed daily synthesis of 17.7 g. Hb or 2.8 g./day/L of blood (1.0—1.6). When related to a total body Hb of 749 g., the mean erythron life span obtained is 48 days (100—135). Deposition of plasma Fe in storage was 19 mg./day (0—2).

In vivo measurements of radioactivity (Fig. 4) show initial accumulation of radioiron in sacral marrow, and to a lesser extent, in liver, none in spleen. Subsequently there was a gradual and complete net release of radioiron from the marrow, accompanied by a moderate secondary accumulation of radioiron in spleen, none in liver.

The study shows that the rate of erythropoiesis is slightly more than doubled, maintaining a normal total body Hb and completely compensating for an erythrocyte life span reduced to slightly less than half normal. Iron stores are greatly increased with corresponding increase of plasma iron deposition in storage form. The latent iron binding capacity is greatly reduced in association with increased plasma Fe concentration. This pattern is compatible with endogenous haemachromatosis in which there is superimposed an occult haemolytic process.

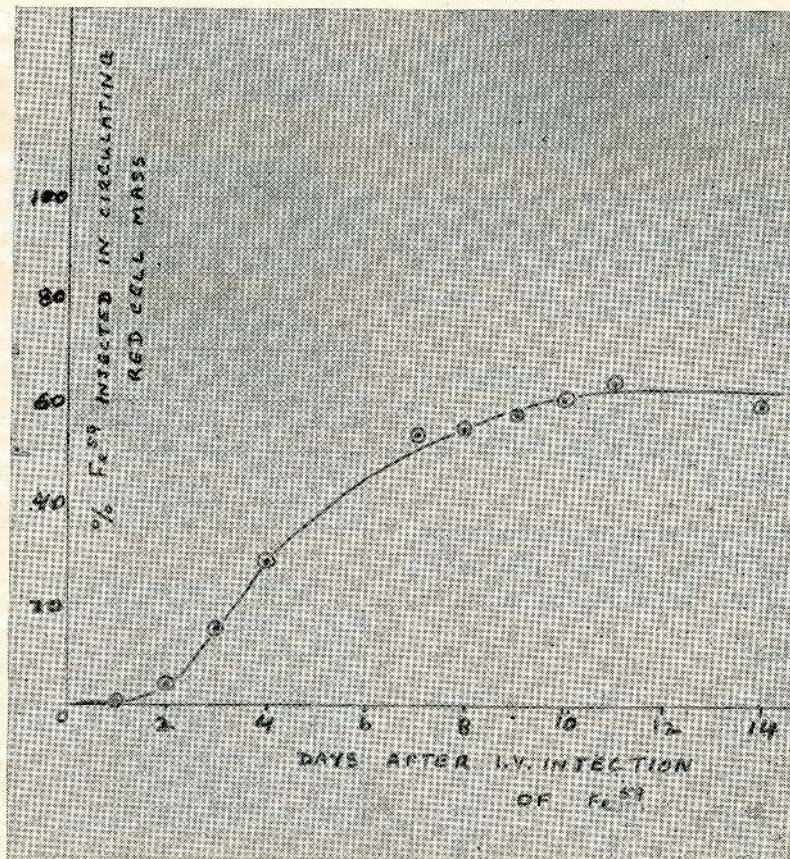


Fig. 3. Radioiron in circulating erythrocytes of patient T. G. after one intravenous injection of Fe⁵⁹.

Case 2.

Patient E.S., male, 66 years.

Complaint: Shortness of breath,
5 wks. duration.

On examination, anasarca of lower body up to nipples. Spleen 3 cm. below costal margin in MCL. Liver palpable, 1 cm. below costal margin in MCL. Prostate enlarged.

PCV 14, BUN 100, creatinine 10
 Total plasma proteins 5.6%
 Albumin 3.5
 Globulins 2.0
 Na 141 K 5.1 Cl 112.

Diuresed about 10 L urine with weight loss of 55 lbs. during two weeks.

Cystoscopy showed diffuse haemorrhagic cystitis behind an enlarge prostate.

Platelets 78,000
 Retics 0.4—1.2%
 Wbc 3,800.

Patient transfused to a PCV of 38.

PCV fell to 22 in 20 days.

Transfused to 28, fell to 20 in 24 days.

Bone marrow biopsy normal.

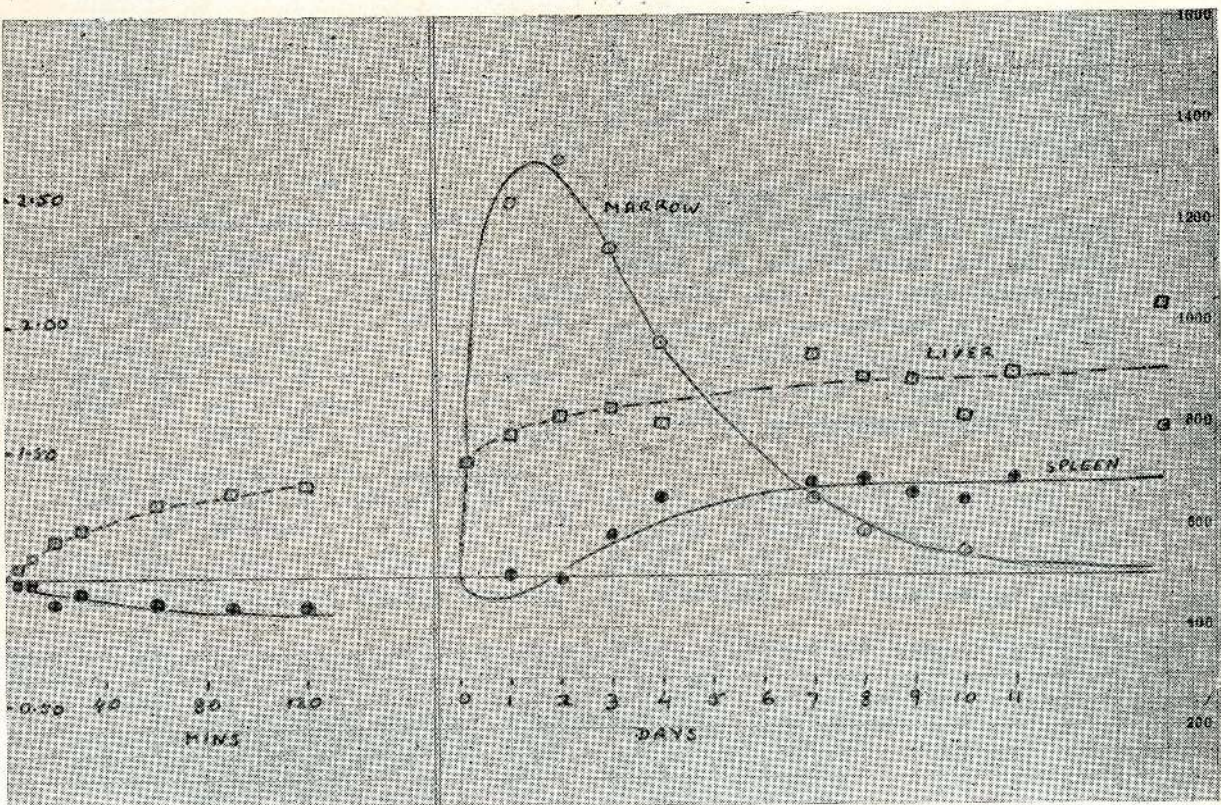


Fig. 4. Variation with time of body surface counting rates in patient T. G., after one intravenous injection of Fe^{59} . Rates are expressed as ratios of that at zero time.

Further cystoscopy and retrograde pyelograms suggested that uraemia was secondary to obstructive uropathy.

Haematological picture was thought to be due to a primary haemolytic anaemia from hypersplenism with thrombocytopenia. Normal bone marrow in the face of marked anaemia, showing no response to stimulation with folic acid and iron was suggestive of uraemic depression of the marrow. It was felt that splenomegaly was an aetiological factor, and isotopic studies were undertaken to confirm or rule out this suspicion.

Report of Iron Kinetic study :

Plasma Fe	48 μ g/100 ml.
	(normal range 70—170).
LIBC	309 μ g/100 ml.
TIBC	357 μ g/100 ml.
	(300—400).

Gross turnover of Fe in plasma is increased to 0.77 ml/hr/L. of blood (0.22—0.40). Net incorporation of radioiron in the circulating erythrocytes was rapid (Fig. 5), attaining a stable maximum of 50% (85—100%).

Analysis of plasma radioiron for two weeks shows a daily synthesis of 23.4 g. Hb, or 4.0 g/day/L of blood (1.0–1.6). When related to the total body Hb of 348g., a mean erythrocyte life span of 15 days is obtained (100–135).

In vivo measurements (Fig. 6) show a rapid initial accumulation of radioiron in sacral marrow, none in liver and spleen. Subsequently there was a rapid release of radioiron from sacral marrow, accompanied by a marked secondary accumulation of radioiron in spleen. There was no significant secondary accumulation of Fe^{59} in liver.

This iron kinetic study shows a marked reduction of erythron life span to approximately one eighth normal, with a marked splenic sequestration and destruction of

erythrocytes. Erythropoiesis, though increased three-fold, is subnormal with respect to the severe anaemia present. This study indicates the presence of a severe haemolytic process which should benefit from splenectomy.

Case 3.

H.B. Female, age 41 years.

Complains of premenstrual tension, occasional headaches, premenstrual shooting pains in the eyes. Has a tremor and has to go to bed during her periods. Periods regular once in 26–27 days. Flow now shortened from a week to only two days, but still very profuse, with clots.

Had scarlet fever at the age of 6. Complete thyroidectomy 5 years ago, taking 25 mg. cytomal b d, sometimes t.d.s.

On examination, patient was well nourished, pleasant and co-operative. Mildly

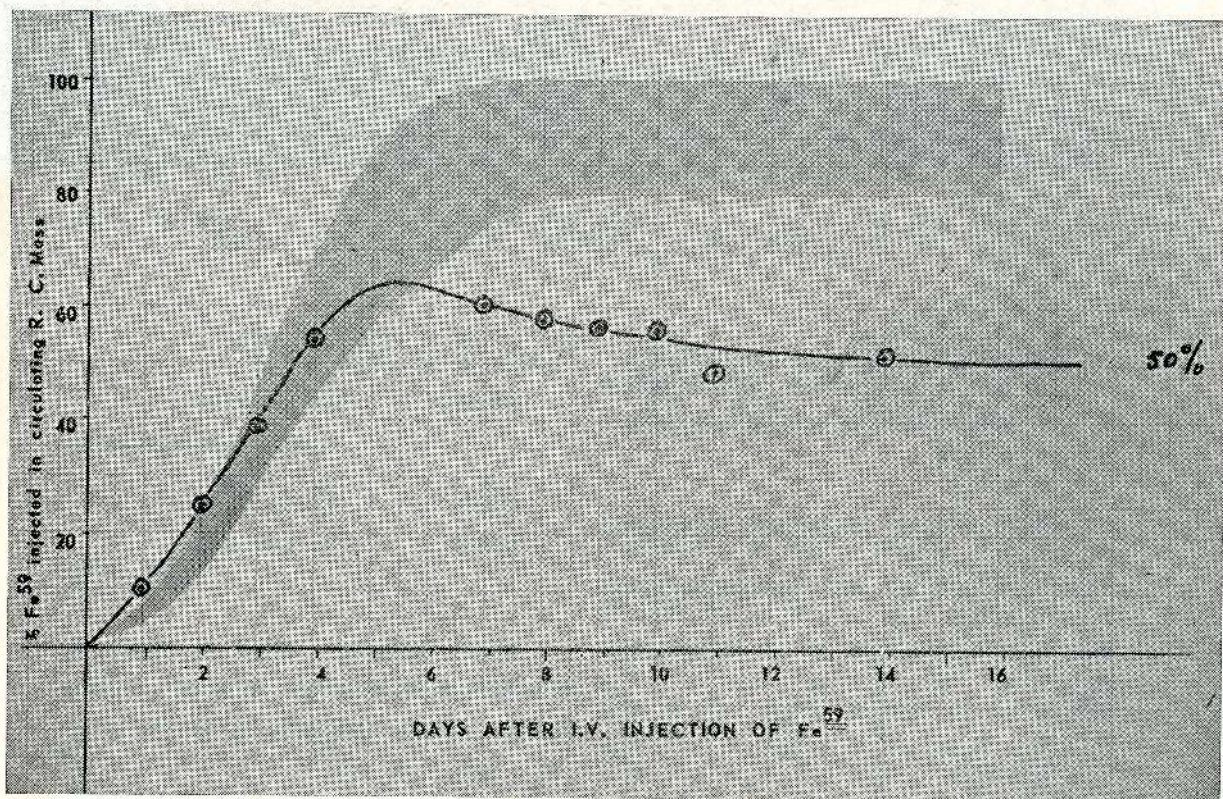


Fig. 5. Radioiron in circulating erythrocytes of patient E. S. after one intravenous injection of Fe^{59} .

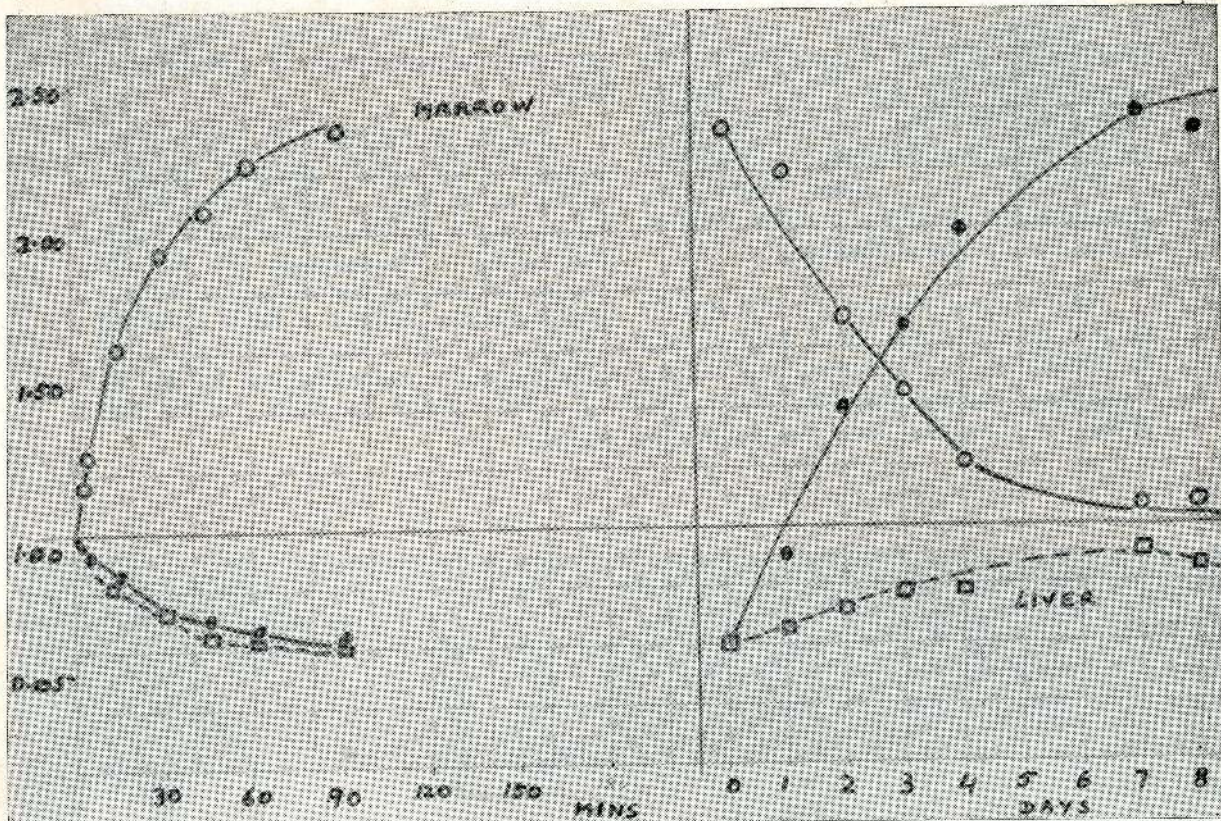


Fig. 6. Variation with time of body surface counting rates in patient E. S., after one intravenous injection of Fe^{59} . Rates are expressed as ratios of that at zero time.

pale, not cyanotic. Skin clear. Pulse 84 with a regular sinus rhythm.

B.P. 140/85

Liver and spleen not felt

Neurological examination negative.

	22/4	27/4	25/5	5/6	26/6
Hb	8.0	7.1	7.0	7.1	7.5
PCV	26.5	26	27	26.4	27.5
Rbc	3.77	4.32	4.48	4.39	5.26
MCV	70	60	65	60	52
MCH	21	17	18	16	14
MCHC	30	27	28	27	27
Retics	0.9	11.1	3.9		

Platelets 460,000 350,000 380,000 340,000 320,000

Total plasma proteins	5.64 g%
A/G	1.86
Alb.	38.0%
α_1 -glob.	9.3
α_2 -glob.	6.5
β -glob.	24.1
γ -glob.	22.2
Bilirubin	0.23 mg.%
Fragility	0.40-0.60

Results of iron kinetic study:

Concentration of iron in plasma	12 μ g/100 ml (70-170).
LIBC	496 μ g/100 ml
TIBC	508 μ g/100 ml (300-400).

Gross turnover of iron in plasma is 0.19 mg./hr/L of blood (0.22-0.40).

As shown in Fig. 7, radioiron appeared in circulating erythrocytes more rapidly than normal, attaining a maximum net incorporation of 92% (85—100%). Measurement of plasma radioiron for 18 days shows a daily synthesis of 6.0g Hb or 1.32 g./day/L of blood (1.0—1.6). When related to a total body Hb of 285 g., a mean erythron life span of 47 days is obtained.

In vivo measurements of radioactivity (Fig. 8) show a rapid initial accumulation of radioiron in sacral marrow, none in liver and spleen. Subsequently there was a rapid release of radioiron from sacral marrow,

accompanied by a light secondary accumulation of radioiron in spleen. There was no secondary accumulation of radioiron in liver.

Only 0.2% of the injected radioiron was present in the stools collected during a period of 14 days. This corresponds to a loss of only 9 ml. blood in the stools during this period. Measurement of red cell volume following a five day period of heavy menstrual flow indicates a slight reduction of body red cell volume of 78 ml. This corresponds to a menstrual loss of 280 ml. of whole blood (average normal only 50 ml.).

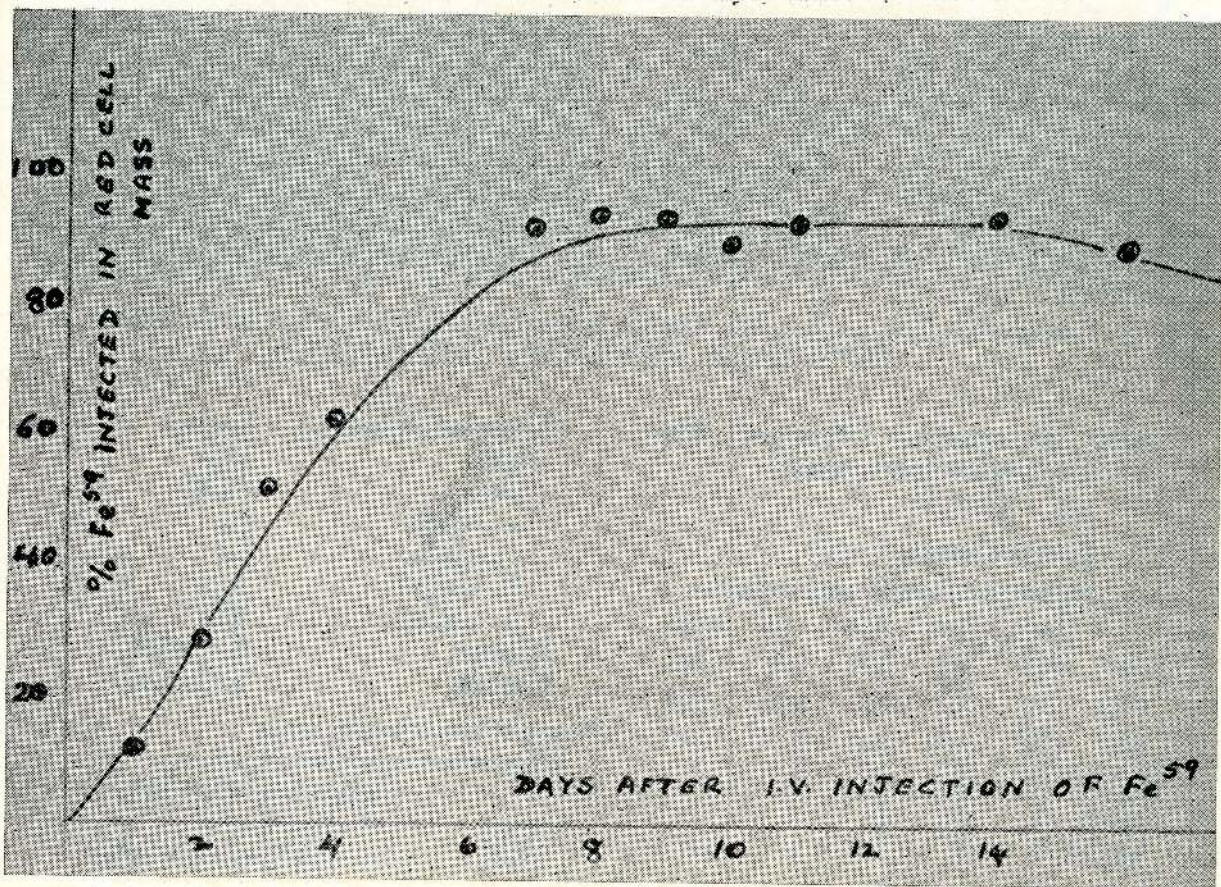


Fig. 7. Radioiron in circulating erythrocytes of patient H. B. after one intravenous injection of Fe⁵⁹.

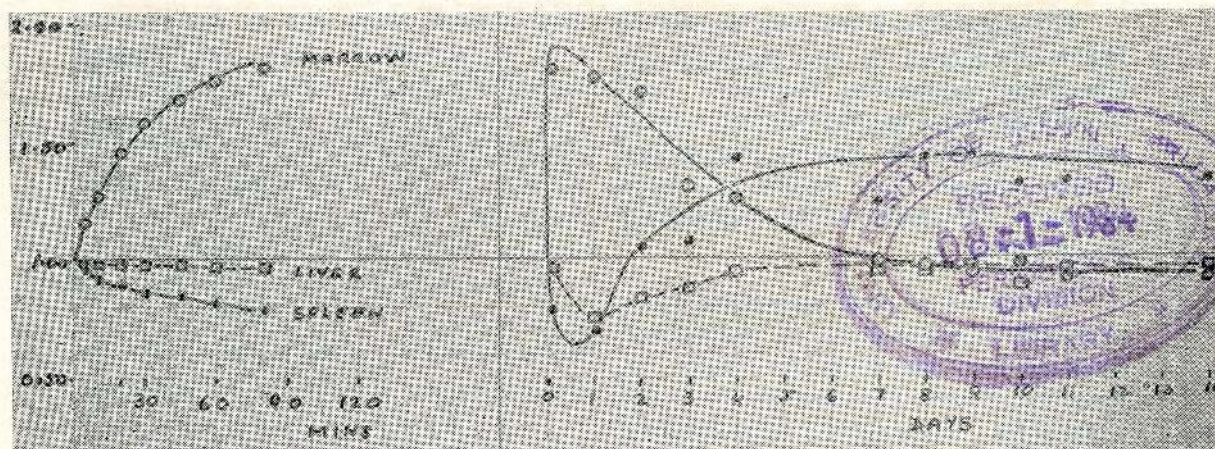


Fig. 8. Variation with time of body surface counting rates in patient H. B. after one intravenous injection of Fe^{59} . Rates are expressed as ratios of counts per minute to that at zero time.

This iron-kinetic study shows a normal rate of Hb synthesis despite the stimulus of severe anaemia. Mean erythron life span is reduced to approximately half normal, in association with slight marrow, haemolysis and a slight splenic sequestration and destruction of erythrocytes. Plasma iron concentration is markedly reduced, with a marked increase of total plasma iron binding capacity. These findings are all characteristic of severe iron deficiency.

ABSORPTION OF FOOD IRON

Another field in which radioiron has been of great assistance is in the study of absorption of iron. Many of these studies have been carried out with labelled iron salts and their results cannot be applied to absorption of food iron. For absorption of iron must be in the ferrous state and ionised. Iron in food exists mainly in the ferric state or in combination with porphyrins. Any process that helps in the digestion of food and the liberation of the iron in the free state will aid absorption. Substances that keep the iron in the reduced state will also aid absorption.

The study of iron absorption from foods have been facilitated by the availability of foods labelled with radioiron. Injection of radioiron into poultry has resulted in the meat and eggs being labelled. Vegetables have been grown in nutrient media containing radioiron. Cattle injected with radioiron have yielded labelled meats and milk. These foods have been fed to normal and iron deficient subjects, both adult and children. The results indicate that a normal adult male absorbs 5 to 10% of the iron in foods, that iron in meat and liver is more readily absorbed than iron in vegetables, and that the iron in egg is very poorly absorbed. Iron in blood is more readily absorbed than that in egg. Addition of 250 to 1000 mg. ascorbic acid increased the absorption of iron from all the foods, in some cases 15 or 20 fold, for the larger doses of the vitamin. Iron-deficient subjects absorb more iron than the normals, the average being 15 to 20%. Children absorb more iron than adults and iron-deficient children more than normal children. Any condition that increases the rate of haemopoiesis increases the amount of food iron absorbed.

IRON REQUIREMENTS

Using radioiron it has been possible to estimate the amount of iron excreted, iron loss during menstruation, increase in body iron during pregnancy and the losses during delivery, and also the transfer of iron from mother to foetus. Such studies have given us a more accurate idea of the requirements of iron (Table 1).

The amount of iron assimilated by an adult male or postmenopausal woman must equal the total lost from the tissues. In temperate climates this amounts to 0.5 to 1 mg. daily. Some workers (Foy & Kondi 1957) believe that in the tropics a significant amount of iron is lost in the sweat. They found that "cell-rich sweat" contained 0.3 to 6.0 mg Fe/litre. Studies by Hussain and

co-workers (1959, 1960) also indicate that a major portion of the iron in sweat comes from desquamated cells. From figures available for the iron content of skin it is seen that about 500 g. of skin would have to be desquamated to account for the loss of 1 mg. Fe, and 3 kg. of skin to account for the loss of 6 mg. Fe. Such a rate of turnover of epidermal cells seems unlikely. A 70 Kg man has about 4,900 g. skin and the renewal rate of the epidermis has been estimated to be 2 or more weeks. According to Foy and Kondi (1957) friction between the body and clothes is greater in hot moist climates and may account for a high dermal desquamation rate. If they are correct the amount of iron lost by an adult man could be greater than 1 mg. per day.

Table 1. Estimated Iron Requirements in mg/day.

	Loss in		Average Requirements		Total requirements
	Urine Sweat etc.	Menses	Pregnancy	Growth	
Men, postmenopausal women	0.5—1	—	—	—	0.5—1
Menstruating women	0.5—1	0.5—1	—	—	1—2
Pregnant women	50—1	—	1—2	—	1.5—2.5
Children (average)	0.5	—	—	0.6	1—1.5
Girls, 12—15 yrs.	0.5—1	0.5—1	—	0.6	1.5—2.5

The requirements for men and postmenopausal women are easily met by absorbing 5-10% of the iron from a diet which provides 12-15 mg. iron daily. Younger women are, however, in a precarious state of balance. They will have to absorb about 17% from 15 mg. in the diet, or increase the intake. The average western diet pro-

vides 15 to 20 mg. daily, and such diets contain less of substances like phytic acid which interfere with efficient iron absorption. Results of nutritional surveys show that the intake of a greater part of the population in Ceylon is below 15 mg. per day. 98 out of 137 families with a monthly income of about Rs. 74/., 93/174 families with an in-

come less than Rs. 131/- and 28/62 families whose income was over Rs. 170/- were on a deficient intake (Cullumbine, Bibile and Wikramanayake, 1949). Europeans resident in Ceylon, studied by the individual method, had an average intake of 14.5 mg. (males) and 10.9 mg. females) (Cullumbine, 1949). Table 2 shows the daily per capita intake of iron and the sources from which iron was derived, being results of a survey of the diet of Medical Students living at Hostels in Colombo. The figures compare favourably

with the average intake of 16.3 mg. daily (for men) obtained in a previous study (Cullumbine, Basnayake, Le Motte and Wikramanayake, 1950) where the iron intake during several weeks was estimated chemically. The main source of iron in Ceylonese diets are animal foods, vegetables, rice and pulses, and the iron intake tends to be low when even cheap sources of iron, such as small fish, dried fish and leafy vegetables are not popularly eaten.

Table 2. Daily intake of iron and the Sources of Iron in Diets of medical students in Ceylon.*

	M E N		W O M E N	
	ozs. of food eaten	mg/Fe	ozs. of food eaten	mg/Fe
Milk & Milk Products	2.07	0.06	2.32	0.07
Other animal foods	6.17	4.69	3.22	1.60
Rice & Rice Flour	6.54	1.58	6.15	1.61
Bread & Wheat Flour	4.32	0.61	5.66	0.98
Pulses	0.65	1.18	0.24	0.40
Leaves	1.84	0.77	1.15	0.47
Other Vegetables	9.80	4.24	6.55	1.50
Coconut		1.60		1.33
Condiments	1.31	1.90	0.74	0.97
Sesame Seeds	0.07	0.17		
Sugar & Preserves	2.45	—	2.12	0.17
Fruits	6.10	0.45	3.75	0.47
Total		17.3		9.57

* From Wikramanayake, T. W. & Panabokke, R. (1961).

AETIOLOGY OF IRON DEFICIENCY ANAEMIA

If an adult male or post menopausal female, excretes about 1 mg. iron per day and absorbs none at all, 6 to 4 years would pass before either would have only 7.5 mg. of Hb per 100 ml. (Moore, 1958). Therefore a subject on a deficient diet or with an absorptive defect could be expected to develop iron deficiency anaemia over a period of 5 to 10 years. Poor diet or poor absorption, coupled with normal growth or normal menstruation, may readily induce iron deficiency.

Deficiency can be produced by chronic haemorrhage of only minor degree. A woman might be unaware of an abnormal menstrual flow even if it is increased from the normal 38 to 70 ml. to 100–150 ml. Yet such an increase brings about a menstrual loss averaging 2–3 mg. of iron/day. A negative balance could also be produced by an individual losing 2 to 4 ml. of blood per day through the gastro-intestinal tract. Such a loss might go undetected by routine tests for occult blood. As indicated earlier, iron from haemoglobin is absorbed and there might be insufficient haemoglobin in the faeces to answer the test for occult blood. This is supported by experimental evidence reported by Mendeloff (1953). Fifteen ml. of packed red cells were given orally each morning for six days and tests for occult blood remained negative.

ACKNOWLEDGEMENTS

The iron kinetic studies reported here were carried out in the Autumn of 1959, under the guidance of Dr. M. Pollycove, whose assistance is gratefully acknowledged.

REFERENCES

- Cullumbine, H. (1949). A study, by the individual method, of diets consumed by European subjects in Ceylon. *Ceylon J. med. Sci. (D)*, **6**, 186.
- Cullumbine, H., Bibile, S. W. & Wikramanayake, T. W. (1949). A study of the diets of various Ceylon Communities. *Ceylon J. med. Sci. (D)*, **6**, 254.
- Cullumbine, H., Basnayake, V., Le Motte, J. & Wikramanayake, T. W. (1950). Mineral metabolism on rice diets. *Brit J. Nutr.* **4**, 101.
- Foy, H. & Kondi, A. (1957). Anaemias of the tropics. Relation to iron intake, absorption and losses during growth, pregnancy & lactation. *J. Trop. Med. Hyg.* **60**, 105.
- Hussain, R. & Patwardhan, V. N. (1959). Iron content of thermal sweat in iron deficiency anaemia. *Lancet* **i**, 1073.
- Hussain, R., Patwardhan, V. N. & Sri-ramachari, S. (1960). Dermal losses of iron in healthy Indian men. *Indian J. Med. Research* **48**, 235.
- Mendeloff, A. I. (1953). Selection of a screening procedure for detecting occult blood in faeces. *J. Amer. Med. Assoc.* **152**, 798.
- Moore, C. V. (1958). Etiology of iron deficiency anaemia. In "Iron in Clinical Medicine". Eds. R. O. Wallerstein & S. R. Mettier. Berkeley: University of California Press.
- Pollycove, M. (1958). Iron Kinetics. In "Iron in Clinical Medicine". Eds. R. O. Wallerstein & S. R. Mettier. Berkeley: University of California Press.
- Pollycove, M. & Mortimer, R. (1961). The quantitative determination of iron kinetics & haemoglobin synthesis in human subjects. *J. Clin. Invest.* **40**, 753.
- Wikramanayake, T. W. & Panabokke, R. (1961). The relationship between diet and arteriosclerosis in Ceylon. *Amer. J. Clin. Nutr.* **9**, 752.

An Evaluation of Intra-venous Iron-dextran Therapy in Obstetrics and Gynaecology

By

WILFRED S. E. PERERA, M.B.B.S., F.R.C.S., F.R.C.S.E., M.R.C.O.G.,

Obstetrician & Gynaecologist,

General Hospital, Galle.

THE commonest single hazard facing particularly the female population in the developing countries of the East is iron deficiency anaemia. To none are these problems more apparent than to Obstetricians and Gynaecologists. Patients often present themselves with severe anaemia in pregnancy and this is particularly a problem in the Eastern countries where nutrition and availability of blood are far from satisfactory. It is common experience of maternity units of Government Hospitals in Ceylon to find that an appreciable number of patients admitted as non-emergencies suffer from anaemia. The degree of this deficiency is often such that the minimum standards desirable with regard to fitness for anaesthesia and operation are not obtained.

Though oral iron therapy is the most convenient, most effective and safest method of correcting iron deficiency anaemia, time is frequently against the Obstetrician, especially in our Hospitals.

The problem that arises is how to raise the haemoglobin level and replenish the iron stores in such patients in the limited time that is available before delivery or operation. One method has been intra-muscular iron therapy by intermittent injection, but although it offers some advantages in terms of time, yet a course of injections lasting up to three weeks may be required. Where our patients are concerned this factor is of tremendous importance as socio-eco-

nomie conditions are often quite a hindrance to many of them in enduring a prolonged stay in hospital quite some distance away from their homes, and just as often as inconvenient in attending their nearest local Institutions for repeated injections at frequent intervals.

Blood transfusion would appear to be the most satisfactory and speedy solution to this problem of anaemia. Blood, however, is not a commodity easily and adequately available in most of our Institutions and furthermore it is an expensive method of correcting iron deficiency since 500 ml. of blood raises the haemoglobin by only about 6 per cent. One pint of whole blood provides about 250 mg. of iron, whereas 30 ml. of iron-dextran complex costs less than half as much and provides six times as much iron. Moreover as transfusions carry considerable risks (Stewart, 1960) its use should only be considered when there is no other possible alternative. One must remember that, after blood transfusion the haemoglobin level only has been raised, the iron stores have not been replenished, nor have the body tissues had time to recuperate from a lengthy period of hypoxia and the intrinsic changes associated with long standing iron deficiency. The ideal therapy would therefore be one which permits the safe administration of the patient's total iron requirements in one single operation, without necessitating stay in hospital for several weeks.

It is in the search for an ideal method of intra-venous iron-dextran therapy that these trials were undertaken at the Maternity Unit of General Hospital, Badulla, to determine the most suitable method for use in Hospitals which with a shortage of beds caters for a population containing a high proportion of patients with iron deficiency anaemia.

Material and Methods

The study was carried out at General Hospital, Badulla, from August 1964 to October 1967. There was no selection of patients, other than that they were all anaemic patients admitted during pregnancy, puerperium or for treatment of gynaecological disorders, in whom the haemoglobin concentration was less than 10 g. per 100 ml. (68.5 per cent.)

824 women with anaemia were treated during this period and reviewed. Venous blood was used for all haematological investigations and haemoglobin level was estimated by the colorimetric method. The diagnosis of iron deficiency anaemia was made from the history, from the estimation of the haemoglobin, the packed cell volume (P.C.V.) and the mean corpuscular haemoglobin concentration (M.C.H.C) and from examination of blood film. Bone marrow examinations and serum protein examinations were carried out in a few cases.

Calculation of the Dose

Total dose in MG = weight in pounds
 $(100 - \text{Initial Haemoglobin } \%) \times 0.3$.

Add 500 Mg. to allow for blood loss at delivery and foetal requirements.

1 ml. iron dextran = 50 Mg.

The amount of iron required by each patient was calculated using the formula given above by the manufacturers. Post-treatment haemoglobin levels were determined wherever possible at one and two weeks' intervals and at

follow-up clinics after six weeks. Causes of chronic blood loss as for example from intestinal helminth infestations were eliminated by appropriate treatment. As many of out-patients had multiple dietary deficiencies and because facilities were not available for more elaborate laboratory investigations, a high protein diet with both Vitamin B₁₂ and folic acid were routinely administered to all out patients.

The frequency of side effects was determined carefully by direct questioning and examination of the patient during and immediately after the end of treatment.

The trial could be divided into four phases as shown in Table 1.

Table 1

Mode of administration.

	No. of cases
Total dose infusion	
(1) Using 5% dextrose	89
(2) Using normal saline	190
Total	207
Undiluted Intravenous Injection	
(1) Without sensitivity testing	273
(2) After sensitivity testing	272
Total	545

Basu (1963) first reported the successful administration of iron dextran in the form of a single dose diluted in 5% dextrose given by continuous intra-venous infusion through a disposable plastic giving set over 4—5 hours. This method came to be known as the total dose infusion technique. We adopted this method and 89 patients were treated this way. With this technique thrombophlebitis was reported by other work-

ers as occurring in 5—15% of patients. Subsequent reports by several workers that the incidence could be reduced if normal saline was used as diluent in place of 5% dextrose led us to adopt normal saline as a diluent in administration of iron dextran to the next 190 patients. We compared the side effects with these two methods and these results will be shown subsequently.

Marchasin and Wallerstein (1964) and Dawson and his colleagues (1965) reported the successful administration of large doses of undiluted iron dextran by intra-venous injection without any serious toxic effects. Since this method appeared to be even more convenient than the total dose infusion technique which involves the setting up of a drip and supervising it for several hours, we decided to try out this method of administering iron dextran intra venous, the only precaution taken was that the syringes and needles were autoclaved and used for this purpose only. After we had completed 273 cases using this method without any untoward effects, we had one death. In retrospect, it appears clear that the death probably was the result of a hypersensitivity reaction. We therefore decided to continue using this method after administering a preliminary test dose. Not more than 0.5 ml. of iron dextran is mixed with 4.5 ml. of the patient's blood by drawing the blood into a 5 ml. syringe containing the stated amount of iron dextran. Then the injection was given slowly over at least a 1½ minute period. If the test dose was tolerated, then one hour later the total dose was given undiluted over a period of 5 minutes. Since this method was adopted 272 cases have been treated without any serious untoward effect.

Table 2

Type of Case	Number	Percentage
OBSTETRICAL	699	85
Multiparae	617	75
Primiparae	82	9
Antepartum	458	55
Postpartum	241	29
GYNAECOLOGICAL	125	15

Table 2 shows the type of cases admitted for the trial. It shows that most of the cases were obstetrical and that many of the anaemic patients were multiparae and that the greater percentage of patients were antepartum.

The 824 patients given iron dextran complex by the total dose technique were classified as shown in Table 3 into six groups according to their haemoglobin level on first examination.

Table 3

Grading of patients according to initial haemoglobin levels.

Initial H. B. level in percentage	No. of cases	Percentage Incidence
10 — 20	52	6.3
21 — 30	183	22.3
31 — 40	253	30.7
41 — 50	198	24.0
51 — 60	102	12.4
61 — 70	36	4.4

This gives an indication of the severity of the anaemia. It will be seen that about 60% of our patients admitted for trial had haemoglobins clearly under

40% and that over 80% had haemoglobins under 50%. This is in striking contrast to all the series reported where particularly in Europe and U. S. A. none of the cases had haemoglobins under 40% while in two series, Varde (1964) had 2.5% cases and Bonnar (1965) had 5% cases under 50%.

Table 4

Initial Haemoglobin %	Average weekly rise in Hb. gm. %
10 — 20	2.4
21 — 30	1.7
31 — 40	1.5
41 — 50	1.4
51 — 60	1.0

Table 4 shows the average weekly rise of haemoglobin in all patients. It will be noted that the more severe the anaemia the more rapid is the response. In most of the reported series the average weekly rise in haemoglobin has been

in the region of 1 gm. %. It was therefore highly gratifying for us to note that in the majority of our cases we obtained double or more the weekly haemoglobin rise that have so far been reported.

There was no significant difference in the weekly rise of haemoglobin in each group when the results of the two methods of administration — namely the total dose infusion method and the undiluted intra venous method, were compared. There was also no significant difference in the weekly rise of haemoglobin when the results of intra venous administration by these methods were compared with the results obtained by Lionel (1964), by administering iron dextran complex intra muscularly to pregnant women.

In view of the fact that the response is the same with both intra venous methods, we would have to take into consideration the incidence of side effects with these two methods in determining the ideal method of intra venous injection of iron.

Table 5
Adverse effects— All methods.

METHOD	Percentage incidence	Deaths
Total dose infusion	47%	
(1) With saline	5%	0
(2) With dextrose	43%	0
Undiluted intra-venous injection	6.9%	
(1) Without sensitivity testing	8.8%	1
(2) After sensitivity testing	5%	0

The above table shows that the overall incidence of adverse effects is greater with the total dose infusion method than with the undiluted intra-venous injection method, except for the fact that one death occurred with the

latter method which will be discussed later. In order to determine the cause of this high incidence of adverse effects with the total dose infusion method, it

is necessary to examine in detail the adverse effects encountered with this method.

Table 6.
Adverse effects—Total dose infusion technique.

REACTIONS	PERCENTAGE INCIDENCE		TOTAL
	With Normal Saline	With Dextrose	
Chills & rigors	14%	11%	12.5%
Thrombophlebitis	12%	10%	11%
Fever	7%	11%	9%
Chest Pain	5.3%	2.3%	3.8%
Pain at site of injection	4.2%	2.2%	3.2%
Joint pains	3.1%	2.2%	2.7%
Abdominal pain	1.6%	2.2%	1.9%
Headache	2.1%	1.1%	1.6%
Swelling of joints	1.0%	1.1%	1.0%
Giddiness	1.0%	0%	0.5%
Pain in limbs	0.5%	0%	0.25%
Vomiting	0.5%	0%	0.25%

The main side effects with this method are chills and rigors, thrombophlebitis, fever, chest pain and pain at the site of injection, in that order of frequency. We did not find any significant difference in the incidence of thrombophlebitis despite the change over to normal saline as the diluent.

This is in contrast to the claims of other workers that the use of normal saline results in a reduction in the incidence of thrombophlebitis. From a study of the adverse effects encountered with the use of these two different diluents, we can only conclude that it does not matter whether 5% dextrose or normal saline is used.

Table 7.
Adverse effects—Direct undiluted injection.

REACTION	No. of Cases	Percentage Incidence
Flushing of face and body	9	1.6%
Giddiness	7	1.2%
Chills and rigors	6	1.1%
Fever	5	0.9%
Chest pain	4	0.7%
Diffuse burning sensation	3	0.5%
Urticaria	2	0.4%
Vomiting	1	0.15%
Collapse and death	1	0.15%
		Total 6.7%

The above table shows the incidence of side effects with the method of undiluted intra venous injection. It will be seen that the incidence of adverse effects is much less than with the total dose infusion and the nature of the adverse effects commonly encountered is different. The main adverse effects encountered with this method are flushing of the face and body and giddiness. Thrombophlebitis was not encountered in this series. This is probably because the duration of infusion is the most important factor causing thrombophlebitis, and the total dose infusion takes about 4-5 hours whereas the undiluted injection is completed within 4-5 minutes. The only serious untoward effect encountered with the latter method was one case of collapse and death. The patient was a primigravida aged 20 with congestive cardiac failure due to severe anaemia, and a haemoglobin level of 15% (2.2 gm. per 100 ml.). She was rapidly digitalised and 1 pint of blood

was transfused. Due to difficulties in obtaining further blood for transfusion, 30 ml. of iron dextran was injected intra venous 9 days after admission. 20 minutes after injection she complained of chest pain, was sweating profusely and collapsed soon afterwards. All efforts at resuscitation therapy failed. This appears to be a hypersensitivity reaction and one or two such cases have been reported in the literature. Whether congestive heart failure and tachycardia were contributory factors were not known. Although this probably had no direct association with the therapy, it would seem possible that after the onset of hypotensive symptoms, the weakened heart was incapable of dealing with the cardiovascular collapse, despite the cardiac stimulants and resuscitation therapy prescribed at this stage. In retrospect, it is now clear that this unfortunate incident could have been prevented if a preliminary test dose had been carried out.

If therefore, we compare the adverse effects encountered with these two methods—total dose infusion and undiluted intra venous injection, we see that the incidence of adverse effects is

definitely less with the undiluted intravenous injection and that by testing for sensitivity serious allergic reactions can be prevented.

Table 8.
Comparison of adverse effects by the two methods.

REACTION	Total dose infusion	Undiluted intravenous injection
Thrombophlebitis	11%	0%
Rigors and chills	12.5%	1.1%
Fever	9%	0.9%
Chest pain	3.8%	0.75%
Pain at site of injection	3.2%	0%
Flushing of face	0%	1.6%
Giddiness	0.5%	1.2%
Collapse and death	0%	0.15%

Other than the two major clinical papers published in England and U.S.A. to which I have referred earlier, this is the largest single series comparing the two methods of total dose administration (total dose infusion and direct intravenous injection), to be reported from the East, and that in the particular socio-hygienic conditions prevailing in Ceylon.

SUMMARY

Four trials of intra venous iron dextran therapy in obstetrical and gynaecological patients have been carried out in a series of 824 patients, comparing the intravenous infusions with intravenous injections.

The frequency of adverse effects have been assessed. The commonest side effect of venous thrombosis observed

with intra venous infusions has not been seen in any patient on intra venous injections. The incidence of adverse effects has been reduced from 45% with infusions to 5% with injections.

In my opinion the ideal method of treating iron deficiency anaemia in hospitals is by the method of undiluted intra venous injections of large doses of iron dextran complex, after a preliminary test dose to detect hypersensitive individuals.

ACKNOWLEDGEMENTS

I wish to thank Dr. N. D. W. Lionel of the Department of Pharmacology of University of Ceylon, Colombo, for his enthusiastic co-operation in the preparation of this manuscript. I am particularly grateful to the Medical and Nursing staff of the Maternity Unit, of the

General Hospital, Badulla, who were directly involved in the close care of the patients under study, and to the Laboratory staff for their co-operation. I am grateful to Bengel Laboratories Ltd., for the generous samples of imferon supplied to me to carry out part of these trials, and to Dr. G. D. Ballantyne and Mr. C. F. Grigg of Fisons Pharmaceuticals Ltd. for their helpful advice.

REFERENCES

Basu S. K. (1965) *Lancet*, 1, 1430.

Bonnar, J. (1965) *Brit. med. J.*, 2, 1030,
Dawson, D. W., Goldthorp, W. O. and
Spencer, D. (1965), *J. Obstet. Gynaec.*
Brit. Cwlth. 72, 89.

Lionel, N. D. W. (1964) Personal Communication.

Marchasin, S. & Wallerstein, R.A. (1964)
Blood. 23, 354.

Stewart, G. (1960) *Lancet.* 2, 421.

Varde, N. K. (1964). *J. Obstet. Gynaec.*
Brit. Cwlth. 71, 919.

Supernumerary Teeth in the Maxillary Sinus

A Case Report

By

DR. P. SHANMUGARAJAH, M.B.B.S.,

House Officer E. N. T Unit,

Govt. General Hospital, Jaffna.

A twenty year old female came to the O.P.D. on 12-11-67 with a history of a milky discharge from the left cheek lateral to the angle of the mouth. This discharge was present since birth. She was seen by the O.P.D. Surgeon who then suggested a Sinogram. The Sinogram revealed a long wide tract leading to a cavity in the region of the upper left second premolar tooth. This tooth was then extracted. X-ray of the Sinuses revealed two fully formed teeth in the lateral wall of the maxillary Sinus. As the discharge persisted she was referred to the E.N.T. Surgeon.

Examination at this stage revealed that large quantities of liquid could be expressed by pressing the cheek against the teeth. This discharge was milky and had a bad odour. A Caldwell Luc operation was performed on her on 20-12-67. At operation methylene blue injected into the sinus was seen tracking up to the second left upper premolar tooth. Through a sublabial incision the maxillary antrum was opened into and the antrum was found to be infected. The thick and fleshy mucous membrane lining the antrum was stripped off except over the roof. When the infected material was sucked out from the antrum a small elevation was seen on the lateral wall.

The bone above this elevation was gently chiselled out and only then was a fully formed tooth visible. A second tooth was found impacted on the first. They were both removed without much effort. Bleeding was controlled by means of a dry gauze pack. An Antrostomy was done and one end of the pack was taken out through the antrostomy opening into the left nasal cavity. Sublabial incision was closed. The sinus tract was not dissected then as it was hoped that the discharge would stop once the supernumerary teeth were removed. The pack was removed on the following day. The discharge stopped but reappeared seventeen days later. After discussion with the Dental Surgeon the tract was dissected out 10 days after reappearance of the discharge. The tract was fleshy with thick walls and led to the left maxillary antrum. It measured $1\frac{1}{2}$ inches long and was $\frac{3}{4}$ inch thick. The patient had an uneventful recovery and left hospital twelve days later.

Histological examination of the sinus tract by the Pathologist revealed skin lined with hyperkeratotic squamous epithelium and infiltration of the epidermis and upper part of the dermis with chronic inflammatory cells, especially



Fig. 1 Sinogram—Lateral view showing sinus injected with dye.

lymphocytes. The section was reported as subacute dermatitis.

Comment: Patients with supernumerary teeth in the maxillary antrum usually present with facial pain, frontal headache or nasal discharge. This patient had none of these symptoms. A persistent discharging sinus from childhood suggested a parotid fistula and we had to exclude this. It was really the X-rays of the sinuses that revealed the supernumerary teeth and gave a clue as to the cause of the sinus. At operation when dye was injected into the sinus the tract was clearly outlined leading to the maxillary antrum. Outlining the tract is an important procedure in the surgery of this condition. Removal of the supernumerary teeth alone did not stop the discharge and excision of the tract was done at a second operation. The tract was congenital in origin as the milky secretion which was of bad odour was probably from the sub acute dermatitis of the tract.

This case presents a rare abnormality viz., Supernumerary teeth in the lateral wall of the maxillary antrum with a congenital tract leading to the exterior. Congenital abnormalities of this nature usually undergo malignant change and thus surgery should be undertaken as early as possible. Histology should be done to exclude malignancy in all cases.

Acknowledgements: I wish to thank Dr. K. Thuraisingham, F. R. C. S., O.P.D. Surgeon, Dr. (Mrs.) S. Thuraijahsingham, D.M.R.D., Radiologist, Dr. V. Cugadasan, F. D. S. R. C. S. Dental Surgeon, Dr. S. C. Jeyarajah, D. T. M. H., D. L. O., E. N. T. Surgeon, Dr. V. Rajapillai, M. R. C. P., M. C. P., Pathologist and Dr. S. Varatharajan, F. F. A. R. C. S. Consultant Anaesthetist and editor for their kind help and co-operation and to Dr. S. C. Jeyarajah whose gentle persistence resulted in the completion of this report.

A Case of Ascending Myelitis Following Chicken Pox

By

DR. P. RAJASINGHAM, M. B. B. S.,
H.O., Thoracic Unit, Jaffna.

PATIENT V. S., Male age 44 yrs., was transferred from Base Hospital, Pt. Pedro on 29-3-68, with a history of progressive weakness of all four limbs, regurgitation of fluids on swallowing and difficulty in breathing.

Eighteen days prior to admission to this Unit, patient had developed Chicken Pox. On the 12th day he developed weakness of the lower limbs and was unable to walk. Four days later he had weakness of both upper limbs. On the following day patient had slight difficulty in breathing. He had a severe cough which was worse on trying to swallow fluids. He also noticed regurgitation of fluids through the nose. He had fever at the onset of the weakness of the lower limbs. He complained of pain, numbness and tingling of the extremities. He was able to pass urine without difficulty.

On Examination: Patient was well nourished. There were healed scars of Chicken Pox all over the trunk, face and limbs. The patient was mildly dyspnoic. Tongue was pink and moist.

C. V. S.: Pulse 84/ min. Volume and tension good. Heart size was within limits. Sounds were normal and there were no adventitious sounds. B. P. 120/80.

Respiratory System: Trachea was central. Percussion note was resonant on both sides. Breath sounds were equal and heard on both sides. A few crepitations were heard at the left base.

C. N. S.: Patient fully conscious. Pupils were equal central and reacted to light. Fundi were normal. No abnormality was detected in the cranial nerves. There was no neck rigidity or kernigs. There was no spinal tenderness. Wrist drop and foot drop were present on both sides.

Tone: Muscle tone was diminished in all four limbs.

Power: There was weakness of all four limbs.

Wasting: Was not apparent.

Reflexes: Were absent in all four limbs. Abdominal reflexes were also absent. Muscle tenderness was present. Plantars—No response.

Sensation: Could not be elicited satisfactorily as patient was not co-operative, but there appeared to be increased pain sensation and diminished appreciation of touch of the lower limbs. He was able to appreciate hot and cold. Proprioception was normal. Bladder control was maintained.

Diagnosis: A diagnosis of Ascending Myelitis complicating Chicken Pox was made.

Course of the Disease: As the day advanced, the patient became progressively dyspnoic and the regurgitation got worse. There was evidence of increasing weakness of his respiratory muscles. His respiration was mainly Diaphragmatic. It was decided

to perform a Tracheostomy and if necessary to artificially ventilate him, the indications being:—

- (1) Weakness of intercostal muscles.
- (2) Bulbar Paralysis.

The Tracheostomy was done at about 10.30 p. m. on 29-3-68 and as the dyspnoea persisted and patient complained of fatigue, he was put on Intermittent Positive Pressure Respiration at about 1.30 a.m. The Ventilator employed was the East Radcliffe Respiator.

Treatment: On the first day, the patient was on Intravenous fluids. A Ryle's tube was passed and feeds were given through the tube as well. A total of 2500 cc of fluids were given daily. Intravenous fluids were continued for three days. A fluid balance chart was maintained.

Drugs: Reverine 250 mg., I.M. 12 hourly
Prednisolone 15 mg., T.I.D.
through tube
Vitamin C 5000 mg.
Vitamin B Co I.M. daily.

Management on the respirator: A No. 8 size cuffed tracheostomy tube was used. The cuff served two purposes:

1. To prevent Aspiration of secretions from the throat.
2. To prevent an air leak. The tidal Volume was adjusted to about 400—500 cc, and the minute volume was kept at 8 to 10 liters. The rate of respiration was adjusted accordingly. The Humidifier was also placed in the circuit.

The staff were trained on the use of the Manual operation handle in the event of Electrical Power failure.

Recordings: Of B.P. Pulse, Respiratory rate and volume, Presence of Cynosis Sweating, etc. were maintained.

The tracheostomy tube was inflated just sufficient to prevent an air leak. The cuff was deflated every three to four hours and at the same time secretions were sucked out. Secretions as a routine were sucked out half hourly. Sterile catheters were used for the purpose. Pharyngeal secretions were also sucked out at intervals of forty five minutes. The patient was turned on his sides two hourly to prevent bed sores, and to help in clearing the secretions in the lungs. Physiotherapy was given for the chest and limbs.

Investigations: X rays of the chest were taken every other day to detect any pulmonary complications. Blood urea on 31-3-68 was 44 mg. %.

PCO₂ } could not be done as there
PO₂ } were no facilities.

The patient made steady progress on the respirator and on 2-4-68 he was able to breathe on his own for periods of ten to fifteen minutes, but felt tired out when kept off the respirator for longer periods. The patient was finally taken off the respirator on 5-4-68. The Ryle's tube was removed on 7-4-68.

Movement of his limbs, especially the upper limbs showed a marked improvement. The lower limbs took much longer to regain their function.

Reflexes, however, could not be elicited for a considerable period. The Tracheostomy tube was removed on 18-4-68. The patient was able to swallow solids and fluids without difficulty. Upper limb movements were full. Lower limbs however had not regained full movements. Weakness and wasting were still present. On 13-5-68 the patient was transferred back to the base Hospital Pt. Pedro to continue treatment.

Comment: Encephalitis as a complication of chicken pox is a well recognised entity. Ascending Myelitis has however

been less frequently reported. In this case, the paralysis started at the lower limbs and spread upwards to involve the upper limbs and later the muscles of respiration and deglutition. Putting the patient on the Respirator probably altered the outcome of the illness.

Pathology : Microscopically the cord at the site of lesion exhibits oedema and hyperaemia and in several cases, actual softening Myelomalacia. Microscopically the Leptomeninges are congested and infiltrated with inflammatory cells. The Cord exhibits perivascular inflammatory infiltration

and oedema. There is degeneration of the ganglion cells of the grey matter of the Myelin sheaths and axon cylinders of the white matter. There is a Hyperplasia of neuroglia.

Acknowledgements : I wish to thank Dr. N. Ganeshanathan, F.R.C.S., Thoracic Surgeon and Dr. S. Varatharajan, F.F.A.R.C.S. for their valuable advice in preparing this article.

Reference : "Diseases of the Nervous System"—Sir Russell Brain. Oxford University Press.

REVIEW OF THE ACTIVITIES OF THE JAFFNA CLINICAL SOCIETY IN THE LAST ACADEMIC YEAR

During the past year we had the fortune to listen to several guest lecturers who came forward with original contributions.

1. Dr. K. Jeyasingham, Lecturer, University of Ceylon, read an exhaustive paper on "Investigating cases of Renal Hypertension". This talk gave us an insight into the recent advances in methods employed in investigating Renal Diseases.
2. Dr. P. R. Anthonisz, Surgeon, General Hospital, Colombo, gave a very comprehensive talk on "Post-Cholecystectomy Syndromes", in his own inimitable style.
3. Dr. Benjamin David, Paediatrician, gave an articulated discourse on the subject "Horrors of Starvation".
4. Then we had Dr. Donald Barlow who discussed the Surgical aspects of Carcinoma of Oesophagus. This followed a paper read by Dr. S. J. Stephen, Thoracic Surgeon, on the subject "Critical review of 100 cases of Carcinoma of Oesophagus".
5. Professor S. Udappa of the Benares University spoke on Thyroid diseases and the use of Radio active Isotopes. To us this talk provided a window into research work carried out in India.
6. Recently we had our own Professor A. Sinnatamby who read us an impressive contribution on the "Actiology and Management of Pelvic Endometriosis".

While we thank these gentlemen who came way out into this wilderness to share with us their knowledge, I should not forget to thank our own Surgeons, Physicians, Obstetricians, Paediatricians, Orthopaedic Surgeon, Thoracic Surgeons, Eye Surgeons, E. N. T. Surgeons, Anaesthetists, Radiologist and Pathologist for their illuminating contributions which took the form of talks, case demonstrations and clinical discussions.

On the lighter side we had a film show over Beer sponsored by I. C. I. We also had contributions by way of Medical books from the U. S. I. S. library in Ceylon. We played host on various occasions and had get-togethers over dinner given in honour of the visit of Dr. Anthonisz, Dr. Barlow and the Hon. Minister of Health, M. D. H. Jayawardane.

While I take stock of the Clinical Society's activities during the last year I feel that though we strove to bring in several improvements there appears to be a lot of room for further improvement. We are handing over to the new committee with confidence that they will try to improve on what we are handing over to them. We wish them all success.

Dr. M. Ramanathan,
Secretary.

JAFFNA CLINICAL SOCIETY

ANNUAL GENERAL MEETING

The following were elected office-bearers for the year 1968-1969.

<i>President :</i>	Dr. K. Sivagnanaratnam, L. M. S. (Cey.)
<i>Secretary :</i>	Dr. S. Thiruloganathan, M. B. B. S.
<i>Asst. Secretary :</i>	Dr. C. Kulasingham, M. B. B. S.
<i>Treasurer :</i>	Dr. P. Rajasingham, M. B. B. S.
<i>Joint Editors :</i>	Dr. K. E. de S. Karunaratna, M. D. (Cey.) M. R. C. P. (Lond.) M. R. C. P. (Edin.) Dr. S. Varatharajan, M. B. B. S., F. F. A. R. C. S., (Eng.)
<i>Committee :</i>	Dr. V. Arumugam, F. R. C. S. (Eng.) Dr. H. A. D. Weerasooriya, M. R. C. P. (Lond.), M. R. C. P. (Edin.), M. R. C. P. (Glas.), D. C. H. (Lond.) Dr. P. Sivasothy, M. B. B. S., D. P. H. Dr. S. Arunachalam, M. B. B. S., D. O. (Lond.) Dr. K. Balasubramaniam, M. B. B. S.
<i>Joint Librarians :</i>	Dr. K. Alagaratnam, B. D. S. Dr. P. Shanmugarajan, M. B. B. S.
<i>Library Committee :</i>	Dr. V. A. Benjamin, M. S., F. R. C. S. (Eng.) Dr. J. Balachandran, M. B. B. S. Dr. S. Vignarajah, M. B. B. S.

Dr. Samuel Kron (General Surgeon) and Dr. Owen Beard (Cardiologist) from the American ship S. S. Hope, delivered a well co-ordinated lecture on the subject "Medical and Surgical Shock".

The meeting was followed by a dinner which was well attended.

M. Ramanathan,
Secretary.

BRITISH CEYLON CORPORATION LIMITED

AND ITS SUBSIDIARY COMPANIES

ORIENT COMPANY (CEYLON) LIMITED

BRITISH CEYLON MILLING COMPANY LTD.

Manufacturers of :

Household Soaps

Sovereign Bar

Health Joy Soap

Snow White

Lotus Soap

F. B. Bar Soap

Soft Soap

Toilet Soap

Suvendra Sandalwood Soap

B.C.C. Sandalwood Soap

Coal Tar

Margosol

Night and Day

Shaving Soap

Snow Flakes

Shampoo

Liquid Soap Plain

Disinfectants

Pynol

Hipower Black

Hipower White

Talcum Powders

Suvendra Talcum Powder

Sovereign Talcum Powder

Cooking Oil

White Oil

Cooks Joy

Cattle Feeds

Morlac

Morlac 'Plus'

Expeller Poonac

Poultry Feeds

Chicbes

Grobes

Leybes

DISTRIBUTORS :

S. SINNATHURAI & BRO.

39, K. K. S. ROAD,
JAFFNA.

If you want

**CLEAN, FRESH, GOOD, CHEAP
VEGETABLES & FRUITS**

VISIT

THE VEGETABLE & FRUIT STALL

OF

The Jaffna Co-operative Stores Ltd.

(Clock Tower Road, Jaffna)

'SERVICE ABOVE SELF' is our MOTTO.

"Beautify and Fortify your Home"

WITH

IRON GRILLS, GATES, COLLAPSIBLE GATES,
SHUTTER GATES, SPIRAL STAIRCASE,
GARDEN SWINGS ETC, ETC.

ARC WELDING OR RIVETTED

— By —

RAJAN IRON WORKS

Work Shop :
**Opp. Momsac Building,
No. 8, Stanley Road,
Jaffna.**

Branch :
**Manipay Road,
Anaicoddai.**

With Best Wishes

from



Singapore Pharmacy Limited

280/I, HOSPITAL ROAD,
JAFFNA.

Phone: **396**

Grams: **VITAMINS**



Gelusil MPS is more than just an antacid

Gelusil MPS also has a defoaming action.

It is an antacid — Antiflatulent with non fatiguing flavour

Product Information

Methylpolysiloxane (Simethicone)	50 mg
Aluminium Hydroxide Gel	250 mg
Magnesium Hydroxide	250 mg

Gelusil MPS is a combination of the antacids aluminium hydroxide Gel, magnesium hydroxide plus activated Methylpolysiloxane (Simethicone). Gelusil MPS offers a distinctive therapeutic approach to the treatment of excessive gastric acidity, relief from the discomfort from gastrointestinal gas and bloating. The addition of activated methylpolysiloxane to an antacid formula provides a way to treat gas distention and gastric hyperacidity.

INDICATIONS: Gelusil MPS is useful in

- (1) Relieving flatulence and bloating
- (2) Reducing gastric hyperacidity
- (3) The adjunctive treatment of peptic ulcer

DOSAGE: One or two tablets between meals and at bedtime and whenever symptoms are pronounced.

WARNER-HUDNUT (LANKA) LTD.

P. O. BOX 1230 — COLOMBO.



ROYAL DISPENSARY

Phone: 397

JAFFNA



BHARANI PHARMACY

HOSPITAL ROAD,

JAFFNA.

NEW SINGAPORE CHEMIST

For all your western medicine
visit today itself

All your requirements can be
obtained

at wholesale and Retail prices

230, Main Street,
Chunnakam.

BRITISH CEYLON CORPORATION LIMITED

AND ITS SUBSIDIARY COMPANIES

ORIENT COMPANY (CEYLON) LIMITED

BRITISH CEYLON MILLING COMPANY LTD.

Manufacturers of :

Household Soaps	Night and Day	Cooking Oil
Sovereign Bar	Shaving Soap	White Oil
Health Joy Soap	Snow Flakes	Cooks Joy
Snow White	Shampoo	
Lotus Soap	Liquid Soap Plain	Cattle Feeds
F. B. Bar Soap		Morlac
Soft Soap	Disinfectants	Morlac 'Plus'
	Pynol	Expeller Poonac
Toilet Soap	Hipower Black	
Suvendra Sandalwood Soap	Hipower White	Poultry Feeds
B.C.C. Sandalwood Soap		Chiches
Coal Tar	Talcum Powders	Grobes
Margosol	Suvendra Talcum Powder	Leybes
	Sovereign Talcum Powder	

DISTRIBUTORS :

S. SINNATHURAI & BRO.

39, K. K. S. ROAD,
JAFFNA.

If you want

CLEAN, FRESH, GOOD, CHEAP
VEGETABLES & FRUITS

VISIT

THE VEGETABLE & FRUIT STALL

OF

The Jaffna Co-operative Stores Ltd.

(Clock Tower Road, Jaffna)

'SERVICE ABOVE SELF' is our MOTTO.

"Beautify and Fortify your Home"

WITH

IRON GRILLS, GATES, COLLAPSIBLE GATES,
SHUTTER GATES, SPIRAL STAIRCASE,
GARDEN SWINGS ETC, ETC.

ARC WELDING OR RIVETTED

— By —

RAJAN IRON WORKS

Work Shop :
Opp. Momsac Building,
No. 8, Stanley Road,
Jaffna.

Branch :
Manipay Road,
Anaicoddai.

SUBHAS TOURIST HOTEL

(APPROVED BY THE CEYLON TOURIST BOARD)

ALL MODERN FACILITIES IN THE TOWN

ROOMS WITH SITTING ROOM

ATTACHED BATH & TOILETS

BALCONY, ROOF GARDEN

(Air conditioned rooms under Construction)

VERY QUIET, RESTFUL SPOT,
CLOSE TO RAILWAY STATION AND COMMERCIAL AREAS.

FOR BOOKINGS CONTACT :

THE MANAGER,

SUBHAS TOURIST HOTEL

15, VICTORIA ROAD,

JAFFNA.

TELEPHONE : 7228

TELEGRAMS : "SUBHAS"

Yarl Metal Industries

MANUFACTURERS OF :

ALUMINIUM, BRASS & COPPER
HOLLOW-WARE

PIONEERS IN :

ELECTRO-DEPOSITION OF
METALS—CHROMIUM, NICKEL AND
OXIDISING

250—254, K. K. S. Road, JAFFNA.

— Tele : 7049

Branch : 63, Bankshall Street, COLOMBO 11. —

„ 26150

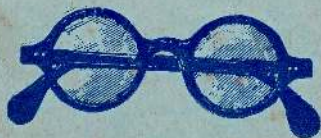
Printed by Nicholas James of No. 20, Fifth Cross Street, at St. Joseph's Catholic Press,
Jaffna for Dr. S. Varatharajan, Govt. General Hospital, Jaffna. 444-68.



With the Compliments of

Albert Edirisinghe

MANUFACTURING OPTICIANS



HEAD OFFICE :

**6, DHARMAPALA MAWATTE,
KOLLUPITIYA, COLOMBO 3.**

BRANCHES AT

**Y. M. B. A. BLDGS., FORT,
COLOMBO 1**

**182, D. S. SENANAYAKE
MAWATTE,
KANDY.**

**160, MAIN STREET,
RATNAPURA.**

**5, KING'S STREET,
BADULLA.**

**1, MAIN STREET,
GALLE.**

**67, STATION ROAD,
KALUTARA SOUTH.**

**319, LAYARDS BROADWAY,
GRANDPASS.**

**45, MAIN STREET,
JAFFNA.**

Mobile Optical Unit visiting other towns