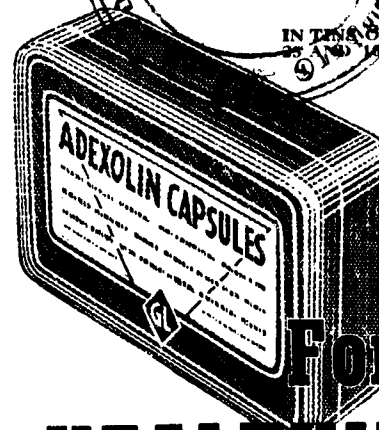


MEDICO-SURGICAL SUGGESTIONS

Vol.

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No. 12.



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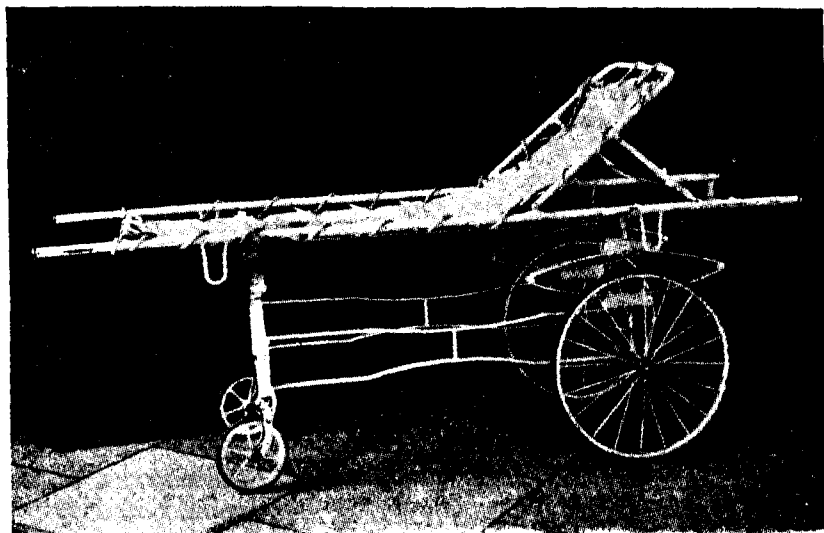
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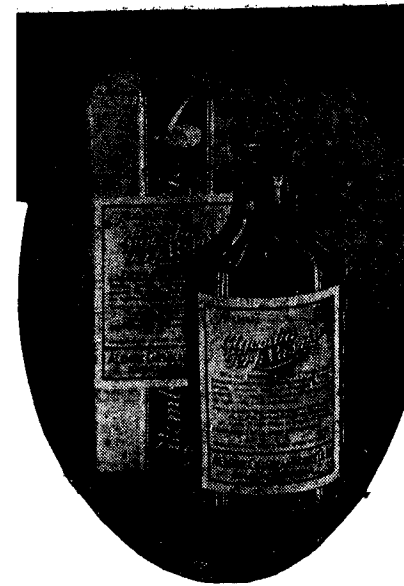


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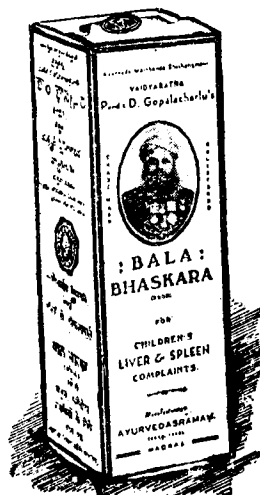
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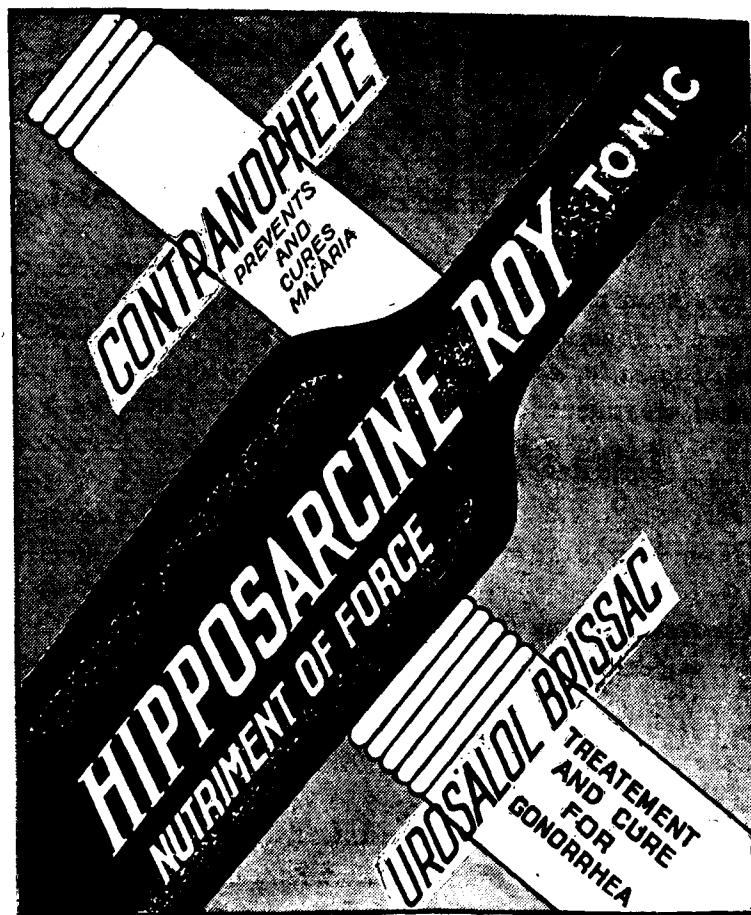
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Editors: Dr. K. P. Rama Hebbar & Dr. P. R. Venkappaya.

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MEDICO-SURGICAL SUGGESTIONS

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MEDICAL RELIEF IN MYSORE.

A visitor to the office room of the Senior Surgeon to the Government of Mysore, unless he or she be a timorous type of an applicant, will not fail to be attracted by a board, giving a tabular statement of the number of medical institutions in the State, and the number of people, who were treated both as in and out-patients in them during the successive decades since 1890. The figures thereon give one an idea of the wonderful expansion of the Government Medical aid in the State. Obviously the Mysore people believe with Stevenson that the physician is the "fine flower of our civilisation," and that they are not "giving themselves hopelessly into the hands of the profession, one so deeply mistrusts" as Bernard Shaw thinks.

Expansion of the Medical Organisation in the State would be better understood if one has the patience to pin small flags on the map of Mysore, to indicate the location of 280 and odd institutions that exist to-day. The distribution is so made all over the State that there is at least one dispensary within a radius of five miles, serving an average population of 23,734. In this distribution the Malnad districts, the most unhealthy, thinly populated and with villages scattered without any approaches to them, have received greater benefit in that though they form one-third of the whole State, have more than 40 per cent of the medical institutions to look after the health of the people there. It is often heard that even such a large number of institutions is inadequate to meet the requirements of the disease-stricken people of the Malnads. The number of institutions may be doubled, yet the cry for more dispensaries will continue, until the preventive measures recently started yield the anticipated results.

ORIGIN OF MEDICAL AID.

The honour of inaugurating Medical Aid in the State goes to Colonel T. G. McGann who came to Mysore in 1876 as a Civil Surgeon and is still in Mysore, adored by all, spending his retired life closely watching the fruits of the tree which he planted more than 52 years ago. In 1876 there was one general hospital in Mysore without any special arrangements for maternity work, situated in a

group of small cottages which were replaced in 1918 by a magnificent structure which is now called the Sri Krishnarajendra Hospital. In those early years, Bangalore had a small hospital for emergent and serious cases only. The generosity of Rai Bahadur Yele Mallappa Chetty of "Y" Tank fame gave Bangalore a Maternity hospital. By 1885 when Colonel McGann took over administrative charge, there were 37 Medical institutions which gradually rose to 120 by 1896 when he retired. To-day there are 281 institutions manned by 400 Medical Officers, 52 of whom are women. The number of patients that were treated last year as in-patients was 47,000 and as out-patients there were about nearly nine times that number. These huge figures indicate that the public of Mysore have begun to throw off their old superstition and ignorance and to realise the benefits of treatment by modern scientific methods. How much the public value the Allopathic system can be gauged by the number of general practitioners who are settling down in the State. Their number is almost half of the number of men in service. The expenditure of the Medical Department has risen from 3½ lakhs in 1900 to nearly 18 lakhs in 1935 of which about 5 lakhs are contributions by Local Bodies. The percentage of expenditure works on an average of 0.4-2 per head of population. Of the 18 lakhs, a little over 10 lakhs has been spent in the cities of Mysore and Bangalore where all the well-equipped General Hospitals and Special Institutions have been grouped. The District Hospitals are being reorganised and brought up-to-date. With a view to further extend relief in rural areas, a Rural Practitioners' scheme is under consideration of the Medical Department and it is believed that the scheme will be attractive to encourage a large number of fresh men, who are now unemployed, to settle in the villages.

PRIVATE PHILANTHROPY.

The great awakening of the public with regard to modern scientific treatment is also evidenced by the fact that during the last ten years the spontaneous donations by philanthropists towards construction of hospitals amount to well over 11 lakhs. The Princess Krishnarajammanni Tuberculosis Sanatorium is a gracious gift of the Royal House of Mysore. The huge pile of buildings of the Maternity Hospital in Bangalore with its Children's Hospital, Isolation wards and the out-patients' Departments; the Radiological block and the Out-Patients' wards of the Victoria Hospital; the eye-hospital and the out-patients' dispensary of the Sri Krishnarajendra Hospital in Mysore, the Maternity Hospital at Holenarasipur, the General and Maternity Hospitals at Chickmagalur and at Shimoga, are some of the major hospitals made possible by these generous donations. Sri Krishnarajendra Hospital at Mysore has also received a munificent gift of Rs. 20,000 for Radium treatment. The Victoria Hospital in Bangalore is hoping to have a Deep Therapy apparatus installed with

the aid of public charity. The town of Kolar will very soon have an imposing building, the cost of which is estimated to be 85 thousand rupees. Mysore is actively engaged in raising funds to replace the present Maternity Hospital of Col. McGann's time by a modern structure worthy of the capital.

While saying something about Medical Aid in Mysore one should not forget the work of Missionaries, who, in their selfless devotion to service, are attending to the needs of sick and disabled, irrespective of caste, creed and position in life. They have in all six institutions of which one is a General Hospital, four are for women and children and the sixth is a dispensary.

MATERNITY AID.

The Medical Organisation of the State has not forgotten the women folk; in fact the women of Mysore are much better off when compared with their sisters outside in the matter of maternity aid. This does not really mean that medical facilities for women in Mysore are quite adequate, for it is common knowledge that a very large majority of labour cases are conducted by untrained Dayees and even by women who have just had an opportunity of witnessing a couple of deliveries. There are at present 52 women Doctors in charge of 31 Maternity institutions and female dispensaries where the number of women delivered last year was about nine thousand. In addition a batch of 200 midwives, including 32 working in non-dispensary places, have conducted about 18,000 labours outside. There is a move to have a midwife in each village and a Maternity home for each Village Panchayat. This will become possible only when there are intelligent women coming forth to take up the profession and willing to settle in rural areas. The State Branch of the Indian Red Cross Society with its invaluable aid in the organization of Maternity and Child-welfare work has been to a very great extent responsible in creating facilities for ante-natal and post-natal clinics in different parts of the state. The work of these clinics which are 33 in all is co-ordinated by an Organiser working under the direction of the Director of Public Health.

INDIGENOUS MEDICINE.

While in the absence of figures, it is not possible to estimate the percentage of people that flock round unqualified healers, it may be safely admitted that trained and untrained Hakims and Vaidas, the literate and illiterate quacks and Dayees command public confidence to the same extent in Mysore as in the rest of India. The Ayurvedic and Unani systems may or may not be scientific. The Government have shown keen interest in their revival. There is a training College in Mysore. One hundred and twenty-six indigenous dispensaries are maintained by the Local Bodies at a cost of Rs. 40,000 catering to the needs of 1,224,062 sick people in different parts of the State.

PUBLIC HEALTH ORGANISATION.

As long ago as 1887 the necessity for a preventive organisation was recognised and the Senior Surgeon was made Ex-Officio Sanitary Commissioner, but no notable advance was made till 1929, when, as a result of the Health Survey conducted by the Rockefeller Foundation, at the invitation of the Government, the Public Health Department was reorganised and placed under a Sanitary Commissioner, independent of the Medical Department. Though tied down by a limited budget, the department has made remarkable progress during the past seven years. The rural Health Unit of Mandya has helped considerably in creating a "Sanitary conscience" amongst the villagers. Encouraged by its results, a second centre has now been established in Closepet. Three Malaria controlling stations are in full swing carrying out experiments in eradicating the carrier mosquitoes. Massive treatment against Hook-worm has been undertaken in heavily infected areas. Within a period of four years, Guinea-worm has been completely rooted out of Chitaldroog and if one wishes to catch it, he needs to just cross the frontier. To disseminate Health Knowledge, considerable propaganda is being done by means of health films, leaflets, posters and journals. The water-supply of all the important towns, with the exception of Bangalore City, is now under the control of the Health Department. That Department which has a programme of eventually cutting down the morbidity and mortality rates, and of raising the average expectation of life of a Mysorean, thereby effecting a possible reduction in the Medical budget of the State should be working under the handicap of finance and want of recognition from the public is a very regrettable feature.

NON-OBSERVANCE OF SANITARY REGULATIONS.

Although there are Sanitary laws enacted, they are very imperfectly enforced. A dead body, for example, may be disposed off without producing a proper medical certificate regarding the cause of death. Often-times the watchman of the burial grounds acting as the Registrar gives his own interpretation as the cause of death from the description of the malady. Bangalore City has a system of voluntary notification of infectious diseases. But the public penalise the notifying practitioner by not utilising his services a second time. Such a state of affairs, not by any means peculiar to Mysore, could only be improved, in the opinion of some, by educating the masses in health-knowledge and not by any legislation which cannot be effectively enforced. The Indian Red Cross Society supplements the efforts of the Sanitary Department in the spread of health habits amongst the adults and the school-going folk. Rural Hygiene is an important feature of Boy Scout training; the Rovers during the holidays visit the villages to give practical demonstrations in the disposal of refuse without

affecting its value as a manure, in cleaning the drinking-water wells and effectively preventing their pollution and in constructing drains and ventilating houses. The school-going population of the big cities, and of some of the Municipalities who have volunteered to contribute towards the cost, enjoys the privilege of the defects being noted by a medical officer on the cards provided for the purpose. Leprosy, fortunately confined to a few centres in the State, is being very effectively tackled by a local Committee of the Empire Leprosy Relief Association.

GROWTH OF MEDICAL EDUCATION.

To meet the local needs, a Medical School was started in 1885, but it did not survive long. The abundant clinical material that was available in the Victoria Hospital with a highly qualified staff was a sufficient inducement to restore the Medical School in 1917, and it is gratifying to observe that the products of this institution have won high praise both in and outside Mysore. A College in addition became a necessity in 1924, as a degree in Medicine to a Mysorean in the outside Universities, owing to heavy congestion in their own institutions, became almost impossible. Till three years ago Licenciates were all being absorbed into the service. Amongst the later products there has been unemployment. Of the Graduates, 63 in all since the inauguration of the College, only 19 have been absorbed into service while in the same period 20 appointments have gone to the Graduates of other Universities. It may be that the exigencies of services required the import of foreign talent, or it may even be that it was considered necessary that the Independent Medical Profession should have amongst its ranks men with recent training and ideas. Whatever may be the reason for their not being in Government service they have augmented the list of unemployed. One would wish to seriously consider the desirability of maintaining both factories in full swing without a market for their products. Though on paper the standard of qualification for entrance into the Licenciate course is slightly lower, in practice one finds a very good majority of the entrants possess the higher qualification required for the degree course. Yet such a Licenciate, who takes a course shorter by one year is considered an inferior commodity. This caste system in the Medical profession may have had some justification at the time it was inaugurated, but the present conditions do not warrant that there should be two portals of entry into the profession. It is the fervent hope of many a lover of the profession that Mysore will soon give the lead to the rest of India by closing down the Medical School which is the only solution of this vexed problem of Caste System. Such a step may be very strongly opposed on financial grounds, but "the increase in the Medical Budget would be gradual and not abrupt, as replacing the Licenciates by graduates would take nearly 30 years."

To regulate the Medical curriculum and to guide Practitioners of the Allopathic system, Mysore has its own Medical Council. Registration is compulsory for all men in service. Private Practitioners may register, if in return to certain restrictions on their liberties and actions, they accept the privilege of issuing certificates required by law.

It is roughly estimated that there are about 200 qualified practitioners in the State, many of them congregated in Bangalore and few scattered in the District and Taluk Headquarters. Their relations with their brothers in service have been most cordial, and a fairly good number have joined the Mysore Medical Association, which till 1929 was an official body. This Association has been instrumental to a very great degree in bringing the private practitioners in touch with the clinics of the major hospitals and creating a healthy rivalry between the two sections of Medical men. While no one amongst the practitioners appears to be building a fortune, a good many have just been able to keep the bailiff off. One enthusiastic young medico, a graduate of the Mysore University, has recently started a pathological and bacteriological laboratory on an up-to-date scale and has been of immense use not only to himself but to the public as well. Many have begun to wonder what further additions to their number might mean in a place where Government Medical Aid is "free to the poor and practically free to the rich", to such an extent that there is a danger of the poor being neglected. Even the well-to-do patients belonging to the neighbouring Provinces consider it much cheaper to seek medical aid in Mysore Hospitals than in their own stations—the journey, the house-rent, the hospital and other charges put together being much cheaper than their medical attendants' fee!

A. WORD TO THE WEALTHY.

Some years ago there was an idea of creating Honorary appointments in the staff of some of the big hospitals, but it did not materialise, chiefly, as one understood, for want of a large number of outstanding men of experience. The average practitioner has no incentive to raise himself above the general level. The Honorary system will undoubtedly raise his efficiency, but the present order of treating all patients, rich or poor, more or less free of charge, militates against the introduction of such a system. Is it too much to hope that the wealthy classes of Mysore who have interested themselves in the problems of Medical relief and made large donations towards the constructions of Government Hospitals and wards, will consider the necessity for private and charitable institutions were the hidden and unused talent of the practitioner may be most advantageously used in the relief of sickness amongst the deserving poor? An organised effort by the practitioners towards the establishment of private institutions appears to be most necessary.

The Hindu October, 21, 1936.

THE COLON AS A SOURCE OF ABDOMINAL PAIN.

L. C. GATEWOOD, M. D.

Chicago.

A careful survey of the material from any large medical or gastrointestinal clinic will show that far more than half of all the instances of abdominal pain which come under observation are due to functional or anatomical disorders of the bowel. It is interesting, therefore, to consider the mechanisms and causes of this most common of all sources of abdominal pain.

There are three mechanisms for the production of pain from the colon:

A. Increase in tension of the bowel or in pressure within the lumen of the bowel:

I. Actual increase in volume distention, e.g., gaseous distension, enema, etc.

II. Pressure increase due to muscular contraction.

(a) Increase in peristalsis and tonus contraction.

(b) Obstructing mechanisms.

1. Organic narrowings.

(a) Neoplasm.

(b) Cicatrizing stenosis arising from healing of ulcers and other inflammatory lesions of the bowel wall.

(c) Adhesive bands.

(d) Extrinsic pressure, e.g., Neoplasms, glands, etc.

2. Spasm.

(a) Diffuse—transitory.

(b) Localized—due to inflammatory lesion, e.g., diverticulitis.

B. Inflammatory (peritoneal).

C. Neoplastic—(Relatively unimportant since not usually present. The pain of neoplasm is usually obstructive).

The mechanism responsible for the production of peristaltic pain is the one which has been so thoroughly studied by the balloon method evolved by Carlson and used by Alvarez and other observers. It is so closely related to the physiologic mechanism of bowel contraction that it requires relatively little alteration in anatomical or physiological conditions to bring it about. It is impossible to dissociate the effects of increased tension of the bowel wall and increased pressure within the bowel because a distension of the bowel usually stimulates increased contraction. A slight increase in tension may register only as a feeling of fullness or distension. A somewhat greater tension results in actual pain which may vary from a dull ache to terrifically severe, cramp-like colic of our green apple experiences of childhood. This pain not infrequently becomes so severe as to cause nausea, vomiting or actual fainting. The increase in pressure and resultant distress may be continually localized to

the same bowel segment in the case of a localized cause or may be such as to give rise to increase in pressure at one time in one segment and again in another elsewhere and at still other times generalized throughout the entire abdomen. The pain may register in the exact region where the increase in pressure is occurring, as we have been able to observe countless times during the course of fluoroscopic examinations of the colon, and it may be referred elsewhere at the same time or it may less commonly be felt only in the location of reference. The most common reference is to the back but occasionally the pain may be referred up over the lower part of the chest or down the front of the thighs. Occasionally it is referred to the pelvis or perineum.

The increased peristaltic activity which produces pain usually results also in an increased rate of movement of material through the colon, thus causing a decrease in the time available for absorption of water from the bowel content and a corresponding increase in fluidity of the stools—that is, diarrhea. We find, therefore, a frequent co-relation of pain and diarrhea in the symptomatology of bowel disorders. Exceptionally it may happen that intense or persistent spasm of colon segments may interfere with forward movement of the bowel content, resulting in pain associated with constipation, as seen for example in lead colic.

The most important etiologic factors producing this pressure type of distress will include:

1. Localized primary disease of the colon such as carcinoma, polyp, tuberculosis, etc. These lesions may cause merely a compensatory increase in the pressure produced by peristaltic contraction or may in addition, act as irritants to cause a reflex increase in peristaltic activity, which may be either localized or general.

2. Extrinsic disease involving the bowel to produce obstruction, e.g., hypernephroma; pancreatic cyst; masses of glands due to Hodgkin's disease, tuberculosis or carcinoma involvement, or any of a variety of conditions which may impinge upon the colon in a region which does not allow its escape and result, therefore, in obstruction.

3. Generalized irritative and inflammatory processes. These are by far the most common cause of colon pain. Included in this category are all of the heterogeneous groups of cases which fall within the general diagnosis of "colitis" and which have furnished the material for so much discussion regarding classification and nomenclature. In general the group may be divided into

- (a) Simple irritation.

- (b) Inflammatory:

1. Non-ulcerative.

2. Ulcerative.

- (a) Nonspecific ulcerative colitis

- (b) Amebic dysentery.

- (c) Bacillary dysenteries.

- (d) Tuberculosis, etc.

The dividing line between the irritative and the actually inflammatory cannot always be sharply drawn and that which at one time seems to be merely irritative may subsequently prove to be actually inflammatory. The causes of the simple irritative and non-ulcerative inflammatory types may be grouped as follows:

- A. Dietetic causes:

1. Excessive amounts of the laxative components of the diet.

2. Abnormal food irritants.

- (a) Abnormal food combinations.

- (b) Chemical irritants resulting from food decomposition or fermentation.

- B. Drugs. The prevalent use and abuse of laxatives by the lay public, promoted by the extensive advertising campaigns of the manufacturers, have provided the source for a tremendous amount of peristaltic distress. Enemas of all kinds tend likewise to irritate the colon and the addition of soap, magnesium sulphate, glycerine and various other chemical substances to enhance their effectiveness in emptying the colon, serves also to increase their effectiveness as irritants.

- C. Chemical irritants produced within the body. Included in this group are bacterial toxins—as for example, those responsible for the diarrhea observed frequently in the early stages of pneumonia and various other infectious diseases; those less clearly defined chemical products resulting from the faulty metabolism occurring in the tissues at abnormally low temperatures, as a result of chilling the body; metabolic products reaching the bowel via the blood stream because of serious metabolic or excretory derangement elsewhere, e.g., in hyperthyroidism and in uremia. The latter furnishes an excellent example of the way in which a single cause may, under varying conditions, result in simple irritative or actual non-ulcerative inflammatory change and, in its more severe degrees, extensive ulceration of the colon. It may thus serve to emphasize the indefinite borderline between these groups.

- D. Nervous factors. The contraction of the colon in response to stimulus acts as a conditioned reflex. The factors of nervous and mental stress, extremes of emotional state such as anxiety or fear, anger, etc., tend to modify the degree of peristaltic response to stimulus and in susceptible individuals, to result in pain and diarrhea.

The nature of the peristaltic response is such that it may readily be stimulated under a variety of conditions with corresponding variations or additions to the general symptom picture. The taking of cold or excessively hot foods or liquids into the stomach may provide a thermal stimulus and result in pain occurring immediately

after the ingestion of food or liquid. Lesser degrees of this type of response may be experienced by the patient only as a feeling of fullness and pressure so that he complains that he feels filled up as soon as he starts to eat, decreases his food intake correspondingly and loses in weight. In other individuals the ingestion of warm foods or liquids may have the effect of converting the stomach into a hot water bottle, its close proximity to the colon resulting in a soothing thermal effect. The patient may thus report relief of pain by food taking, in this manner simulating the food relief of the pain of peptic ulcer. The mechanical stimulus from jolting or jarring may cause the pain to be initiated or aggravated by exercise. The conditions of life from day to day are such that it is frequently impossible to dissociate the effect of exertion from that of fatigue, anxiety and other emotions because so many factors act simultaneously.

Diagnosis. In the recognition of this type of pain a carefully elicited history is of great importance. The majority of patients have learned by daily physiological experience to recognize the sensations which are associated with increased peristaltic activity preceding bowel movement and the question, "Is this pain associated with a desire for a bowel movement?" should regularly be asked concerning any abdominal pain of uncertain origin. Especially when the bowel contractions cause an increase in pressure in the sigmoid and rectal segments, the patient will definitely associate his discomfort with the sensation of desire to defecate. In many instances the use of the bowel distension enema or so-called "test enema" will help to identify the source of the patient's pain. For this purpose the patient is given a large enema of plain water, introducing a small amount at a time until the bowel is distended and the patient's original distress is thereby aggravated or modified or a new and different distress has been produced by the enema. The patient should be carefully instructed before the enema is started that its purpose is not merely to empty the bowel but that the enema is given as a test to enable him to compare a known bowel distension distress, thus artificially produced, with the pain he was already experiencing. Similar observations may at times be obtained with the barium enema used in the course of the roentgenologic examination. The contra-indications to the use of this method will manifestly include such acute inflammatory processes as appendicitis, diverticulitis and most of the ulcerative bowel lesions.

In the diagnosis of the obstructive bowel lesions, the neoplasms, the ulcerative lesions, and the non-ulcerative inflammatory processes, the painstaking examination of feces by chemical, microscopic and bacteriologic methods are indispensable as is also a thorough roentgenologic and proctoscopic examination. The limitation of time upon this paper precludes a detailed discussion of laboratory

findings but there are a few points worthy of brief emphasis. The presence of occult blood in the stools on a meat free diet is highly significant and negative reports are reassuring in helping to exclude the presence of carcinoma, polyp and ulcerative lesions. It is especially important, however, to remember that tuberculous lesions of the bowel show very little tendency to bleed. Even with very extensive ulcerative tuberculosis of the ileum and colon, the examination of the stools for occult blood may be persistently negative. Fortunately, from the standpoint of diagnosis, practically all of the other ulcerative lesions of the colon and the neoplasms tend to show persistently positive tests for occult blood. Macroscopic blood in the stool occurs only when the bleeding lesion is low in the bowel or when there is an active diarrhea. Blood changes in color and disintegrates quickly when in contact with the bowel content and after a short time is no longer recognizable as gross blood though it will still give a positive benzidine reaction. The oozing of small amounts of blood from the surface of an ulcerating carcinoma causes macroscopic blood in the stools only when the tumor is in the rectum or sigmoid. The occurrence of pus in the stools as a macroscopic or microscopic finding, indicates the presence of an ulcerative lesion or the perforation of an abscess into the lumen of the bowel. As a rule, the processes which give rise to blood or pus in the stools will also produce sufficient anatomical alteration to produce characteristic roengenologic changes. Proctoscopic or sigmoidoscopic examination will, in many instances, provide a direct visualization of the responsible lesion. In that group of patients who present a history of allergic manifestations or a history of pain or distress following certain individual articles of food the skin tests for protein sensitization may prove helpful. However, in testing a large series of patients our own experience has been that clearcut protein sensitization has proved of far less frequent occurrence than earlier publication would seem to indicate.

Because pain originating in the colon may occur at any time, in any part of the abdomen and of any severity, it may readily simulate practically any other type of abdominal pain and must be considered in the differential diagnosis of all cases of abdominal pain. The relief of pain by the taking of warm food has frequently simulated the pain occurrence of peptic ulcer. The less severe attacks of appendicitis and gall bladder disease are very often simulated by the distress of a bowel colic. Even the lumbar pain of a renal colic may be reproduced by pain in the colon. The pains of lead colic may at times be very similar to those of gastric crises of tabes. Manifestly a careful physical examination will frequently furnish the necessary evidence for differentiation. Simple irritation of the colon is as a rule associated with little or no increase in muscle resistance and only the more acute inflammatory lesions such as diverticulitis,

pericolic abscess, etc., are likely to show definitely localized muscle defense reaction. The latter will almost always present abnormalities of roentgenologic findings, blood, pus or mucus in the stools, etc. Some measure of the irritability of the colon can be obtained by palpating the colon in the right and left lower quadrants, rolling it under the palpating fingers to determine the degree of spasticity, etc. The present tendency of lay patients to self medication with cathartics for any kind of abdominal pain frequently results in the development of a cathartic colitis in an individual who already has a localized organic lesion of the bowel (e. g., carcinoma). This combination of a generalized and a localized bowel condition produces a diagnostic problem which is frequently quite difficult.

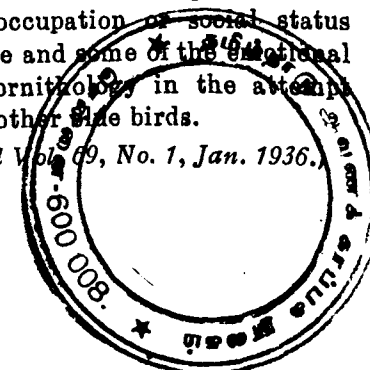
Treatment. The limitation of the time allotted to this paper does not permit a full discussion of the treatment of the organic and the functional disorders of the colon. Since the treatment of the dysenteries and the ulcerative bowel lesions has received so much attention in recent medical literature, it seems worth while rather to consider the milder inflammatory and simple irritative bowel conditions.

In the care of the commoner type of so-called "colitis" or irritable colon the problem is rather one of management and of education than of radical or aggressive treatment. Exogenous irritants of all kinds are to be excluded as far as possible. Since cathartics are among the chief offenders in this group, it is expedient that they be stopped and the patient taught the fundamentals of the normal dietetic management of the bowel. It is not sufficient for the physician to assume direction of the diet. This may be the quickest way to regulate the bowel action by means of diet but if the patient has not been educated in the principles of diet management he is likely to revert to his laxatives as soon as he is no longer under direct supervision and thus undo all that has been accomplished. A simple record of the quantity of vegetable and fruit used in the diet and the type of stool resulting has often proved helpful in the education of such patients. Because of the parallelism between degree of peristaltic activity the pain or distress resulting, and the water content of the stool, it is usually expedient to restrict the diet to include only that quantity of roughage which can be tolerated without producing loose stools. In doing so it is essential that the diet prescribed should provide an adequate caloric intake and adequate protein, mineral and vitamin intake. While this can usually be accomplished by diet alone it is sometimes necessary to add specific vitamin preparations. Those patients who have demonstrated allergic sensitivity to certain articles of food should exclude such foods.

There are many drugs which occasionally prove helpful but there is none which finds universal applicability. Perhaps belladonna

and its derivatives and the bromides or other simple sedatives proves the most widely useful. The administration of calcium as suggested originally by Haskell and Canterow with parathormone has proved valuable in lessening the degree of bowel irritability in obstinate cases of ulcerative colitis and is used less frequently in the non-ulcerative forms external application of heat in various forms and, in some cases, the deeper heat produced by diathermy may add both to temporary palliative relief and more permanent progress. The neurogenic factor is one which has not been sufficiently appreciated. It is a common experience to see a patient follow a strict regime for weeks in order to control the manifestations of an irritable colon and then go on a vacation in the country for a month during which he can eat anything and do everything, only to find the old trouble recur when he returns to the city and the office grind. Frequently the anxiety of the patient over his own condition is sufficient to provide the neurogenic factor and result in a vicious circle. Reassurance plays an important part in the treatment of such patients but it is not sufficient to merely say "This thing is not serious. You are going to be all right." It is necessary to devote sufficient time to the logical explanation of the patient's manifestations to give him some understanding of their mechanism. Much depends upon the judgment of the physician in estimating the intelligence of his patient in order to determine how far one may go into detail without confusing the patient and adding to his anxiety. Regulation of the patient's mode of life with prescribed rest periods, recreative exercise and limitation of periods of work will prove helpful in many cases. In others the result can best be obtained by the establishment of a program of short vacation trips at frequent intervals as contrasted with the more usual single vacation per year. These peaks of emotional stress which can be anticipated or recognized can sometimes be offset by a tightening of the dietary regime at that time and an exacerbation of symptoms thereby prevented. Occasionally it will be found that the nervous stress responsible for the difficulty can only be removed by a social or occupational readjustment. The highly emotional man or woman with an irritable colon, readily influenced by neurogenic factors, should not attempt to hold a position in the "information-bureau" at a railway station or the "complaint division" of a department store. Under present economic conditions, however, changes of occupation or social status are far easier to prescribe than to produce and some of the emotional stresses will perhaps require a study of ornithology in the attempt to differentiate between blue eagles and other blue birds.

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FUNDAMENTAL ASPECTS OF THE DIAGNOSIS AND TREATMENT OF ANEMIA.

BY WM. BOSWORTH CASTLE, M.D., *Boston, Mass.*

The patient suffering from anemia usually has either a condition for which appropriate treatment is brilliantly successful or one for which there is no specific remedy and for which the best available measures merely forestall temporarily the fatal issue. These diametrically opposed possibilities render precision in diagnosis in this field of internal medicine of especial significance. Recognition of those conditions for which specific therapy is available is obviously of primary importance. The possibility of obtaining from adequate treatment complete relief for patients suffering from such types of anemia offers an opportunity which will appeal to any physician who has the good of his patients at heart. For this reason I believe it is worth while to present briefly to you some of the salient facts concerning the fundamental aspects of the diagnosis and treatment especially of those anemias which can be successfully treated.

Anemia may be divided on an etiologic basis into two main groups. In the first group, acute blood loss or increased blood destruction is the cause of such inordinate demands that the blood-forming organs are unable to supply the requisite number of red blood cells. The peripheral blood and the bone marrow present evidence of an intensive regenerative effort. The anemia of acute blood loss needs no treatment unless as a result of sudden decrease in the blood volume there is circulatory failure. For this condition, copious fluids or blood transfusions are urgent necessities. The successful treatment of the anemia of increased blood destruction obviously depends on the elimination of the blood-destroying agent whether organic (e.g., malaria, streptococcus) or chemical (e.g., lead). For congenital hemolytic jaundice splenectomy is almost a specific. In other types of hemolytic anemia in which the cause of the blood destruction is obscure, treatment is largely by the judicious use of transfusions.

In anemias of the second group failure of the supply of cells or of hemoglobin is the dominant cause for anemia. The bone marrow, whatever its morphologic appearance, is functionally inadequate to keep up with the natural rate of blood destruction. The inactivity of the blood-forming organs is usually emphasized by the lack of signs of active blood production in the peripheral blood. The success of the treatment depends on whether or not the cause of the bone marrow failure is remediable. If failure is due to toxic inhibition by poisons of external origin (e.g., benzol) or of internal metabolism (e.g., chronic infection or nitrogen retention) transfusions may keep the patient alive until the underlying cause has been removed. If due to destruction of the bone marrow by invading neoplasms

(e.g., carcinomatosis, leukemia) the life of the patient may be prolonged by irradiation provided the tumour cells are sensitive to such a measure. If due to aplasia of the bone marrow (e.g., idiopathic aplastic anemia) in a physiologic sense and sometimes morphologically as well, no specific treatment is available, though frequent transfusions may be a means of lengthening the period of the patient's useful existence.

In striking contrast to the unsatisfactory methods of treatment of many varieties of anemia are the therapeutic successes attainable in conditions of the second group in which the failure of cell or hemoglobin production is due to defective nutrition of the blood-forming organs. Thus, in certain types of macrocytic anemia what the marrow needs for a return to normal function is a substance contained in preparations of liver or stomach tissue. In all types of hypochromic anemia the diminished production of hemoglobin will be corrected by providing an adequate supply of iron. In certain instances of scurvy with macrocytic anemia vitamin C deficiency appears to be the basis of the bone marrow starvation. In thyroid deficiency a general lowering of the metabolism is in some way responsible for inadequate activity of the blood-forming organs. Patients with anemias of these types are, then, those most important to recognize early and to treat thoroughly.

It is well to suspect anemia as a possible cause or contributing factor of disability in every patient. The appearance of the patient is not necessarily an indication of the existence of anemia. Pale individuals may have normal blood counts and patients with "good color" may have well-advanced anemia. Therefore if nothing more is done, at least a determination of the hemoglobin of every patient should be made by some reliable method. A hemoglobin determination is more useful than a red blood cell count because in every type of anemia the hemoglobin is decreased, although in the common hypochromic anemia the red blood cell count may be little below normal. Digestive symptoms are usually present in anemia of nutritional deficiency. Sore mouth, dysphagia or hyperacidity may, upon analysis, turn out to be associated with gastric anacidity and anemia. A "nervous breakdown," mental depression of neural symptoms, including "neuritis" and "locomotor ataxia," may be the manifestations of degenerative processes associated with pernicious anemia. The symptoms of congestive heart failure or of angina pectoris are sometimes due to an underlying anemia. Swelling of the ankles, albuminuria and some nitrogen retention may seem to indicate a diagnosis of nephritis but in reality may be the manifestations of anemia. Enlargement of the liver and spleen may suggest cirrhosis but nevertheless be due to hypochromic anemia.

Symptoms may occur in the early stages of anemias of nutritional deficiency when the anemia is not marked. For this reason

it is well to keep in mind the fact that in general the macrocytic anemias responding to liver extract, which occur in pernicious anemia, sprue, pellagra, pregnancy, celiac disease and occasionally in chronic alcoholism and chronic intestinal disorders, are commonly associated with disturbances in one or more of three systems of the body. Attention should be directed toward the alimentary tract for such symptoms or signs as glossitis, dysphagia, dyspepsia, gastric anacidity, constipation or diarrhoea; toward the neural system for evidence of peripheral neuritis, subacute combined degeneration of the spinal cord, or changes in the mood or personality; and finally, toward the blood for evidence of anemia with a high color index. In hypochromic anemias poor diets, blood loss whether due to hemorrhoids or to "hookworms," repeated pregnancies, rapid growth or the onset of menstruation are dominant features. In some of these patients a smooth tongue, gastric anacidity, mild indigestion, splenomegaly, and spoon-shaped finger nails are found. In scurvy in adults a history of strikingly restricted diet is common, and the individual affected is frequently a man whose diet has suffered as a result of his wife's death. Sometimes too rigid restriction of the diet prescribed by a physician will produce the same result. Thyroid deficiency as a cause of anemia does not always result in outspoken myxedema. Whenever there is doubt, a basal metabolism determination is indicated. Occasionally a chronic sinus infection or other focus of infection may complicate an otherwise simple case of anemia of nutritional deficiency.

In defining the nature of the anemia, enumeration of the red and the white blood cells and of the platelets, determination of the hemoglobin and the making of stained blood films from capillary-blood are the conventional aids. In my experience it is easier to do accurate blood counts from a 5 cc. sample of oxalated whole blood taken from a vein than from capillary blood samples. One such blood has been rendered incoagulable, it can if necessary be kept in the ice box for several hours and subsequently used for all the necessary examinations with the exception that capillary blood is usually preferable for blood films. It is thus no longer necessary to fill pipettes accurately under the sometimes unfavorable conditions of the bedside. An oxalated venous blood sample also has the advantage that it permits the determination of the percentage volume of packed red blood cells by use of the hematocrit tube. Before centrifuging, the same tube may be used for a determination of the sedimentation rate. From the hematocrit volume it is possible to calculate the mean corpuscular volume and the mean corpuscular hemoglobin concentration, which show striking contrasts in macrocytic and hypochromic anemias. The color of the plasma in the hematocrit tube can be compared with that of standards and so the degree of icterus determined. Much information can be gained from knowledge of the percentage of reticulocytes in the

peripheral blood measured over a period of a few days. The reticulocyte count is useful as an index of bone marrow activity both in diagnosis and in determining at an early stage the effectiveness of treatment applied in the anemias of nutritional deficiency.

The diagnosis of the anemias of nutritional deficiency is, however, best made by a proper consideration of both clinical and laboratory data. Although the diagnosis, for example, of outspoken pernicious anemia or of the severe hypochromic anemia of hookworm disease is obvious, there are many borderline cases and combinations of these types of anemia which will not be recognized unless the fundamental mechanisms for the production of these conditions are appreciated. The macrocytic anemias of pernicious anemia and the allied conditions mentioned above are apparently the result of the failure of a process in the normal individual which provides for him a supply of "liver extract" derived from the usual diet. Thus, when the normal individual ingests food containing substances closely related to vitamin B and known to be present, at least in meat, eggs and certain whole grain cereals, an interaction with a factor secreted by the stomach results in the production of a substance effective in the bone marrow. The failure of this mechanism may obviously be brought about by (1) defective nutrition, (2) defective gastric secretion, (3) defective absorption from the intestinal tract and (4) in theory, defective utilization of material after absorption. In any case of macrocytic anemia one or more of these mechanisms may participate in variable proportions. For purposes of illustration it may be said that disturbance of the intake of food is an important factor in the macrocytic anemia of pellagra, sprue and pregnancy. Disturbance of the gastric secretion is predominantly of importance in pernicious anemia but is also involved to some degree in certain cases of sprue and of the pernicious anemia of pregnancy. Disturbance of intestinal absorption is to some extent probably involved in all such conditions, but is a significant feature of certain cases of anemia in sprue, idiopathic steatorrhea and unusual instances of macrocytic anemia in which intestinal anastomoses or stenoses of the gut are present. All these mechanisms may be involved to variable degrees in states of chronic malnutrition associated with gastro-intestinal disease, whether in extensive cancer of the stomach or of the large bowel, or in intestinal tuberculosis, ulcerative colitis or chronic dysenteries. With these facts in mind it is not difficult to understand the occasional instance of the development of macrocytic anemia or of sore tongue or diarrhea, or of neuritis in pathologic conditions of the alimentary tract. Such conditions sometimes develop after operations, preceding which the patient has been in a prolonged state of chronic malnutrition.

The factors involved in the production of hypochromic anemia are somewhat similar, with the outstanding difference that blood loss, whether by actual bleeding, by transfer of hemoglobin-building materials to the fetus, or by a relative reduction of the amount of hemoglobin in circulation through rapid growth, is the dominant factor. Blood loss due to these mechanisms would not alone be effective in producing hypochromic anemia were the supply of iron in the food or its absorption from the intestinal tract adequate. It is for this reason that poor diets and gastric anacidity are so frequently associated with many instances of hypochromic anemia in which loss of blood does not seem to have been an outstanding phenomenon. However, since the male adult does not ordinarily need more than 1 mg. of iron a day, it is necessary to have blood loss by one of the methods mentioned above in order to deplete the available iron significantly. The menstrual loss of women is probably the feature causing the higher incidence in this sex.

Hypochromic anemia, unlike most other types of anemia, can usually be diagnosed from the blood examination alone, for in the absence of chronic infection the finding of a low color index usually indicates a failure of hemoglobin production, which can be relieved by the administration of iron. In contrast to this is the fact that pernicious anemia and related macrocytic anemias are by no means the only conditions in which macrocytosis of the red blood cells is observed. Following acute hemorrhage the red blood cells are temporarily increased in size, and in most conditions in which a depression of bone marrow function takes place the red cells are normal or somewhat increased in size and contain a normal concentration of hemoglobin unless blood loss has occurred. Thus, in aplastic anemia, aleukemic leukemia, benzol poisoning, chronic nitrogen retention and cirrhosis of the liver the blood picture may distinctly resemble that of pernicious anemia, but the anemia will not respond to the administration of liver or stomach preparations. In the differential diagnosis of pernicious and related anemias, the final proof is a therapeutic test with effective liver or stomach preparations. Because orally administered material may not be adequately absorbed, the original therapy should perhaps always be given parenterally in the form of liver extract.

In the treatment of pernicious and related macrocytic anemias, the administration of liver or stomach preparations in adequate amounts is essential. The effectiveness of the treatment may be quickly confirmed by discovering whether or not significant increase of reticulocytes occurs at about one week after the treatment was begun. Since liver and stomach preparations are expensive compared with iron compounds, it is worth knowing at once whether the former are going to be effective in treatment. Whereas it may be justifiable to give iron empirically to every patient with anemia

because it costs little, the administration of liver or stomach preparations should not be made without evidence of benefit. At present these products are described in terms of the amount of original organ employed in their preparation. Since the efficiency of the methods of extracting the active principle is variable such a description is not necessarily definitive. Certainly no preparation should be prescribed which is not listed in "New and Non-official Remedies" or in the United States Pharmacopoeia. In the future, the activity of such preparations will be defined in units, thus giving the amount of effective material left in the product by the manufacturer. In general terms it can be stated that for pernicious anemia the daily oral administration of a unit of an approved liver extract (e.g., from 400 to 600 Gm.) or of a unit of stomach preparation (e.g., from 300 to 400 Gm.) will be maximally effective in promoting increased blood production. In some patients orally administered material is not normally effective, though responses to parenterally administered material may be good. From the daily parenteral injection of 1 unit of an approved liver extract for intramuscular use (e.g., from 10 Gm. of liver) or from the weekly injection of 7 units of such material maximal results upon blood production can usually be expected in pernicious anemia. Alleviation of the lingual and gastro-intestinal symptoms and arrest of the neural process is to be expected from such therapy. In general, because the effectiveness of a given amount of material when administered by the parenteral route is at least sixty times as great as when it is given by mouth, parenteral administration is more certain and less expensive. Because of the desirability of arresting as soon as possible the degenerative processes of the nervous system, patients having such disturbances should probably always be treated with parenterally administered material.

In the treatment of sprue, control of the diarrhea often demands considerably larger doses of liver extract at the outset. The proportion of cases not responding satisfactorily to orally administered material is so large that the parenteral route should probably always be used in the treatment of sprue. In rare instances it may be necessary to give daily for a period of several days injections of 10 units of liver extract in order to control the diarrhea. Later, somewhat larger doses of liver extract may be necessary than in the management of the average patient with pernicious anemia. In the handling of atypical cases of macrocytic anemia associated with gastro intestinal disease as described above, emphasis should be placed on individual variations and the problem clearly realized as one of giving sufficient material for the individual case. It is the exception that a patient with macrocytic anemia of any of these types can discontinue treatment without danger of serious and perhaps fatal relapse. More common is the patient whose health is not adequately improved because too little material is being administered.

In the treatment of hypochromic anemia of any type, the administration of iron preparations is the first essential. In general, ferrous compounds are more effective per gram of iron than are ferric compounds, and therefore possess a practical advantage over the latter. However, iron in any form may be utilized. Roughly it can be stated that 12 grains of ferrous sulphate, 30 grains of reduced iron or 60 grains of ferric ammonium citrate, administered daily, are efficient doses, though not necessarily comparable. Frequently doses half as great again as these are indicated, and in some instances double this dosage may be necessary. Organic compounds have no advantage over inorganic iron compounds. Because of the relatively low cost of oral dosage and the considerable toxicity upon injection, there is practically no indication for the parenteral administration of iron. Most of the organic preparations of iron for parenteral administration are useless because of the very small content of iron. Because of the demand for hemoglobin in pregnancy, iron should probably be administered prophylactically just as is calcium. Such therapy will help to prevent hypochromic anemia in the nursing infant, which can certainly be completely prevented by the administration of iron to the child after the third month of life. Elixirs of ferrous sulphate are a convenient means of giving iron to children.

The treatment of hypochromic anemia at any age is readily effected by the use of iron. Even if cancer or some incurable cause of blood loss is responsible for the hypochromic anemia, marked temporary improvement in the patient can often be brought about by abolition of the anemia. It is of practical interest that the disability in hookworm disease is largely due to the associated hypochromic anemia. This can be successfully abolished, with or without removal of the hookworms, by the administration of efficient doses of iron. When patients are severely anemic, the anemia should be treated before removal of the hookworms is attempted because of the increased danger from vermifuges when the patient's general condition is poor. Elimination of the hookworms is, of course, desirable, but this alone in many cases does not lead to rapid recovery and should therefore always be combined with therapy with iron. Because following the administration of the liver or allied products in certain macrocytic anemias, especially in sprue, a change to hypochromic anemia may develop, the administration of iron is probably indicated as a routine procedure until the blood has returned to normal. In patients with pellagra or sprue and hypochromic anemia, therapy with iron does not relieve the intestinal symptoms, though the blood may be improved.

In conclusion, I should like again to emphasize the importance of recognising those types of anemia for which there are specific remedies. In no type of condition is treatment so regularly effective as in the so-called nutritional deficiency diseases. Certain types of

anemia clearly fall into this category and benefit in such conditions is no less certain than in other types of deficiency disorder.

GENERAL TREATMENT OF EDEMA.

BY M. W. BINGER, M. D.,

Division of Medicine. Mayo Clinic.

There is no hard and fast rule for the treatment of edema for the simple reason that there are so many factors and conditions causing it. Before rational treatment can be successfully accomplished it is necessary to recognize the etiologic conditions and to outline a suitable regimen in the particular case under consideration.

The pathologic condition resulting in edema can usually be located in the excretory system of the kidneys, in the circulatory system of the heart, vessels or lymphatics, or in some disturbance of the metabolic processes of the body, including the blood, colloidal elements, acid-base regulatory system, endocrine glands and so on. The diseases commonly recognized as producing edema are nephritis, nephrosis, myocardial decompensation, cirrhosis, polyserositis, intra-abdominal malignancy and myxedema; there is also the group of indeterminate edemas of which so little is known and which probably represent some obscure metabolic or nutritional disturbance.

By a carefully taken history and by careful physical and laboratory examination the correct diagnosis can usually be arrived at as each type of case has its outstanding diagnostic features. Complete urinalysis and thorough studies of the chemical constituents of the blood, including determinations of serum protein, cholesterol, carbon dioxide combining power and chlorides, are important aids. Determination of the basal metabolic rate often will determine the existence of thyroid deficiency as a factor. Cardiac studies are always important.

When the diagnosis is completed a rational type of treatment is outlined. There are general measures quite important to be observed in treating any type of edema; for example, restriction of fluids to 1,000 or 1,200 c. c. a day unless a uremic condition prevails and it is found necessary to keep the intake of fluid up regardless of the edema. Restriction of salt to the minimum is also advisable, as sodium chloride undoubtedly in most cases increases the tendency to edema. Naturally, rest in bed is important.

There have been important changes in the choice of diuretic salts in the last decade. Ten years ago ammonium chloride was used almost exclusively, with the feeling that acidosis was necessary in order to produce diuresis. It was found, however, that on this program many of the patients, especially those with nephritis, did poorly; and that toxic symptoms of renal insufficiency developed and

many times cerebral manifestations from acidosis. Later, ammonium nitrate was the favored salt and for several years it enjoyed wide popularity. However, it too was found to produce acidosis, although to a lesser degree than ammonium chloride; in addition, occasional complications of nitrate poisoning were observed.

In the last three years potassium nitrate has more and more been employed as the diuretic salt of choice. In the majority of some 200 cases of edema of all types it has proved successful and in no instance have any untoward effects been observed. It is administered in the form of enteric-coated pills containing 0.5 gm. of potassium nitrate, and 6 to 12 gm. a day are given in divided doses after meals. Similar to the salts of ammonium chloride and ammonium nitrate, potassium nitrate enhances the action of organic mercury compounds when these are necessary. It may safely be given in cases of edema in which there is retention of urea, and I have successfully given it to a patient with edema who had a blood urea as high as 146 mg. per 100 c. c. No toxic effects on the heart in cardiac or other types of edema have been noted. Potassium nitrate is tolerated very well and seldom causes any gastrointestinal disturbances. It is neutral to slightly alkaline in its reactions and does not produce acidosis.

Organic mercury compounds, of which at present salyrgan intravenously is the one of choice, should always be employed with discretion. In my opinion salyrgan should never be employed to start diuresis in cases of acute anuria; when renal insufficiency exists in the form of uremia, it is hazardous to use it and it is likely to increase renal insufficiency. Its use is not advised if the blood urea is greater than 50 or 75 mg. per 100 c. c., nor if erythrocytes are present to any degree in the urine. Salyrgan is most successful in those cases of minimal renal insufficiency: namely, edema due to cardiac decompensation, nephrosis, polyserositis, and in the edemas of indeterminate origin. One-half cubic centimeter is first given intravenously, and if no toxic effect is noted, 2 c. c. may be given the following day and repeated every third or fourth day. I prefer, however, to try the more conservative measures first, and I find it necessary to use less and less salyrgan.

In addition to the immediate problem of ridding the patient of the existing edema, there is also the need for outlining his regimen when he goes home in order to keep him free of edema in the easiest, safest, and most efficacious manner possible. In this regard it becomes a matter of training the patient so that he will co-operate fully with his home physician. The simpler the regimen is the more likely it is it will be followed.

In cases of cardiac edema there is not only the problem of ridding the patient of excess water, but also of supporting his heart.

Here xanthine derivatives, digitalis and the organic mercury compounds are successfully employed. Usually any evident renal insufficiency is secondary to passive congestion and organic mercury compounds can be employed with a greater degree of safety than in cases of nephritis. In cases of severe, terminal, diffuse arterial disease with cardiac and renal insufficiency its use is not advocated.

Glucose and sucrose in a concentration of 20 per cent may be given intravenously as a diuretic in cases of anuria, from 200 to 500 c. c. being given at a time. Its administration should be followed by the administration of about 100 c. c. of physiologic saline solution to wash out the vein. I frequently add an ampule of 10 c. c. of aminophyllin to the glucose, either 5, 10, or 20 per cent solutions, as an additional diuretic agent. I have never seen any harmful effect from its use.

In cases of nephrosis in which the serum protein is low and in which the renal function is adequate, it is advisable to build up the serum protein with a high protein diet of from 75 to 150 gm. of protein a day. If the basal metabolic rate is low it is well to try thyroid extract to raise it to near normal; this procedure has to be carefully supervised, however, and frequent metabolic determinations are necessary until the rate is adjusted.

In cases in which there is considerable pleural effusion or ascites, or both, it is often advisable to aspirate excess fluid. This can be done quite safely and will afford considerable relief to the patient.

Watching the daily weight of the patient and careful measurements of the intake and output of fluid are the best guides to the results of treatment.

THE MANUFACTURE AND STORAGE OF DRUGS IN INDIA PROFESSOR SCHROFF ON THE DANGER OF PRESENT METHODS.

BY D. M. MAJUMDAR,

Assistant Secretary, United Provinces Pharmaceutical Society.

Under the joint auspices of the U.P. Pharmaceutical Association and the Benares Hindu University Pharmaceutical Society, Professor M. L. Schroff recently delivered an illuminating lecture on the "Manufacture and Storage of Drugs in India." Captain S.K. Chowdhury occupied the chair.

Professor Schroff dealt at length with the drug trade in India. He said that India still depended on foreign countries for her supply of drugs. About two crores worth of drugs alone (exclusive of chemicals and narcotics) were imported into India annually and out of these a great many were of doubtful value and not an insignificant number quite useless. Some Indian concerns were also well known to be selling spurious drugs under fictitious European names.

As regards the manufacture of drugs in India, he described the condition as very pitiable. None, he said, of the Indian concerns had a qualified Pharmaceutical Chemist on its staff and hence the manufacture of drugs was in the hands of persons who, while possibly knowing the art of Pharmacy, were quite ignorant of Pharmaceutical science. This accounted for some of the preparations of even the most reputable firms being of doubtful value.

Continuing, Professor Schroff gave examples and said that the manufacture of Liquid Extract of Belladonna, Liquid Extract of Hyoscyamus, Liquid Extract of Ergot and many other preparations was carried out on unscientific lines. Further, he pointed out that the Pharmaceutical concerns in Delhi, Lahore, Lucknow, Cawnpore and elsewhere had no arrangements for the standardisation of drugs and hence the medicinal preparations manufactured by these firms should be taken or administered with caution. He even went on to say that these concerns did not seem to want to employ qualified men as such standardisation of drugs would deprive them of some of their profits.

Coming to the storage of drugs, Professor Schroff condemned the methods of storage as unscientific, definitely harmful, and obsolete. Drugs manufactured by the most up-to-date scientific methods could retain their potency under the storage conditions generally prevailing in India. It was partly due to this fact that persons suffering from various diseases improved when they went abroad for treatment, whereas the same medicines did not do them any good in India.

He described the storage of some of the Biological products and demonstrated beyond the least doubt that the efficacy of a great many medicines was due to the bad storage conditions. He said, "Vaccine lymph is stable for long periods only when stored below 0° C., above this temperature its potency is definitely maintained for relatively short periods for three months with storage at 0-5° C., for one month at 5-10° C., and one week above 10° C. From this it will be clear to all that when one is vaccinated here, where the average temperature is between 25-35° C., we do not know whether we are being vaccinated with a useless vaccine or a potent one. Similar considerations hold good for various sera, antitoxins, etc., and if these preparations are left over unsold during the summer months one can well imagine the kind of injections he is getting. When we know that cholera, typhoid, plague, etc., are more likely to occur during the summer months than the vaccines for the same have to be stored during summer months and in India every Medical Hall tries to exhibit such preparations under conditions decidedly detrimental to the efficacy of these drugs.

Professor Schroff then described the storage of vitamin preparations which should be kept in a cool place protected from light and

remarked that he found, to his surprise, even the big drug stores in Calcutta were ignorant of these elementary facts. He quoted a case where he discovered that Haliverol was being sold in the market with the rubber cap dissolved in the vitamin solution due to heat.

Regarding Hormone preparations he said that there is a time limit for the use of these and beyond that time the efficacy may be destroyed and in this connection he detected at Mussorie in one of the largest drug stores there that pituitary preparations were sold two years after they were time barred, i.e., preparations which are not to be sold after August 1932, were sold even in June, 1934. Again he quoted a case from Cawnpore where a proprietor of a burnt drug store sold his spoiled stock to a Patna merchant for sale as fresh and new preparations. Cases from Benares were also mentioned, all of which were to the detriment of the drug trade in India.

In conclusion he appealed to the Government to enact Pharmacy and Drugs Act on the lines recommended by the Drugs Enquiry Committee and declared there was an urgent need of creating a strong public opinion on the lines indicated above so that suffering humanity may be saved from the clutches of unscrupulous manufacturers and ignorant distributors.

Captain Chowdhury (chairman) agreed with Professor Schroff in what the latter described regarding the drug trade in India. On an invitation from the Chairman to deliver a lecture before the Benares Medical Association, Professor Schroff agreed to do so. The Chairman said that he often found the Hyoscyamus preparations not yielding results expected of them. Now he saw the reason for the inefficacy. He also felt that it was time that the Government took action and enacted a suitable Act. Such an Act would be a boon not only to humanity as a whole, but also to the Medical Profession, as it would place at their disposal drugs of standard quality.

(*Indian and Eastern Druggist Vol. XVII, No. 11, Nov. 1936.*)

CHOLECYSTITIS

By E. F. ROOT, M.D.

Salt Lake City.

The title of this paper is somewhat misleading, for cholecystitis is only part of a syndrome. It does not occur as a distinct and independent entity. Always the entire biliary tree and perhaps more or less of the endocrine glands are involved.

The liver is the largest and one of the most important organs of the body. Whatever affects the liver in any way must have some effect on the body as a whole and on the surrounding structures. The gall bladder contains a portion of the bile and would necessarily be affected by any departure from normal; also it must be affected by abnormal conditions of adjacent organs. The gall bladder is the only reservoir for the output of the liver except the small amount

in the hepatic ducts. Bile is not a continuous product of the liver but is only secreted as it is needed, just as the gastric secretion is produced only as it is stimulated by the presence of food. Digestion begins when the partly digested meal begins to come over into the duodenum. It then continues until the stomach has emptied. The gall bladder holds a small amount in reserve to start digestion which is then taken up by the liver and is probably secreted exclusively from the liver through the hepatic ducts. Pancreatic secretion begins simultaneously with the bile flow. The stomach, the pancreas and liver contribute their part to digestion, assimilation, and excretion. So whatever upsets the normal function of these most important organs must profoundly affect the general state of health.

Dr. Crile, in his thesis on life, makes the brain the positive and the liver the negative. If he is right the liver sustains as much a function as the brain. The brain is a well protected organ encased in bone and suspended in a waterbed. The liver is equally well protected, but it is more exposed to damage from other organs, notably the stomach and duodenum. Any injury by trauma or disease of the stomach or duodenum must be reflected to the liver.

When often we have ulcer or some disease of the stomach or duodenum and forget to look further to determine whether the liver is functioning normally. Also a great deal of the suspected stomach or duodenal disease is only or primarily disease of the liver or of the gall bladder. Gastric disturbances, nausea vomiting, pain in the epigastrium, headache, the so-called migraine, constipation, flatulence, etc., are more often due to liver disfunction or gall bladder disease than we have been willing to admit. Without positive evidence of ulcer of the stomach or duodenum one should suspect and look for gall bladder disease. Pain from obstructed bile, either in the gall bladder or ducts, is often in the pit of the stomach. It is asked why I have not put emphasis on the pains of appendicitis. The reason is that most cases of appendicitis can be differentiated except the unrotated appendix that lies next to the gall bladder. It does not matter, as operation is demanded.

Anything causing disturbance or inflammation of the gall bladder causes some disturbance of the adjacent organs. A badly diseased gall bladder usually becomes adherent to whatever is in contact with it. Most of the upper abdominal organs may become more or less grown into one mass of adhesions. An ulcer in the wall of the end of the stomach or duodenum, or a neoplasm of the duodenum may cause a general inflammation of the upper quadrant and involve the liver and incarcerate the gall bladder. Subphrenic abscess sometimes begins from an inflamed or abscessed gall bladder. Peritonitis with effusion on the right side may perforate and

cause abscess below, but this should be diagnosed from the history and x-ray findings.

I believe it can be laid down, as a rule, that stones in gall bladder are always preceded by cholecystitis. Cholecystitis causes swelling of the mucosa, consequently slowing of the bile flow. Bile in the gall bladder is more concentrated and less fluid than bile flowing in the ducts freshly secreted. Bile stasis forms into cholesterol masses, which form a nucleus for gall stones.

Acute cholecystitis is liable to close the cystic duct by swelling, thus ending in an empyema of the gall bladder. This empyema of the gall bladder without stone will persist until released by drainage or cholecystectomy. An old case of empyema causes gastric symptoms as well as general malaise, so much so that it is hard sometimes to differentiate it from disease of the stomach itself. These cases call for complete gastro-intestinal x-ray examination, including cholecystography. If this is done and no pathology is found and the gall bladder does not show, one is certain that the organ is closed and a diagnosis of empyema is practically assured. Of course when diagnosis is established one would not hesitate to operate, as that offers the only means of relief. This means cholecystectomy in most cases. Occasionally one might wish to use the remains of the gall bladder for a drain tube, these cases have gone too far to expect a functioning gall bladder.

A new or simple cholecystitis may sometimes be relieved by the so-called medical drainage. This is simply relaxing the muscle spasm and stimulating bile flow by concentrated doses of sulphate of magnesium. This treatment is also effective in assisting the passage of small stones through the common duct.

After stasis of the bile and gall bladder empties poorly, one must expect gallstones. Stones in the gall bladder that are small enough to engage in the cystic and common ducts cause the gallstone colic that is so characteristic that a "snapshot" diagnosis can often be made. The larger ones cause only general malaise and seldom come to operation excepting where pressure is caused on the cystic or common duct. Occasionally the gall bladder becomes so over-distended with stones or stones and detritus that it stops bile flow by pressure on the ducts and cutting off the blood supply, with consequent death of the parts.

Frequently the ampulla of the gall bladder at the cystic duct holds a stone that becomes imbedded and occludes the artery and cystic duct. This causes death of the gall bladder, and calls for operation or a general toxemia and peritonitis ensue.

Calculi may form in any or many ducts of the liver. This is probably due to a general dysfunction of the liver and slowing of the bile stream. The stones we find at operation are almost entirely either in the gall bladder or common duct or both. Lahe says that in 10 per

cent of cases of gallstones, stones are in the common duct. These are not always palpable. He advises opening the duct and exploring with a probe if in doubt. Stones within the lumen of the common duct, or if found in an hepatic duct, should be taken out by incision. Then the incision may be closed by suture if easily accessible. I have no objection to leaving the incision open to drain if the approach is difficult. The most common place to find stones in the common duct is at the ampulla of Vater. These are usually difficult to dislodge and force through the sphincter. Stone in this position or anywhere in a duct must be removed or the operation fails to cure the pains and pathology. As you know, the ampulla and opening of the common duct lies behind the duodenum and is hard of approach, but the stone must be removed. If direct approach and incision seem too difficult, I do not advise approach through the duodenum. That is a difficult operation and is sure to cause infection.

B. Schiassi of Vienna is an advocate of conservation of the gall bladder and ducts in cases of stone when the damage is not great to the mucosa. In case of great difficulty in removing stone from the duct, and especially from the ampulla, ether may be injected to soften the cholesterol, thus emulsifying the stone and the bile pressure will carry it on. This little procedure is, I think, very much worth while. A case in point is that of a woman sixty years old with pancreatitis—emaciated, jaundiced, with constipation and vomiting. Operation revealed a long narrow gall bladder, perfectly hard as though it contained a single concretion. This was pressing deep on the common duct and pancreas. I decided to save the remains of the gall bladder for a drain. It was very difficult to dig out the mass of dry stones and impossible to move the last bit in the cystic duct. A rubber tube was put into the old sac. There was no pathology of stomach or duodenum. The head of pancreas was two and one-half inches in diameter. Wound was closed with wick drain. Ether was put in through the tube daily for three days. The wound healed and the gall bladder sloughed and came out intact. Bowels began moving spontaneously or by light laxative within a few days. This case would have recovered without ether, but on account of completely opening the ducts I am quite sure the ether cleared the way rapidly.

Aside from neoplasm, pancreatitis is almost wholly dependent upon stasis. Blocking of the pancreatic duct can occur from infection or external pressure. In any disturbance of liver function there is a corresponding pancreatic disturbance.

Acute jaundice is caused by complete or nearly complete closure of the common duct. This is never permanent unless caused by neoplastic or other complete occlusion of the common duct. But given a permanent jaundice or bronzing, a diagnosis of malignancy is usually justified. I know of no cause of a permanent occlusion without neoplasm excepting by severance or damage at operation. Unrelieved

this must prove fatal within a short time. One of the characteristic diagnostic clinical signs is jaundice more or less and an intense itching. The suffering from the itching is often insupportable and uncontrollable. Every part of the body is itchy. The urine becomes very dark, sometimes blood red, the stools and the skin colored anywhere from bright yellow to black. All this can be relieved if the obstruction can be relieved.

When the common duct has been obliterated one may try to pass it way back into the duodenum. I do not approve of opening the gall bladder into the stomach or duodenum. There may be cases where such a compromise is justifiable. The liver is almost certain.

When the duct is blocked the bile pressure causes it to dilate. A large one or the dilated common duct can be used as the beginning of a new duct. This operation has been tried when there was very little literature on the subject. It had been tried, but none had sufficient merit to survive. The first case antedated any reported case, but it is due to L. that this operation came into prominence. In his address for the American College of Surgeons, he detailed seven cases so operated. I have done this operation. The operation is as follows:

The exposure is in the usual way. In every case through scar tissue, adhesions, and distorted organs. The anatomy identified, a good exposure of the duodenum made, then a search for the common or larger hepatic duct. A medium sized rubber catheter is then passed into it. This is done by the R. C. Coffee method to insure a tight action, to prevent fluids, gases, etc., from infecting the liver. This is not stitched to the gut for it is necessary to have nothing pulling. The free end of the catheter is then carried through the duct and carried back as far as convenient. The wound is made water tight, to the duct by chromic gut. The wound is closed and a proper blood drain inserted. Bile will flow through the temporary drain and in time a permanent duct will form. The permanent duct remains patent and functioning for the reason that it has completely epithelialized and is not scar tissue. If it were just scar tissue, it would be obliterated in time.

The only original thing I claim, or Doctor McArthur, in this operation, was using an entire length catheter, fastened to the duct and hanging down into the duodenum. This tube will finally loosen and pass the bowel. Others had used a short tube, but results do not justify it. The short tube, if it does not pass, it remains as a foreign body and an infection.

Finally I wish to emphasize the importance of complete drainage in apparently gastric cases. Do not be satisfied with

indigestion, but look for and find the cause if possible. Most of the early cases are amenable to treatment, but allowed to go on they become surgical.

(*Colorado Medicine* Vol. 33, No. 1, Jan. 1936.)

Extracts

THE FACIES IN CARDIAC DISEASE.

F. A. WILLIUS, M. D., *Section on Cardiology*: The appearance presented by patients suffering from cardiac disease varies widely, yet under certain conditions a careful scrutiny of the facies discloses evidence that is of great value in the diagnosis of the type of lesion. The physician of past generations was a master in the interpretation of signs revealed to him by the sense of sight. His diagnostic armamentarium was limited to the skillful utilization of his five senses, so that perhaps he was more adept with his limited methods than physicians are to-day, with numerous diagnostic accessories at their command.

In cases of long standing mitral stenosis the facies frequently reveal the existence of the lesion clearly vividly to those who carefully interpret what they see. A cyanotic flush of the malar eminences occurs, and frequently is associated with dilated capillaries in the skin in this region. At times the flushing is without the cyanotic hue; at first glance, it gives the impression that the patient has rosy cheeks. However, closer inspection will show that the cheeks are not flushed but that the malar prominences are the seat of increased color.

In advanced aortic stenosis and aortic insufficiency, a central pallor or sallow appearance of the face at times occurs, which frequently is exaggerated by the occurrence of well-marked cyanosis of the lips. The patient often has an expression, particularly when orthopnea is present.

Another condition in which the facies may present rather characteristic features is coronary thrombosis. In this condition, an extremely anxious expression of the face may occur. This is associated with a peculiar ashen pallor which usually is not limited to the central portion of the face.

The patient with congestive heart failure frequently presents a facial appearance which is quite characteristic of the existent disturbances in circulation. There usually is a rather diffuse puffiness of the face and head, which is associated with varying degrees of cyanosis. The soft tissues are not palpably edematous nor are there fluid pouches under the eyes, but the face and head give a congested appearance as though the return circulation is impeded. Following treatment and the mobilization of retained tissue fluid, the normal features of the patients are restored and a striking contrast from their appearance at the time of admission is noted.

Thus, attention is again called to some simple observations that are of practical value in daily contacts with patients afflicted with heart disease.

(*The Mayo Clinic* Vol. II, No. 47, Sept. 30, 1936.)

METHOD OF ESTIMATING BLOOD PRESSURE.

While the examiner palpates the brachial artery below the cuff with the left hand, the pressure is raised with the bulb until no beats can be felt. The stethoscope is then applied lightly over the artery at the bend of the elbow while the pressure in the cuff is slowly let down until sounds are heard. The normal variations in pressure occurring with respiration are such that at certain level of cuff pressure two or three beats may be heard followed by a brief silence and then a repetition. The systolic blood pressure is taken clinically to be the level below these respiratory variations where all the beats first come through. There is no difficulty in determining this point when the heart beat is regular, provided the stethoscope is accurately placed over the vessel.

As the pressure is further reduced in the cuff the sound changes from a clear tapping to a more prolonged murmur with each beat, and then again becomes sharp and clear and louder than at first. Suddenly this loud tapping sound disappears and is followed by a feeble muffled murmur. The clear cut point of change between these two, i.e., at the point of disappearance of the last clear tapping sound, is taken as the diastolic pressure.

It is important that the column of mercury should be allowed to descend slowly point by point in order to read accurately the level at which the "snappy" sound changes. The passage from one sound to the other should be repeated two or three times if necessary until it is quite certain that accuracy has been reached.

(REGINALD HILTON, M.A., M.D., F.R.C.P. *The Practitioner*.—June 1936.)

Medical News and Notes

TINNEVELLY MEDICAL ASSOCIATION. The Tinnevely District Medical Association held its monthly meeting on 24th December at the Government Training School, Koilpatti. Members numbering 25 including two women doctors were present on the occasion.

After tea and music, the meeting began under the presidentship of Lieut. Col. T. S. Shastry, at 6 p.m. The Secretary read the minutes of the monthly meeting held at the headquarters on 21st November 1936, which were passed. The following clinical cases were demonstrated:—A case of faecal fistula, a case of osteomyelitis, great trochanter, femur of a boy, a case of dermoid cyst of ovary and fibroid uterus (suspicious of Malignancy). The notes on the cases operated on by Lieut.—Col. T. S. Shastry, at the Government Headquarters Hospital, Palamcottah, were read by Dr. P. S. Srinivasan,

Sub-Assistant Surgeon of the Palamcottah Hospital. Dr. Miss A. Lazarus read case notes of some other operations by Lieut.—Col. T. S. Shastry, at the Government Women and Children Hospital, Vannarpet. The President offered his remarks on the important features of all the cases. He thanked the Headmaster of the school for placing the school halls at the disposal of the Association for holding the meeting. He also thanked Dr. T. R. Ramachandran, L.M.P., for the arrangements. In connection with the meeting, a Health Exhibition was also arranged at the Loyal Mills, at Koilpatti, for the benefit of labourers. Dr. Shastry explained how to prevent disease and what steps should be taken. Mr. Ashworth, Manager of the Mills, in declaring the Exhibition open, dwelt on the usefulness of such functions.

THE COIMBATORE MEDICAL ASSOCIATION. The 11th annual meeting of the above association was held in the premises of the Moses Gnanabharanam Eye Hospital, Coimbatore on the 5th December 1936. After a group photo at 5 p.m. the general body met under the Presidency of Dr. C. N. Ananta Ranga Rao. The Annual Report was read and adopted, and new office bearers for the coming year were elected. Dr. Rao Sahib Y. P. Vasudevan was elected President.

Resolutions appreciating the services of the Patron, the outgoing President and Secretary were placed on record. A resolution of condolence on the sudden demise of Dr. M. K. Sambasivan of Kumbakonam was passed the members standing. A donation list for funds for the Association to have a building of its own was opened, and about Rs. 700 subscribed on the spot. There was a musical entertainment after this which was followed by a Dinner. There was a large attendance, and the gathering dispersed after a pleasant time.

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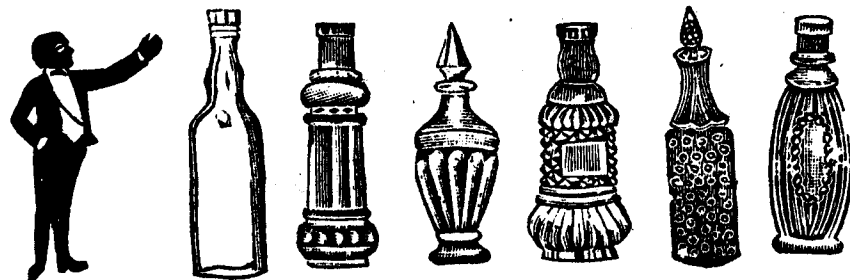
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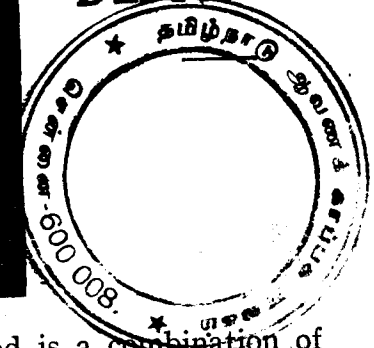
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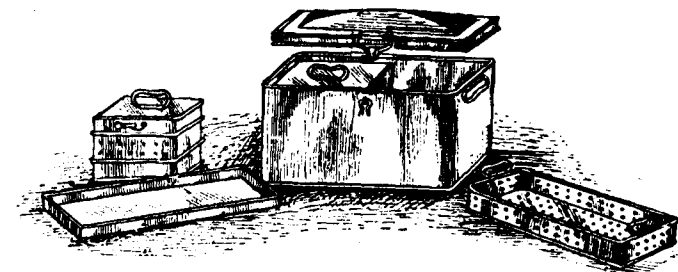
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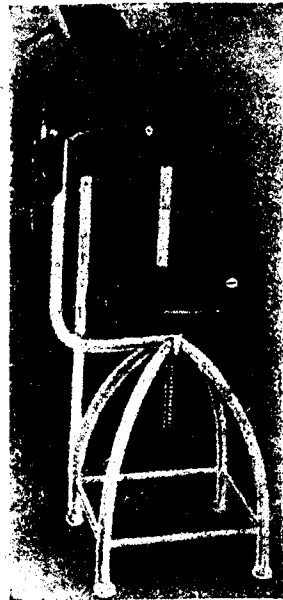
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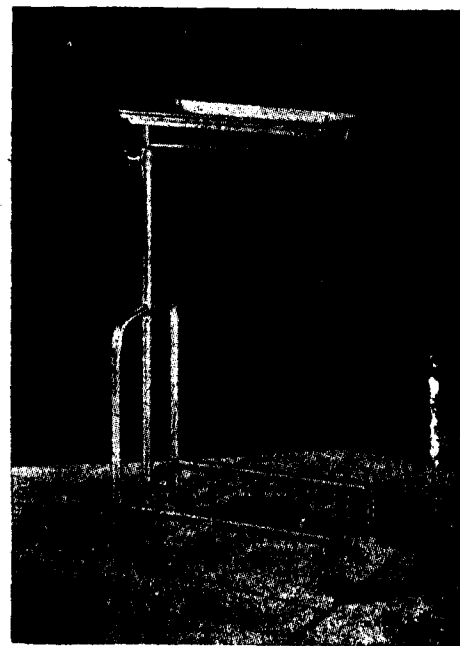
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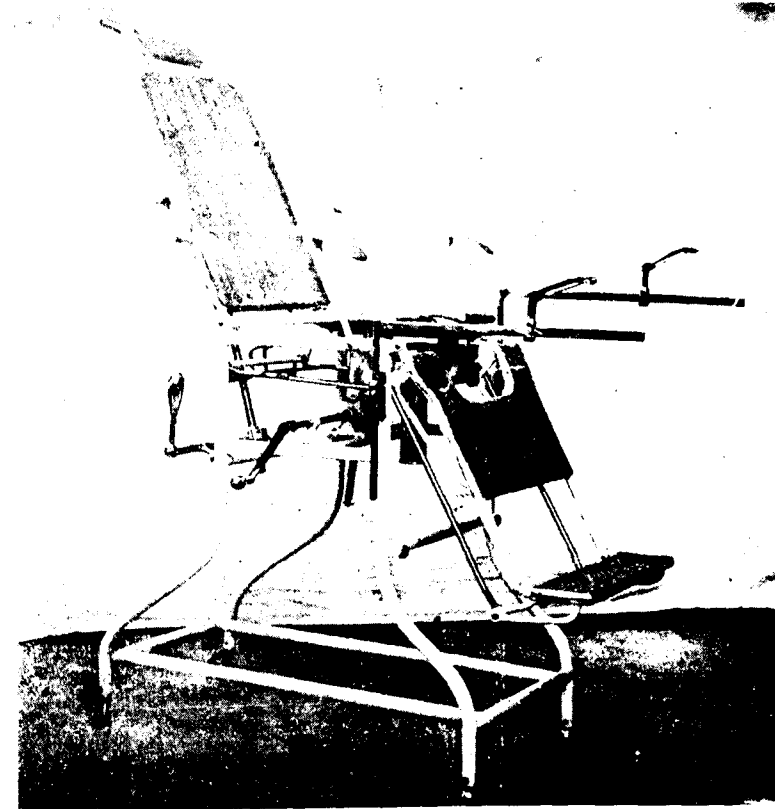
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