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Original Article.

*THE MODERN TREATMENT OF PYORRHOEA ALVEOLARIS (PARODONTOSIS.)

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Pyorrhoea Alveolaris is a disease which manifests itself in the form of a vicious cycle involving the tooth and its adjacent articulating tissues. The pathologic disturbances are primarily confined to the latter structures; the presence of the tooth is merely a necessary incident in the completion of the anatomical and functional entity of the parodontium. With the loss of the tooth the parodontium ceases to exist; it is absorbed and, simultaneously, the disease is eradicated.

Causative Factors.

The causative factors of Pyerrhoea Alveolaris may be summarised as follows. Two outstanding incentives are responsible for this disease. First, an abnormal occlusal stress is present which causes an overstrain of the articulating tissues of the affected teeth, and second, the vitality of these articulating tissues is lowered by a co-existing disease to such an extent that they have lost their resistance to normal or even subnormal occlusal stress. Lowered by general disturbance within the paradental tissues may be caused by local or initial lesion of Pyorrhoea Alveolaris reveals itself in the rontgenogram as a diffuse atrophy of the involved alveolar process. All other symptoms are more or less necessary, but they are secondary manifestations.

As a logical sequence, the selection of the method of treatment of pyorrhoea alveolaris must be based upon the early recognition of its causative factors and the correct interpretation of the manifested clinical symptoms. Therefore the rational treatment of this disease resolves itself into :

1. Preliminary sanitation of the oral cavity.
2. Surgical procedures.
3. Etiotropic and organotropic medication.

* Exclusively contributed to Medico-Surgical Suggestions.

4. Prosthetic restorations.
5. Prophylaxis.

It is quite impossible in routine clinical practice to rely specifically on one method of therapy. The best results are always obtained by the judicious interlocking of such procedures of individual treatment as are indicated for the case on hand. Pyorrhoea Alveolaris is never cured by a specific drug alone or by a drug compound, or by a vaccine, or by a special method of surgical or physical thereapy.

Specific Instrumentation.

The removal of subgingival calculus and granulation tissues from the pyorrhoeic pocket by a well qualified Dentist resolves itself into two basic phases, *i. e*, chemical procedures to assist in the ready disintegration and displacement of the organic and inorganic detritus and instrumentation applied for the purpose of disposing of the debris.

The mechanical removal of the concretions from the pocket, which is usually referred to as curettage, is accomplished with steel instruments. The instruments are known as scalers, and according to the form of their cutting edge they are designated as chisels, hoes, curettes and files.

The selection of a proper set of instruments by the individual operator for the specific purpose of curetting the pyorrhoeic pockets will always remain a matter of personal equation. As the field of operation is never exposed to view, the instrument must visualise to the fingers holding it the condition of the surface over which it passes.

Local Medicinal Treatment.

The local medicinal treatment of Pyorrhoea Alveolaris has for its object primarily the elimination of those contributory factors which cause suppuration and, secondly, the cauterisation of the granulation tissue within the pocket.

For the elimination of the ever-present endamoeba buccalis and other parasites from the pocket, the application of a 0.5 to 1 per cent. solution of emetine hydrochloride is recommended.

The preliminary emetine hydrochloride treatment should be followed by the application of caustic agents for the purpose of destroying the ever-present granulation tissues. To enumerate all of the various chemicals which have been recommended for this purpose in the past would be quite impossible at this moment. Let it suffice to say that a more or less concentrated solution of silver nitrate, an 8 per cent. solution of zinc chloride, and copper sulphate in substance are the drugs of choice. I prefer copper sulphate to any other drug for this purpose. To obtain the best results the chemical should be applied in the form of the very finest powder, freshly made into a thick paste with water, or, still better, with an 8 per cent.

solution of zinc chloride on a glass slab. By means of an iridio-platinum applicator a small quantity of this paste is taken up, transferred to the previously washed out and superficially dried pocket, and, with a wiping motion, deposited at its very bottom. Zinc chloride in an 8 per cent. solution as a vehicle is a most desirable agent for this purpose, as in this concentration it will cauterise only diseased tissue. The paste must be prepared fresh at the time of its application. A ready-made mixture cannot be employed, as recrystallisation of the copper sulphate will take place, forming hard, sharp crystals which will lacerate the delicate tissues within the pocket. The pocket should be temporarily sealed with veseline, a thin chloropercha solution, elastic collodion or some wound varnish. Care must be exercised not to let any of the copper sulphate be swallowed, as it acts a very prompt emetic.

Testing the pocket.

The entire gum tissue is now painted with Talbot's iodine solution for the purpose of stimulating the relaxed soft structures and the patient is dismissed for three or four days. At the next appointment the pocket is thoroughly washed out, superficially dried and tested by coating its inner surface with the 8 per cent. zinc chloride solution. If the pocket assumes a milk-white colour, it is an indication that ramnants of granulation tissues are still present. This being the case, the copper sulphate zinc chloride treatment is repeated. From three to five treatments are usually required to obtain satisfactory results. If by this time the pocket has not sufficiently shrunk, surgical procedures for its removal are indicated.

Surgical Treatment.

In spite of the most careful mechanico-chemical disposal of the granulation tissue from the *cul-de-sac* by curettage, it will be found that in many instances these methods have failed to bring about the desired results, i.e., the obliteration of the pocket. It will be observed that in such cases the pockets are usually more than 5 mm. indepth and that the failure of resolution is due to the physical impossibility of keeping the *cul-de-sac* free from infection. As a consequence, the resection of that part of the gum margin which constitutes one wall of the pocket by means of the knife or by the actual cautery has been advocated within recent years.

Gingivectomy.

The operation of gingivectomy of ulectomy as it is occasionally referred to may be briefly described as follows. Sanitation of the oral cavity prior to the intended operation is absolutely imperative; i.e., supergingival tartar is carefully removed; useless teeth and roots are extracted, and preferably by means of compressed air the pockets and interproximalspaces about the teeth are thoroughly cleansed with a warm mild alkaline solution containing suitable quantities of the official hydrogen peroxide. The gum tissue to be exised

is locally anaesthetised with a 1½ per cent. novocain solution and by means of suitably shaped straight and curved lancets and shears, it is cut away up to the very margin of the alveolar process on the bucco-labial and on the palato—lingual surfaces, care being exercised to festoon the gum edges over the teeth and completely to clear the interproximal spaces. The cutting should be inserted at a right angle to the long axis of the tooth.

The number of teeth to be included in one operation is largely dependent upon the individual case I prefer to include from one to five, even eight teeth, i.e., one half of one jaw, but never more. This will allow sufficient sound gum tissue on the other side of the jaw for the comfortable chewing of food.

Post-operative Treatment.

Curettage of the alveolar bone is only very rarely attempted, the preservation of every particle of osseous tissue being essential for the future resolution of the affected alveolar process. Every trace of tartar which now may become visible upon the exposed roots should be carefully removed. The placing of interproximal sutures for holding the gum tissue is necessary. The post operative treatment consists in daily packing the interproximal spaces with spunge or gauze, saturated with a 10 per cent. solution of argyrol or protargol.

Within about two weeks the new gum tissue will have completely encircled the involved teeth Daily care of the mouth by using a mild antiseptic wash must be insisted upon.

Internal Medicinal Treatment.

Regarding the general hygienic care of the patient, attention should be paid to the prompt elimination of waste products, hence the drinking of copious quantities of water is advisable. Since with advancing age the amount of carbon dioxide produced by the connective tissue cells is gradually reduced, especially in those subjects which show an indication of acidosis, and thereby the output of calcium is increased, the drinking of carbonated or mildly alkaline water is to be recommended. Without entering at this moment into a discussion of the therapeutic action of alkaline waters, in itself a most complicated subject, the fact remains that they exercise a beneficial influence on the carbon dioxide tension of the blood. As a consequence, the output of calcium salts by the urine and incidentally, by the saliva is restricted to normal bounds and the tendency to tartar deposition is diminished. The alkaline waters may be of the natural or artificial. Vichy type or it may be in the form of some convenient commercial saline mixture, as citro-carbonate, etc. A level teaspoonful of this latter salt placed in a large glass filled with cold water and drunk during effervescence serves the purpose well. It may be taken once every other day, between meals.

As a matter of clinical observation, it has been noted that a genuine pyorrhoea is often favourably influenced by taking the "cure" at certain mineral spas.

In addition, regulation of the intestinal tract to avoid stasis, constipation and auto-intoxication, which, as claimed by medical authorities, is the fundamental cause of 95 per cent of disease and which is also very common in the genuine type of pyorrhoea alveolaris, must be carefully attended to. Bowel movements, by which regular and thorough evacuation is assured, are largely produced and maintained by mechanical means. Hence, the importance of an increase of the bulk of intestinal refuse by eating large quantities of vegetables which contain roughage, such as raw apples, whole-wheat bread, etc Chronic constipation as well as the presence of other general diseases which may materially retard the treatment of pyorrhoea alveolaris as instituted by the Dental Surgeon are matters which belong to the domain of the medical practitioner; consequently his co-operation in these cases should always be solicited.

Dietary Measures.

At the outset it should be understood that the term "dietary measures" as used by me in its relationship to the treatment of pyorrhoea alveolaris restricts itself to the physical nature of the food and not to its caloric value or its vitamin contents.

The foodstuffs as related to our subject may be classified into non cleansing and cleansing substances. In general it may be stated that farinaceous and sugary foods are usually without fibrous element.

Examples:—Sweet biscuits and cake, bread and marmalade; bread and jam, new bread without crust; bread soaked in milk; milk puddings, porridge and milk; preserved fruits, chocolates and sweets of all kinds; honey.

These foods should not be eaten except when followed byfoods of the cleansing kind. Cleansing and fibrous foods, in general are:

Fish, meat, bacon, poultry; uncooked vegetables, lettuce, cress, radish, celery. Cooked vegetables are as a rule cleansing, but in a less degree than uncooked vegetables, stale bread with crust; toasted bread of all kinds; whole-wheat bread, pulled bread, cheese; savouries; fresh fruits; especially those requiring mastication, i.e., apples, fatty foods, i.e, primarily butter.

Post-operative Suggestions.

Very little need be added to what has been said above in regard to dietary measures. Careful instructions in regard to proper carrying out of these suggestions, including prophylactic care, should be given to the patient, and his intelligent co-operation in the exercise of the daily hygiene of the oral cavity should be earnestly solicited.

Depending upon the severity of the condition present he should be instructed to call for further inspection of his mouth at stated intervals.

THE USE OF EXPECTORANTS.

Charles L. Brown, in an article on this in "J.A.M.A." for July 24, 1937, defines an expectorant as a medicine which aides in the removal of mucus or exudate from the lungs, bronchi and trachea. This action may be accomplished by causing a more active secretion, or by making the sputum more liquid or less tenacious. Another means of removal of sputum would be to stimulate the act of coughing, but this is seldom necessary or wise except in unusual states of debility in which large accumulations of sputum may actually imperil the patient. Often such a method would result in an expenditure of precious energy, and if possible aspiration should be employed instead. Coughing is nature's most efficient method of raising and ejecting sputum, and in some instances in which coughing is excessive, therapy must aim at controlling this act to allow the patient physical and mental rest, and allow coughing at a time when it can be most efficacious.

To cough is to expel air, mucus or exudate from the lungs or air passages in a noisy, violent manner. When the respiratory mucosa is irritated by congestion, exudate or for some other reason, the nerve fibres transmit the impulse to the respiratory centre and the rather complex act of coughing is excited. Deep inspiration occurs, the glottis closes, and forced expiration is made. When the pressure becomes great enough to open the glottis, the sudden change in pressure is attended by the expulsion of a blast of air which characterizes the cough. If mucus or exudate is present in the lower respiratory tract it may be ejected with the air and the cough is "productive." If little or no exudate is present, or no sputum can be raised because of tenaciousness or for other reasons, the cough is said to be "dry" or unproductive."

In respiratory tract disease in which bronchial obstruction, diffuse or localized, is a part of the picture, there is a derangement of intrapulmonic and intrapleural pressures, the extreme of which is found in pulmonary emphysema. Mucus or exudate may cause partial bronchial obstruction to both inspiration and expiration. The forces of expiration are not as great as those of inspiration, and emphysema results from the accumulation of air in the alveoli and overdistension of their walls. Efforts to inspire air past the obstruction may be attended by increased negative intrapleural pressure, but if expiration

is impeded greatly, as in obstructive emphysema, intrapleural pressure becomes elevated positively. In coughing, the forced expiration is accompanied by increased intrapulmonary pressure and elevated intrapleural pressure, simulating transiently the pressure changes found in emphysema, and, therefore, frequent prolonged unproductive coughing may be harmful. Since obstruction due to bronchial spasm or accumulation of sputum may respond to medication, these factors should be carefully evaluated in the selection of expectorants.

Indications for expectorants most often arise in inflammatory conditions of the lungs and larger air passages, and since the same expectorant may not be efficient or advisable in the different stages of the disease, the proper selection depends on a thorough understanding of the underlying pathologic condition. In allergic manifestations, as bronchial asthma and asthmatic bronchitis, the degree of bronchial spasm and the character of the accumulated secretion serve as excellent guides in the choice of therapy. The clinical interpretation of the pathologic process is aided greatly by the close observation of the type of cough and expectoration. Furthermore, the art and science of the prescribing of expectorants is dependant on appraisal of the type of cough, the character of the sputum, and the correlation with the stages and clinical features of the causative disease. Four rather distinct types of cough may be recognized: the hacking, irritative unproductive cough the "tight" cough with scanty or tenacious sputum, the wheezy, squeaking cough, which may be either dry or productive, and the "loose," cough with abundant sputum. In consideration of the subject under discussion, sputum has three main constituents, water, mucus and purulent exudate, and in the individual case it is necessary to evaluate the relative proportions of these components. In the early congestive stage of acute tracheitis, and bronchitis, the cough is of the hacking, irritative, unproductive type. After a few hours or even as much as from one to three days later it may become a "tight" cough with scanty or tenacious mucoid sputum. In some cases of acute bronchitis, the squeaking, wheezing cough develops. Later in the disease the sputum becomes more abundant and mucopurulent and the cough loose. Bronchopneumonia may provide a similar change in the cough and sputum. Lobar pneumonia often has a type of cough and sputum characteristic of the disease, but generally the early stage has a tight grunting cough with a scanty, more tenacious mucopurulent and rusty sputum, while in the later stages the cough is loose and there is abundant, more purulent, sputum. Chronic bronchitis produces a thicker mucopurulent sputum, which at times is tight, at other times loose, depending on the abundance of the sputum, on the relative amounts of pus and mucus, and on associated bronchial spasm, and at times, the cough may have a wheezy character. The cough of congestive heart failure is often rather unproductive until

secondary infection in the bronchi or lungs appears; then it simulates that of chronic bronchitis. If pulmonary œdema occurs, the sputum is abundant, watery and frothy, and may be blood tinged. The wheezing, squeaking cough is characteristic of bronchial obstruction, and is the type found in asthma and asthmatic bronchitis, and here the sputum is scant at first, later more abundant, and is tenacious and contains varying amounts of mucus and pus, depending on an associated bronchitis. In chronic pulmonary disease a loose cough with abundant purulent sputum usually means pulmonary suppuration with cavity, such as lung abscess, suppurative pneumonitis or bronchiectasis. In the latter conditions, coughing occurs when the exudate reaches the irritable level in the air passages, since the deeper portions of the lungs are rather insensitive to stimulation; thus the reason for postural drainage in such cases. The odour of the sputum may be a very good index as to the prolonged retention in the suppurating area. Although older writings have described a characteristic cough and sputum of tuberculosis, it is now recognized that almost any of the types mentioned may be found in pulmonary tuberculosis, depending on the type of pathologic process present. As a general rule the appearance of gross blood in the sputum of chronic pulmonary disease calls for pulmonary rest.

Since the beginning of medicine the patient with a cough has expected and often demanded a "cough medicine" as part of the treatment. A review of old authoritative works on therapeutics reveals numerous drugs of one kind and another used for this purpose, a great many of them now obsolete, and provides an interesting historical background in therapy. Indeed, it would seem that the use of expectorants has been more of an art than a science

Usually an expectorant is classified as "stimulant" or "sedative," and Sollmann has included a third group, the "anodyne expectorants." Perhaps such a classification serves some useful purpose, although it is difficult to list accurately the expectorant drugs under these three headings. There is some confusion in the definition of these terms; for example, one medical dictionary defines a stimulant expectorant as one "used to expel secretions already formed"; one textbook on therapeutics refers to stimulant expectorants as those "which are largely excreted in the bronchial mucus and which check the secretion or modify its character in some obscure way"; Fantus defines this class of expectorants as "aromatic bodies that owe their virtue to elimination from the bronchial mucous membrane. Given in sufficient dosage, they possibly tend to favour healing by producing a curative hyperæmia." Bethea, referring to Sollmann's classification, gives a practical correlation and clinical guidance as follows:

Sedative Expectorants: They are intended to soothe the acute inflammation mainly by stimulating the secretion of protective

mucus. They may be nauseants, as ipecac; demulcents, as acacia or glycyrrhiza; salines, as ammonium chloride; alkalies, as ammonium carbonate. Irritant (stimulant) Expectorants: These are intended to irritate the mucous membranes in such a way as to stimulate repair. They also tend to diminish excessive secretion. Some of these are also called aromatic expectorants. Typical of this group are terpin hydrate and creosote. Anodyne Expectorants: These are intended to depress the excessive cough reflex. These tend usually to diminish secretion. Codeine is typical.

Accordingly, the expectorant drugs official in the U. S. Pharmacopeia XI may be listed as in the accompanying table.

EXPECTORANT DRUGS.

Sedative Expectorant—
- Ammonii Chloridum
- Ammonii Carbonas
- Liquor Ammonii Acetatis
- Potassii Acetas
- Potassii Citras
- Sodii Citras
- Syrupus Acidi Hydriodici
- Potassii Iodidum
- Calcii Iodobehenas
- Antimonii et Potassii Tartras
- Apomorphinæ Hydrochloridum
- Syrupus Ipecacuanhæ
- Mistura Opii et Glycyrrhizæ Composita (Brown Mixture)

Stimulant Expectorants—
- Creosotum
- Creosoti Carbonas
- Calcii Creosotas
- Guaicol
- Eucalyptol
- Oleum Eucalypti
- Oleum Picis Rectificatum (Oil of Tar)
- Syrupus Picis Pini
- Oleum Terebinthinæ
- Terebenum
- Terpini Hydras
- Oleum Pini Pumilionis
- Syrupus Scillæ

Anodynes—
- Morphinæ Sulfas
- Codeinæ Sulfas
- Codeinæ Phosphas
- Aethylmorpeinæ Hydrochloridum

Ammonium Chloride.—Ammonium chloride causes the sputum to be more fluid and less tenacious, and may increase the quantity. Therefore, it is useful in the "tight" cough accompanied by scanty or tenacious sputum, and this is most often seen in the acute and subacute inflammatory conditions (bronchitis and pneumonia) and asthma. Ammonium chloride is not indicated in the chronic stages when the sputum has become more abundant and easy to raise. Its effect does not last long, and it should therefore be given at frequent intervals, perhaps as often as every two hours, and usually the dose of 5 grains (0 3 gm.) is satisfactory. It should not be prescribed with alkali hydroxides or carbonates. The following vehicles are especially suitable for ammonium chloride: syrup of citric acid, syrup of cherry, syrup of wild cherry, syrup of acacia, syrup of tolu balsam and elixir of glycyrrhiza.

Ammonium Carbonate.—This drug has much the same indications as does ammonium chloride, although it is more irritating to the throat and stomach and in large doses may act as a nauseant. With regard to dosage and frequency of administration, it should be used in much the same way as ammonium chloride. It is incompatible with acids, and should not be prescribed with the syrups of acid reaction, such as those of citric acid, squill and ipecac. Although carbonates precipitate free alkaloids from aqueous solutions of most alkaloidal salts, codeine and atropine are not precipitated by ammonium carbonate.

Suitable vehicles for ammonium carbonate are syrup of acacia, elixir of glycyrrhiza and syrup of tolu balsam. Additional flavouring may be helpful in disguising the unpleasant taste, and for this purpose anise water, peppermint water and compound tincture of cardamom may be used.

Citrates and Acetates.—Although some of the citrates and acetates have been used in the acute respiratory infections for their diuretic and indirect alkalinizing effect, they have been listed also among the expectorants, especially in larger doses, by many physicians. Representative of this group of drugs are sodium and potassium citrates and solution of ammonium acetate and potassium acetate. When the citrates are to be used the sodium citrate is commonly chosen and should be given in doses of 15 grains (1 gm.) every two hours, taken with at least 3 ounces (90 cc.) of water. Either the sodium or the potassium citrate may be nicely prescribed in the syrup of citric acid or the syrup of orange. The acetates are somewhat less palatable, and two common representatives of this group are solution of ammonium acetate and potassium acetate. The solution of ammonium acetate (liquor ammonii acetatis) is made from ammonium carbonate and acetic acid, and should be used only when freshly prepared. The average dose is one-half ounce (15 cc.) and is best given in one of the aromatic waters and flavoured syrups. Peppermint is especially recommended as a flavour. If acetates are to be prescribed, potassium acetate in 15 to 30 grain (1 to 2 gm.) doses in one of the aromatic waters and flavouring syrups is recommended.

Iodides.—Fantus states that "iodide is the most powerful agent available for producing hyperæmia and exciting secretion of the respiratory mucous membrane," and "therefore it is contraindicated in acute bronchitis." By the same reasoning it is contraindicated in other acute forms of respiratory infection, such as the early stages of pneumonia. When the pathologic process is older and the sputum more tenacious, or in asthma or asthmatic bronchitis, the iodides may be very helpful. They are used against a thick sputum. Three official forms may be mentioned: potassium iodide, syrup of hydriodic acid, and calcium iodobehenate. The average doses given for these drugs are potassium iodide 5 grains (0.3 gm.), syrup of hydriodic acid 4 cc., calcium iodobehenate 8 grains (0.5 gm.). If one considers only the iodine content in these drugs in the doses given, the amount of iodine is not comparable, the potassium iodide containing the most, the calcium iodobehenate being next, and the syrup of hydriodic acid containing the least. Potassium iodide is the simplest and most efficient form to prescribe if the iodide effect is desired. As saturated solution, it may be given in five drop doses in milk after meals, or it may be prescribed in syrup of tolu balsam, syrup of orange, syrup of cherry or syrup of wild cherry, and syrup of pine tar. Syrup of hydriodic acid in drachm (4 cc.) doses every three or four hours, is prescribed ordinarily as such. The calcium iodobehenate is especially useful in cases in which potassium iodide causes gastric irritation, and may be prescribed in its pure form without any vehicle.

Iodide should not be used in any case suspected of tuberculosis because of the danger of its increasing the activity of the disease.

Among the expectorants which are effective because of their nauseant action are ipecac, antimony and apomorphine. This group is indicated in acute respiratory infection in the early congestive stage, when there is a "dry" cough. The official preparations have been listed. Of these ipecac probably is the most used now and is especially employed in the acute laryngeal, tracheal and bronchial inflammations in children. The syrup of ipecac may be prescribed as such, the dose being from 5 to 12 minims (0.3 to 0.7 cc.), or it may be combined with some other expectorant indicated in the early inflammatory stage. Syrup of orange and syrup of tolu balsam are suitable vehicles for ipecac. Antimony in some form was formerly used widely as an expectorant, but has become less popular. Antimony and potassium tartrate is commonly employed, the dose ranging from 1/60th to 1/20th grain (1 to 3 mg.), and syrup of glycyrrhiza, of orange or of tolu balsam makes a satisfactory vehicle. A large part of the expectorant action of the compound mixture of glycyrrhiza (brown mixture) may be attributed to its antimony content. Apomorphine hydrochloride is most often given subcutaneously, the average dose being 1/60th grain (1 mg.), although a satisfactory effect may be obtained by mouth.

The stimulant sedatives are most useful in the chronic inflammatory conditions. They tend to lessen the mucus and exudate and the hyperæmia caused by them may aid the healing process. They should not be used in the acute stage because of the tendency to produce hyperæmia. Creosote compounds and terpin hydrate, both aromatic, are the representatives of this group which will be discussed here. Both calcium creosotate and creosote carbonate are satisfactory preparations, and are used much the same. The average dose of calcium creosotate is 8 grains (0.5 gm.) and of creosote carbonate 15 grains (1 gm.). Doses should be smaller at first. Usually an

interval of four fours between doses is satisfactory. These drugs are especially useful when the sputum is abundant, as in lung abscess, bronchiectasis and suppurative pneumonitis. Many patients indicate that the sputum becomes less objectionable in taste and odour after taking these. Calcium creosotate is best given in tablets. Creosote carbonate, in ascending (drop) doses, should be shaken up with milk.

Terpin hydrate is indicated in the chronic cough with abundant sputum and is said to be helpful, especially against an excessive liquid sputum. It is commonly used in the form of elixir of terpin hydrate, which contains an insufficient quantity of terpin hydrate to give the best effect. For the full effect, it is better to give terpin hydrate in capsules containing from 2 to 5 grains (0.13 to 0.3 gm.) three or four times a day. Elixir of terpin hydrate serves as a suitable vehicle for codeine.

Squill, not an aromatic but classified as a stimulant expectorant, has been used considerably in acute bronchial inflammation of children and in " spasmodic croup," as the syrup of squill, usually in doses of from 15 to 30 minims (1 to 2 cc.). At one time it was also said to be helpful in the " winter bronchitis " of the aged. In the latter instance its good effect no doubt was related to the cardiac element in the so-called bronchitis. The syrup contains sufficient squill, if given in frequent doses, to produce some "digitalislike" effect, and this should be kept in mind in its usage. The syrups mentioned are suitable vehicles, and other expectorants are sometimes added. Ammonium carbonate should not be put in syrup of squill.

The anodyne expectorants, so-called, hardly need any comment, except to caution against their use in cases in which there is abundant purulent sputum. The purpose of the cough is to get rid of this exudate, and suppression of the cough reflex may be hazardous. Nevertheless, they are useful in giving the patient rest if coughing in such cases has tended to cause exhausion. These drugs act by allaying the cough reflex, and the dose and frequency of administration are an individual problem. Codeine sulphate or phosphate are ones of choice; morphine should be avoided in treatment of the chronic cough because of the danger of addiction. However, there are occasions when good clinical judgment may dictate its use for temporary relief.

Diffuse partial bronchial obstruction as exemplified in bronchial asthma and asthmatic bronchitis presents a special problem in the use of expectorants. Both bronchial constriction and plugging by tenacious mucus enter into this mechanism. Solution of epinephrine 1: 1,000, in doses of from 3 to 12 minims (0.2 to 0.7 cc.) given intramuscularly, is the most effective remedy for the bronchial spasm. Ephedrine hydrochloride and sulphate has a more prolonged effect and have the advantage of oral administration, but are less certain to give relief. The ephedrine compounds in capsules are satisfactory,

although they may be put in liquid preparations. Stramonium and belladonna, usually given as the tincture in a vehicle and often combined with some other expectorant, tend to diminish the quantity of the bronchial secretions. Potassium iodide is helpful in combating tenaciousness of sputum.

The availability of so many expectorants may cause difficulty in choice for a particular case. Most of the therapeutic demands can be satisfied by skilful employment of a few representative drugs such as ammonium chloride, potassium iodide, syrup of ipecac, calcium creosotate, terpin hydrate, codeine phosphate, epinephrine, ephedrine sulphate and tincture of belladonna. The selection of a suitable vehicle may be of no little importance in commanding the respect and co-operation of the patient. Syrups of acacia, tolu balsam, cherry, wild cherry and citric acid and elixir of glycyrrhiza furnish a fairly adequate choice.

Of the accompanying typical prescriptions, 1, 2 and 3 are to be used in acute or subacute inflammatory conditions (acute bronchitis, pneumonia) at a time when the cough is "tight " and the sputum is scanty.

Prescription 1.—*For Acute Bronchitis and Pneumonia.*

R Ammonium chloride ... ... 10 gm.
Elixir of glycyrrhiza ... ... 60 cc.
Syrup of acacia ... ... to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

Prescription 2.—*For Acute Bronchitis or Pneumonia.*

R Ammonium chloride ... ... 10 gm.
Syrup of citric and ... to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

Prescription 3.—*For Acute Bronchitis or Pneumonia.*

R Ammonium corbonate ... ... 10 gm.
Compound tincture of cardamom ... 30 cc.
Syrup of tolu balsam ... to make 120 cc.
M. S.: One teaspoonful in half a glass of water every two hours.

Prescription 4.—*For Subacute or Chronic Conditions.*

R Potassium iodide ... ... 10 gm.
Syrup of tolu balsm ... ... to make 120 cc.
M. S.: One teaspoonful three times a day, after meals.

Prescription 5.—*For Asthma or Asthmatic Brohchitis.*

R Potassium iodide ... ... 15 gm.
Tincture of stramonium ... ... 20 cc.
Syrup of tolu balsm ... to make 120 cc.
M. S.: One teaspoonful three times a day, after meals.

Prescription 6.—*For Children.*

R Syrup of ipecac ... ... 5 cc.
Syrup of orange ... ... to make 60 cc.
M. S.: One teaspoonful every three hours as necessary for cough.

Prescription 7.—*For Acute Conditions.*

R Compound mixture of opium and glycyrrhiza...120 cc.

M. S. : One teaspoonful every three hours as necessary for cough.

Prescriptions 4 and 5 are to be used in subacute or chronic inflammatory conditions when the *sputum is thick*, tenacious and more abundant. (Caution : Not to be used in tuberculosis.)

Prescriptions 6 and 7 are to be used in acute inflammatory conditions when the cough is dry or the sputum scanty.

THE TREATMENT OF PULMONARY HAEMORRHAGES IN TUBERCULOSIS.

The pulmonary haemorrhage in tuberculosis has several peculiarities which differentiate it from other haemorrhages, for instance surgical haemorrhages, and to know these is of vast importance fo our therapeutic measures, writes A. Hofmann, in "Ars Medici." Their uses are as manifold as the morphology of the disease. Beginning with the haemorrhages of the lung in cases of the slight fibrous types, haemorrhage can arise in practically every stage of tuberculosis, through arterial tubercles of embolic origin as well as through the erosion of the blood vessel in the inflamed tissue All these bleedings have one thing in common, *i e.*, do not occur in the normal tissue, but rather in one pathologically altered through inflammation or cicatrization. This is what determines the nature of these haemorrhages. In the tuberculous granulation tissue, whether it be exudative as found in caseous pneumonia, or productive as in tuberculization-forms, the primary tissue, the tissue of the lung, is destroyed, whereby no structure, neither bronchus nor blood vessel, is made an exception. In most cases, to be sure, the vessel has previously become thrombosed and obliterated, thus preventing any haemorrhage. In addition, the walls of the vessels are also markedly resistant to the attack of the tuberculous processes since at autopsy one often sees thick vascular cords in the tubercular cavity. These cords are the only things to have survived the destruction of the surrounding tissue. If the process progresses rapidly so that the vessel has not had sufficient time to occlude its lumen through thrombi and obliteration, or erosion of the vascular wall takes place, a greater or lesser haemorrhage may ensue. But even those vessels which have not yielded to the destruction are a constant danger to the carrier if they have not become thrombosed. The wall has mostly already been affected, whereby its resistance is intensely decreased,

at first infiltrated with inflammatory granulations which later cicatrize. Thus it may happen, also in stages where the actual tuberculous process no longer progresses and the affected feels quite well, that a vessel suddenly bursts and a greater or lesser haemorrhage results. Such a vessel may burst through a sudden exertion, perhaps because of the rise in the blood pressure. These haemorrhages are above all characterized by their frequently protracted duration and by the fact that it is difficult to influence them. The long duration of this haemorrhage is striking when one sees on section how small the bleeding vessel often is, and thinks of how quickly such bleeding otherwise ceases.

By what means does any ordinary bleeding, one after any type of injury, stop? Two factors play a role in this action. The first factor is the formation of the thrombus, the second is the contraction of the vascular wall through the musculature of the tunica media. The latter contracts automatically (like a reflex action) by injury to the vascular wall, and thereby causes the occlusion of the lumen, perhaps with the aid of the thrombi being formed. This often occurs in a surprisingly short time, even in large blood vessels. This mechanism is only possible if there is no interference with the attempt of the vessel to contract when it lies in normal, healthy tissue. If the surrounding tissue is inflamed or cicatrized, thereby deprived of its elasticity, it is easy to see that the blood vessel will be hindered in its attempt to draw together and is kept, so to speak, fully extended. Such haemorrhages last for days, do not react to any external influences, and may eventually cause an intense anaemia, if other complications (to be discussed later) have not already set a limit to the patient's life. The diseased very rarely die of the haemorrhage. If they do die it is not due to the loss of blood, but rather to asphyxia, resulting from the obstruction of a large number of bronchi through the aspirated blood. This is the most important factor and should be constantly kept in mind. This knowledge must determine our therapeutic measures and our action at the bedside of a tuberculous patient who is bleeding. A study of the case histories and of the post mortem examinations of our clinic leads us to conclude that the vast majority of the patients do not actually die of the haemorrhage but rather from an inflammation of the lung. Stricker stated the above in a very plastic way: "In general we should not say more about the prognosis after a pulmonary haemorrhage than that, if no further symptoms immediately follow the haemorrhage, the bleeding episode is in itself irrelevant" In the few cases where death occurred during the haemorrhage, the patients did not, as already stated, bleed to death, but simply choked through the aspirated blood. These cases where a larger blood vessel was eroded do not even for the most part come into consideration for treatment because the entire tragedy happens

in so short a time, almost within a few minutes, that one can only stand by helplessly.

To summarize we must say that, apart from the injury to larger vascular trunks which, as above stated, need not be further discussed, the tuberculous pulmonary haemorrhage have the following characteristics :

1. The bleeding vessels lie in abnormal tissue, in one that is cicatrized or infiltrated, which hinders the contraction of the vessels. The protracted haemorrhages, which may last for days, are caused thereby, and it is for this reason that all our styptics are of such questionable effect, since all (whether it be calcium, stryphnon, or gelatin, etc.) tend to arrest haemorrhage by coagulation, which in these cases is normal anyway. Pneumothorax is actually, as we all know, the only efficient therapy as it produces a relaxtion of the tissue

2. These protracted and often frightening haemorrhages almost never lead to death from bleeding. As is well known the pressure of the pulmonary circulation is about a third that of the systemic circulation, which fact is of primary importance in pulmonary haemorrhages. If the pressure sinks for some reason, it does so in the same proportion in both circulatory systems, and it is easily imagined that a continuation of the bleeding is impossible at a time when such low values are reached in the lesser circulation while quite a fair pressure still exists in the greater circulation. This ought indeed to be the explanation for the fact that pulmonary haemorrhages so rarely or almost never lead to death through bleeding.

3. The outstanding, one could almost say the only, danger with these haemorrhages is pneumonia, the specific and non-specific inflammation of the lungs, which results from the aspiration of the blood carrying the infected substances. Large amounts of aspirated blood also function as foreign bodies so that it is not surprising that the pulmonary tissue, no longer at the height of its resistance as a resul of the disease, reacts with a pneumonia. The pneumonia may originate in any part of the lung, mostly, however, it arises in the lower parts of the diseased lung corresponding to the tendency of the blood to settle. But also the 2nd lung (which may be quite healthy) may become affected, if the blood flows into it at the bifurcation or gets into it through feeble coughing. These pneumonias may, of course, lead to death ; but they may, like every other inflammation of the lung, heal again. Most cases, however, show a quite different development : the fever already in the act of sinking, begins to rise again so that we now know that the simple pneumonia has been replaced by a specific tuberculous inflammation of the lungs. The disease enters a new severe phase. The aspirated blood also carried innumerable tubercular bacilli which have formed new caseous pneumonic

foci. These infiltrations may again disintegrate, cavities are formed, new haemorrhages may occur. Thus we see the patient fall into a circulus vitiosus, which is so often fatal.

The factor which is of vital importance for these haemorrhages has been, in my opinion, far too neglected and much too rarely referred to : one should be less concerned in cases of tuberculous haemorrhages with the stopping of the bleeding (this is attended to by the ill organism even by the fact that it is laid up), and instead help the patient in his struggle with the menacing pneumonia. If we realize and simply consider that which we do and omit to do after an operation on an older or weakened individual in order to prevent a menacing pneumonia, we shall, of our own accord, hit on the attitude to be taken after or during a haemorrhage of the lung. What is the primary thing which we avoid after an operation on an older or debilitated patient ? We shall try, if not all possible, to avoid that he lie motionless in a recumbent position ; we shall raise the upper part of the trunk, induce the patient to breathe deeply and cough up the discharges And what do we unfortunately see again and again with patients bleeding from the lung ? They anxiously avoid every movement of the body remain on their backs in the so-called cadaverous position, suppress every irritation to cough in order to avoid beginning to bleed again, or in order to bring the existing bleeding to a standstill. They simply do not want to see any blood, which, after all, can easily be understood. They do not know that the bleeding may be continuing internally, and that the blood, instead of flowing out, flows into the deeper parts of the lung, which is aided by the immobile and recumbent position. In most cases the patient is encouraged in this attempt to avoid any movement by those about him, including the nurses.

We must therefore make sure that the bleeding tuberculous patient lie in a raised position. We shall allow and even encourage him to move about in bed, more or less dependent on the intensity of the bleeding. If the other conditions, temperature and strength, permit, we can allow the slightly bleeding patient to get up and walk about. He should breathe deeply and expectorate properly. It is advisable to prescribe expectorants, if necessary, inject transpulmin. The cough should be moderately combated, above all the exhausting, frustrated, irritative coughing. One may readily administer a little codein in such cases, but—and this second part is of the utmost importance—no opiates, no morphine, no pantopon. Physicians of the previous generation attached much importance to morphine as a styptic in cases of pulmonary haemorrhage. It certainly has a soothing effect on the frightened patient and allows him pleasant sleep. But this we can attain just as well with bromine and a hypnotic or with bromine alone. Perhaps the patient will cough and bleed less after an injection with morphine and pantopon.

We simply suppress the mechanism of expectoration through morphine and pantopon by benumbing the cough-centre, but the patient still continues to bleed and aspirates the blood that he can no longer cough up.

Finally, the question should be discussed whether the ice-bag should be used or not with haemorrhages. If we consider the distance of the bleeding area from the surface of the skin, it becomes perfectly clear that the transmission of the irritation due to cold is more than doubtful. Let us further recall that the tissue between the bleeding area and the ice-bag is a living substance, saturated with warm blood, having warmth of its own, and not a lifeless substance which simply allows itself to be cooled off. But assuming that this were possible, then physiologically a dilatation would have to follow the contraction of the blood vessels, in other words, the anaemia followed by a reactive hyperaemia. We should therefore have obtain. ed exactly the contrary to that which we had intended. But the matter is not so simple. First of all, as has already been discussed, there can be no question of a contraction or dilatation of the vessels in this altered tissue. If the irritation can produce by way of reflex instead of mechanically a contraction of the vessels, then the healthy, non-bleeding trunks would be affected, resulting in an increased pressure in the pulmonary circulation, which would only further the haemorrhage. The same holds for the habit to permit pieces of ice to be swallowed. Weber has shown that irritations due to cold from the gastric and intestinal mucosa lead to a distension, and irritations due to heat, to a constriction of the pulmonary vessels. According to the above explanation pieces of ice may, in the roundabout way of distending the healthy blood vessels, *i.e.*, through diminution of pressure in the lesser circulation, perhaps still work beneficially. But this effect is so questionable and of such short duration, that it certainly does not practically come into consideration. But on considering the other side of the problem and asking ourselves whether one does not do harm with ice-bags and ice-pills, a totally new aspect present itself. One must consider that even a healthy person cannot without reaction withstand the intense cooling which results from the application of the ice-bag for hours and from the swallowing of ice-pills, together with an unreasonable undernourishment (which will be discussed later). How much greater must the danger be for a debilitated person wasted by protracted disease with his delicate bronchi! We decrease the resistance of the patient and prepare the stage in the best way for the pneumonia which may cost the patient his life.

We shall now briefly discuss the measures to be adopted. One should bear in mind above all that the hæmorrhage, coming mostly out of a clear sky, or at least, unexpectedly, is an intense shock to the patient. It will be our task to inspire faith and confidence in

the patient through kind, soothing words and confident, gentle but energetic action. We shall explain that the hæmorrhage as such is almost devoid of danger, that bleeding to death is certainly out of the question. With more intense bleeding we shall send the patient to bed, raise the trunk and, as already mentioned, enjoin upon him not to lie motionless. Occasionally we shall sit him up and make him breathe deeply. We may also examine the patient without any fear. In cases of lesser hæmorrhages various measures may be undertaken—chiefly in order to put the patient at ease.

Common salt is an old household remedy, which as a 5—20 gm. solution may be advantageously administered. It produces an intense hyperæmia, bringing thrombokinase from the tissues into the blood stream. The salt may also be injected intravenously as a 10 per cent solution.

Tying off the extremities is also recommended since it supposedly also increases the coagulability of the blood, according to Von den Velden, by disturbing the osmotic equilibrium with ensuing hydræmia and flooding with thrombokinase. The tying-off is to be done in about the same way as the arm is normally tied before drawing blood from a vein. The pulse should still be perceptible and the patient should feel no pain. If possible three extremities should be tied off simultaneously. The binding should not stay on longer than a half to one hour; if it hurts the patient earlier, it should of course be removed.

The diet to be given is also of importance. Here it has also unjustifiably become common practice to give the patient only cooled and fluid food during the first few days. We have already discussed the part played by irritation with temperature. But apart from all that we have already said about it, we certainly do not usually eat boiling-hot food; its temperature normally is, to be sure, in any case indifferent. In regard to liquid food, I dare say that the notion that solid food can only be injurious is, to say the least, that of a layman. First of all the bleeding places are usually not very near the oesophagus; and secondly, as we know, the food is ground up by mastication, so that it does not seem likely that this pulpy mass, which normally passes the oesophagus, may in any way mechanically cause injury; finally, it is no great misfortune of course, if the bleeding patients are fed with liquid-puply food. We must, however, keep in mind that the uneasy, vacillating frame of mind in which a bleeding patient affected with phthisis is, can only be increased by our instructions. This is certainly not advantageous. Let us allow our patient to eat normally, according to his appetite, which will often be bad enough; he will thereby bleed for neither a longer nor shorter time. In respect to the other functions of the body, we must try to maintain an easy stool because pressing should be avoided as much as possible.

A few words about the patients who bleed from a large blood vessel should be added: In such cases the hæmorrhage may be so profuse as to cause death through choking within a few minutes. To such patients, as already stated, one mostly comes too late; the patient is found dead, swimming in blood. It may, nevertheless, happen that we are spectators of this appalling scene. If one has enough presence of mind to attempt some measure, there is but one possibility: the patient must be quickly made to vomit. If this is successful, the patient is perhaps saved for the moment—but only if the movements concomitant with the act of vomiting (which are at the basis of every expectoration) force out the masses of blood in the bronchial branches. Unfortunately it takes some time before any emetic works. The easiest and quickest provocation is to irritate the pharynx with some object.

The medicinal therapy—various styptics as stryphnon, coagulen, gelatine, calcium, etc.—are sufficiently well known to make further discussion unnecessary. The most effective means to influence the hæmorrhage is, as stated, the application of an artificial pneumothorax. This treatment should of course be left to the specialist. To determine which side is bleeding with affection of both lungs is often extremely difficult and requires much experience. Besides this it is necessary to find a free pleural gap for the success of this treatment. This is in many cases unfortunately not possible because of a preceding pleurisy and adhesion of the pleural layers. However, if a pneumothorax is successfully made, then an immediate success mostly results.

CEREBRAL HAEMORRHAGE: DIAGNOSIS AND TREATMENT.

In "General Practice" for April-June, 1937, Stanislas de Seze, Neurological Chef-de-Clinique at the Paris Faculty of Medicine, writes that the clinical picture of cerebral hæmorrhage was fully described by our predecessors of last century and must be familiar to us all. A man, upwards of 50 years of age, with a high blood-pressure has been complaining for some time past of headache and giddiness, a tendency to doze after meals or, it may be, fugitive numbness of a limb or some passing trouble with speech. Then comes on the typical attack of apoplexy: the "ictus." The patient suddenly turns pale, stammers a few words, put his hand to his head, then falls to the ground unconscious. In spite of deep coma it is easy to detect the signs of hemiplegia; the patient puffs as if smoking a pipe, the limbs when raised fall more helplessly on one side than on the other, the reflexes are weaker or even absent on one side, and the plantar

cutaneous reflex is in extension (Babinski's phenomenon). Lumbar puncture, even apart from rupture, of a blood-vessel in the meninges, makes the diagnosis easy. The cerebrospinal fluid is more or less yellow within five or six hours after the attack and on centrifugation leaves a deposit of red blood corpuscles.

The prognosis must naturally be very guarded. In a large proportion of these cases the cerebral haemorrhage determines a fatal issue without any cessation of the coma. Should the patient recover consciousness he finds himself exposed for a fortnight or so to the risk of recurrence, to the possibility of urinary infection, bed sores, and bronchopneumonia. Should he escape these complications he usually remains with hemiplegia and the ever-present risk of relapse.

So far I have been describing an attack of capsulolenticulo-striate haemorrhage. When cerebral haemorrhage entails flooding of the ventricles, the clinical picture is even more dramatic and vastly more dangerous to life. The patient, plunged in deep coma, has attacks of epileptiform convulsions from time to time, and, between whiles, contracture of the limbs; the reflexes are exaggerated and this may amount to clonus and, usually, bilateral extension of the big toe. The temperature may run up to 109 degrees, and lumbar puncture gives issue to a blood-stained fluid or, it may be, almost pure blood. Death soon closes the scene.

The two clinical pictures differ considerably one from the other, and the difficulty of diagnosis varies accordingly.

The diagnosis of cerebral haemorrhage into the ventricles is easy enough. True the coma of alcoholism and post-epileptic coma may be fully as deep and stertorous no doubt, tuberculous meningitis, suppurative meningitis of the apoplectic type, and meningeal haemorrhage may cause coma accompanied by contracture and exaggeration of the reflexes, but none of these comas is associated with massive hemiplegia. There remains softening of the brain (embolism) to be differentiated, but the contractures, the repeated attacks of convulsions, the early bilateral exaggeration of the tendon reflexes, and the bilateral extension of the big toe which accompany cerebrospinal haemorrhage are not met with in connection with brain softening. The diagnosis is therefore clinically feasible and lumbar puncture will, if necessary, confirm it.

This, however, is not the case in respect of pure cerebral haemorrhage. When we are in the presence of a case in which deep coma has supervened suddenly and there are also signs of hemiplegia, it is difficult to decide forthwith between a case of capsulo striated cerebral haemorrhage and a big cerebro-sylvian softening.

Observers in the past insisted upon the greater frequency of prodromata in brain softening, its more insidious onset, its less pronounced coma, the temperature displaying a tendency to rise at the onset, afterwards falling, whereas in cerebral haemorrhage there is

an initial fall of the temperature with a secondary rise, Cheyne-Stokes respiratory rhythm, bradypnoea and bradycardia. At a later stage the cortical type of hemiplegia in brain softening has been placed in contrast with the capsular type of hemiplegia characteristic of cerebral haemorrhage.

As a matter of fact these signs are devoid of significance. In opposition to what has sometimes been advanced, prodromata are absolutely constant in cerebral haemorrhage. Ancient authorities looked upon these prodromata as invariable, and drew up a list therof, viz, giddiness, loss of memory or speech, fugitive disturbances in an upper limb. *Recent statistics show indisputability that* these prodromata are in no wise peculiar to brain softening, but are met with in at least three-quarters of the cases of cerebral haemorrhage.

Then, too, the onset of cerebral haemorrhage is by no means always as sudden as has been represented, and, moreover, it is not invariably accompanied forthwith by deep coma. We, must, however, allow that brain softening is usually associated with the cortical type of residual hemiplegia, simply because there can hardly be said to be such a *thing* as *superficial* cerebral haemorrhage. But hemiplegia of the capsular type is just as likely to be observed in a case of deeply-seated Sylvian softening as in a lenticulo-striate haemorrhage.

Is advanced age with sins of arteriosclerosis in favour of brain softening, while in a younger subject with high blood-pressure it would point to cerebral haemorrhage? These shades are quite open to discussion. Statistics are available to show that the frequency of cerebral haemorrhage increases with age just as does the incidence of brain softening. Moreover, the age at which we meet with brain softening is much the same as in cerebral haemorrhage.

From a practical point of view the fact remains that lumbar puncture alone will enable us to settle the question. And lumbar puncture cannot always be resorted to at once for family reasons. For that matter the fear that this intervention inspires in the relatives is not always without foundation. Consequently the dignosis of cerebral haemorrhage must often remain doubtful.

The treatment of cerebral haemorrhage must take into account the trend of contemporary ideas on the pathological mechanism of cerebra haemorrhage.

The idea hitherto held that cerebral haemorrhage is due to rupture of a miliary aneurism of a cerebral artery no longer obtains. Cerebral haemorrhage, according to Rosenblath, Lindemann, Westphal etc., presents the anatomical features of haemorrhage by diapedesis, i.e., by infiltration, in other words, extravasation of blood through the walls of the small vessels: arterioles, small veins and capillaries, in a given area.

As for the reason we have to incriminate functional vasomotor disturbances affecting the cerebral circulation or repeated arterial spasm leading to ischaemia and ultimate necrosis of the small vessels in the given vascular area or to brutal vasodilatation in the particular area offering facilities for the passage of red corpuscles through the worm-eaten arterial walls.

The immediate treatment of cerebral haemorrhage comprises two distinct series of measures, viz., preventive and palliative. In presence of a case of cerebral haemorrhage it behoves us to proceed very cautiously, on the one hand, on account of the extreme fragility of such objects, and, secondly, by reason of the difficulty of making the differential diagnosis between it and softening of the brain, e.g, embolism So, whatever we deside to do, our guiding maxim will be *primo non nocere*. We must avoid anything that might conceivably aggravate the haemorrhage, such as removing the patient to a hospital or nursing home, undue movement while carrying out our examination, even lumbar puncture which, according to some observers, is too much of a shock. The head should be raised, no ice to be applied, since this may cause spasm. The patient is not to be bled unless his blood-pressure is much above normal, but if such be the case it may relieve him. Even so we must not exceed 250 or 300 c.c. The bowels should be evacuated by means of a clyster, a catheter is to be passed in the event of urinary retention and he must be kept perfectly dry and clean posteriorly.

But too often the treatment of cerebral haemorrhage remains without effect. It is impossible to cure free cerebral haemorrhage, remarked Areteus, and difficult to cure even a slight one. These wise precepts still hold good, consequently prevention here again is better than cure.

This brings us to the question as to what can be done to avert cerebral haemorrhage. Here periodical venesection, restricted diet, and the employment of vascular remedies (iodides, insulin, cynara scolymus) will come in handy. We shall do what we can to avoid everything capable of raising the blood-pressure, thus causing rupture of a cerebral vessel, such as stoping, physical effort, constipation straining at stool, cold baths or cold bathing, sexual excesses and powerful emotions. But more particularly must we bear in mind the importance of vascular spasms in disturbance of the cerebral circulation of which apoplexy is the outcome, so that tobacco must be absolutely forbidden. We may prescribe gardenal and opium in small doses with nitrite of soda and the salts of benzyl acetocholin. In this way, if lucky, we may relieve a slight attack and obviate its recurrence.

LIPOID THERAPY WITH HELPIN.

The problem of Lipoid Therapy is met with particularly of actual interest since it was discovered that the lipoids play a most important role in life-functions of vegetal and animal cells and that furthermore they are of much importance in the metabolism of the cells enabling after all their normal functions.

Considering further the stimulating effect of the lipoids on the fermentative processes of the cells, their efficacy as activators not only on the ferments but also on various chemical compounds and processes, we are sure to have enumerated sufficient causes for the tendency to make use of the lipoids in therapy.

The therapeutic results of the lipoids proposed hitherto, notably of the lecithine, however do not always give full satisfaction. Owing to the sensibility of lecithines against many kinds of outer influences, the therapeutic effects in case of their oral administration appear rather doubtful as proved in many instances at the sick-bed and in laboratory.

Much more promising is the administration of the lecithine on the parenteral way, specially in the form of HELPIN as prepared for the first time by Magat in 1925.

HELPIN contains in the form of a sterile emulsion a highly qualified special lecithine the effect of which is synergetically supported by an addition of glycerine. The viscosity of the emulsion is so far diminished by an addition of potassium, calcium, and sodium salts as to obtain the viscosity of water, thus insuring an excellent compatibility.

Before testing HELPIN at the sick-bed exhaustive physiological tests on animals have been carried out the results of which have shown a considerable increase of weight, of the contents of hemoglobin as well as of the erythrocyts and lymphocytes in comparison with the test-animals.

About the first clinical observations with HELPIN reports appeared by Magat, Semmler, Seeling and Ullmann from the 2nd Medical Clinic of the Charite Hospital, Berlin (Privy Councillor Prof. Kraus). In the first instance the HELPIN therapy referred to simple, secondary, and pernicious anaemias in the course of which a remarkable success became apparent as proved by a rapid increase of weight, subjective better feeling, and increase of the red blood corpuscles. Exhaustive blood analysis demonstrated a distinct growth of the percentage of erythrocytes and hemoglobin and in the white blood picture a clear increase of lymphocytes.

The studies of Magat served to induce a great number of clinics in Germany and abroad to carry out control-examinations and having as object principally the therapy of anaemias.

Hajnal and Baum could establish a clear augmentation of hemoglobin contents in consequence of HELPIN injections. Lebermann and Zubak report about an improvement of appetite, increase of weight, and favourable results in cases of pernicious anaemias. Gronberg and Lundberg ascertained as effect of HELPIN a better resistency of the red blood corpuscles against haemolytically acting substances. Olivet points out the absence of any toxical effect of HELPIN and recommends to undertake in anaemias always a trial with HELPIN in cases making necessary to take from whatever causes care of the stomach and intestinal tract. Vogt has examined HELPIN in 70 cases and states a general remarkable progress in the therapy of secondary anaemias after juvenile and climacteric hemorrhages. Pons, Brock, Neumann, and others report on the resorbing effect of HELPIN and on appetite and weight.

HELPIN is injected intramuscularly, daily or every other day 1 to 2 ampoules of 1.5 cc. The injections are painless without fever or other reactions, a cure consisting of 20 to 30 injections, in more serious cases of anaemias sometimes more.

HELPIN is sold in boxes of 10 ampoules.

Medical News & Notes.

PUBLIC HEALTH ACTIVITIES IN TRAVANCORE.

A Broadcast talk given by Dr. R. K. Pillai, Nagercoil, at Hyderabad Radio Station, on 19th August 1938.

Under the illustrious reign of His Highness Sri Chithra Thirunal, Travancore to day, is enjoying a new era of progressive reforms of far-reaching importance. The epoch-making Temple Entry Proclamation of His Highness the Maharaja has given His Highness a permanent and prominent niche in the Temple of the Greatest Reformers of the world Numerous schemes pregnant with great possibilities of developing the economic resources of the State, have been inaugurated. The Pallivasal Hydro-Electric Project and the Travancore University are statesmanly schemes of great magnitude promising a bright future for the country. The Government of His Higness the Maharaja are bestowing their attention upon the promotion of all the nation-building services in the State, of which Public Health takes a lead.

Travancore may be said to be a pioneer among Indian States in the realm of Public Health and Sanitation, with a history of progressive expansion covering a period of about three quarters of a century. The question of "Preventive Medicine" in the State dates as far

back as 1813 when vaccination was first introduced in Travancore. The State Public Health Organisation has, ever since its inception many years ago, been steadily expanding in order that it may be able to cope with the changing conditions and growing requirements from time to time. It was, of late remodelled into an up to-date Public Health Department, with the advice and assistance of the Rockefeller Foundation. The Department deals with a manifold programme of work, the more important activities being : –

Registration of Vital Statistics, Control of Communicable diseases, Medical Entomology, Public Health Laboratory work, Health Unit Operations, Maternity and Child Welfare services, Rural Sanitation, School Medical Inspection, and Public Health Education.

The Public Health Department has been able to achieve an effective control over epidemics. Cholera which was practically an annual visitant to Travancore from 1895 to 1929 is fast being eradicated now. As a result of the intensive vaccination campaign that is being carried on all over the State, a vast majority of the population stand protected against small-pox. Hence the incidence of small-pox may be said to be extremely nominal at present. Vaccination is domicillary in the State. Typhiod is rather endemic in Travancore. To combat this disease, Government have recently declared it notifiable and have arranged for free Anti-Typhoid Inoculations being given in all the hospitals and dispensaries and in localities where Typhoid Epidemics break out. Vigorus preauctionary measures are also being taken at such places in Travancore as are exposed to plague infection from Cochin and Madura Districts.

Treatment and relief measures such as distribution of rice doles, feeding of school children and provision of work by starting in localities where Malaria break out. A state-wide survey of Malaria and filariasis, has been conducted and scientific investigations and control measures against these two diseases are being effectively carried on at certain endemic centres of malaria and filariasis. Some of the findings of the surveys and the results of the control work are of a high scientific value and have been highly commended by experts on the subject. Due attention is also bestowed upon the control of other diseases such as leprosy and yaws.

The Public Health Department has a well organised Public Health Laboratory attached to it. Both prophylactic and curative vaccines are prepared in the Laboratory. The Chief Prophylactic vaccines prepared are for smallpox, Typhoid, and Cholera Anti-rabic treatment is another important work. Arrangements for the preparation of Antriabic vaccine are also, in progress. The Laboratory is showing a good out-turn under Bacteriological Examinations, Chemical Analysis, Entomological studies, and Food Analysis.

The Pioneer Health Unit in India, is the Health Unit run by the Travancore Public Health Department, in a cluster of villages called

Neyyattinkarai. The institution is more than seven years old. The Poonamalle Health Unit in Madras, the Pratabgarh Health Unit in the United Provinces and the Najafgarh Health Unit in Delhi are only of recent origin. The Neyyattinkarai Health Unit represents the intensive type of Health Organization needed for rural areas. Correct registration of vital statistics, and control of communicable diseases are two of the important activities. Maternity and child welfare work is being efficiently attended to, School medical inspection is another principal service. Rural sanitation work comprises provision of bored-hole latrines and wells protected with hand-power water lifts. The Health Unit strives to establish an intimate contact with the masses and to make the villager participate in its various activities by the organization of Health Leagues. Her Highness the Queen Mother was pleased to pay a visit to the Health Unit and thus encourage the work of that institution The Unit has also been visited by many medical and public health authorities from various parts of India and elsewhere.

The rural sanitation activities in the State consist of the construction of bored-hole latrines, sinking of new public wells, repairs and improvements to old wells, sanitation of fairs and festivals, and markets and conservancy work. The water works and drainage departments are arranging for the provision of protected water supplies to important localities suffering from water scarcity.

A comprehensive scheme of school medical inspection is in operation in certain select areas in the State. According to this scheme, a complete physical examination of the pupils is conducted and the defects observed are notified to the parents. The necessary treatment for the defects is attended to by the school medical officers at the nearest district hospital or government dispensary. Correction of defects requiring specialists' attention is done by the respective specialists. The sanitary conditions of the schools are also inspected and necessary improvements suggested.

A proposal for rural maternity and child welfare work is about to be introduced. This proposal provides for the appointment of an adequate staff to work under the supervision of two lady medical officers in village which are away from hospitals and dispensaries.

Public Health Education is another important activity of the Department. Public Health propaganda is carried on by means of lectures with cinema and lantern shows and publication of press articles, pamphlets and bulletins. The health propaganda van owned by the Department is fitted with Microphone, Gramaphone, Amplifier, Loud Speaker and Radio Receiver. This van goes to every part of the State. Besides regular lectures, a series of musical and lecture records on health and hygiene and nutrition are also played through the loud speaker. A large number of public health cinema films is employed for demonstration purposes. Her Highness the Queen

Mother has been pleased to grant the following inspiring message to the Public Health Department in respect of maternity and child welfare :—

"It has given me great pleasure to learn that the Public Health Department has conceived the happy thought of popularising sound ideas regarding, the fundamental problems of maternity and child welfare. On the spread of knowledge relating to them depends the health and happiness of the future generation and there is no more instructive method to secure the end in view nor one with a more immediate appeal to all classes. I wish the experiment all success."

Health exhibitions are organised with the aid of an exhaustive collection of Public Health models, etc. A miniature health Museum is also housed in the central office. Vacation lectures on hygiene are organised for the benefit of school teachers. The health educational branch aims at the creation of a should public health conscience, which is a vital requisite for the success of every public health activity.

The Travancore Medical Department is functioning as a sister organisation, affording medical relief to the people in all parts of the State, through an extensive system of hospitals and dispensaries.

Among Indian States, Travancore stands in the vanguard no less in public Health and medical relief than in education, social reform and economic regeneration.

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION, PALAMCOTTAH.

(TINNEVELLY BRANCH OF THE INDIAN MEDICAL ASSOCIATION).

The President's Function.

The President's Function of the Tinnevelly District Medical Association was held at its monthly meeting held at the Subramanya Karayalar Public Library, Palamcottah, on Sunday the 21st of August 1938. Members numbering 67, including three woman doctors gathered from all parts of the District. Lieut. Col. T. S. Sastry, I.M.S., was "at Home" to the members. After Tea Party and sweet music, the meeting began under the Presidentship of Lieut. Col., T. S. Shastry, I.M.S., at 5-30 P.M. The Secretary read out the Minutes of the Joint Meeting of the Pandya and Chera Medical Association held at Courtallam on Saturday the 23rd July 1938. Dr. T N. Govinda Ayyar, M. B. & C. M., proposed that Rao Bahadur Dr. C. B. Rama Rau, M.D., retired District Medical Officer, be elected as an Honorary member of the Tinnevelly District Medical Association and seconded by Dr. K. Rama Ayyar, M B.B.S, (Andhra)., Rao Bahadur Dr. C. B. Rama Rau, M.D., was unanimously elected as an Honorary member of the Association. On the invitation of the Secretary of the Indian Medical Association the following were elected as President and Vice-President of the Indian Medical Association for the ensuing year :—

I. President :—Colonel K. V. Kukday, I.M.S , Retd., (Nagpur.)

II. Vice-Presidents :—1. Lieut. Col., T. S. Shastry, I M.S., Palamcottah
2. Dr. Miss. B. Thangamma, Benares.
3. Dr. A. Vishwanathan, L.M.P., Madras.

Consideration of the membership of the Indian Medical Association when persons are transferred to places where there is no Branch of the Indian Medical Association was discussed and a decision was postponed.

The following cases which were operated and treated at the Government Headquarters Hospital, Palamcottah, were read out :—

1. A Case of Fracture ribs—complicated with Surgical Emphysema.
2. A case of retro-peritoneal Hydatid cyst in the pelvis.
3. A case of accidental fall, causing fracture of the left collar bone and left ribs.
4. A case of multiple injuries attended with fracture of skull with escape of brain matter.

The above cases were exhibited to the members and the cases were fully discussed by the members.

Dr. A. L Ananthanarayana Iyer, M.B.B.S., demonstrated a case of Hemiplegia and explained to the members how to examine systematically a case affecting the nervous system.

Dr. K. Ramachandra Naidu, L.M. & S., showed a case of temporary fits of unconsciousness, and read out notes of the case.

Thereafter Colonel Shastry, summed up the salient and important features of all the cases and their differential diagnosis in detail. He offered his thanks to Sri C. V. Gopalan, B.A., B.L., the Secretary of the Public Library, for placing the Library Hall at the disposal of the Association for holding our meeting. He thanked the members for electing him as the Vice-President of the Indian Medical Association. He requested all the members to do Health propaganda along with their professional work. He also thanked the members for responding to his invitation. Dr. K. Rama Iyer, M.B., B.S., (Andhra)., thanked the President for this most enjoyable function and for his entertaining the Association.

Thereafter an excellent Dinner brought the happy gathering to a close at 11 p.m.

HEALTH EXHIBITION.

Under auspices of the Tinnevelly District Medical Association in connection with the monthly meeting, a Health Exhibition was arranged at the Municipal Office, Palamcottah, on Sunday the 21st of August 1938, at 10 a.m.

Lt. Col , T. S. Shastry, I.M.S., the President of the Association welcomed the guests and requested Dr. P. R. Vankatarama Iyer, M.B., & C M., retired District Medical Officer, to open the Exhibition.

Dr. P. R Vankatarama Iyer M.B., & C.M., in declaring the Exhibition open said that such Exhibitions are very useful, instructive and beneficial to the public. He delivered his speech in Tamil on topics like Nutrition and preventive diseases like Tuberculosis, Cholera, etc., which was very instructive.

Dr. Rajarathnam, L M. & S., B S.Sc., delivered an interesting lecture in Tamil for the benefit of about 300 boys and girls.

The Exhibition was kept open till late in the evening. The exhibits consisted of posters on Tuberculosis, Small-pox, Flies, Mosquitoes and Cholera, Vitamins, etc. The exhibits supplied by Messrs. Burroughs Welcome on Tropical Diseases were also exhibited. The Local Sanitary Inspector took the boys and girls in batches and explained to them the posters that were exhibited.

INDIAN MEDICAL COUNCIL ACT.

MADRAS PRACTITIONERS' PROTEST.

To protest against the Indian Medical Council Act, a meeting under the joint auspices of the Madras Branches of the Indian Medical Assoiation and the All-India Licentiates Association was held, on 20th September 1938, at "Gana Mandir," George Town. Dr. D.V. Venkappa presided.

The Chairman said that they had been protesting every year against the "unwanted" Indian Medical Council Act as it ignored the rights of a large majority of those in the medical profession whose claims had been recognised by the Provincial Council. He should say that it was their own weakness that allowed the All-India Council to function. He would, therefore, appeal to the sons of the soil who were members of the Council to resign from it. It was their duty, the Chairman said, to lodge their emphatic protest and carry on their agitation till they got what they required.

Dr. M. Sanjiva Rao moved a resolution condemning the exclusion of Medical licentiates from the purview of the Indian Medical Council Act, 1933, and also certain provisions in the said Act which restricted due representation of the independent medical profession on the Council and which perpetuated the undesirable and unwanted dominance of the General Medical Council of Great Britain in their affairs, and requesting the Government of India to amend the Act suitably in consonance with the demands made by the two premier medical organisations of the country, the Indian Medical Association and the All-India Medical Licentiates Association.

Dr. Sanjiva Rao also moved another resolution requesting the Government of Madras to urge the Central Government to initiate the necessary amendments to the Act so as to provide for the inclusion of the medical licentiates, the maintenance of a common register, the replacement of the present large official element by complete non-official elected representatives and for fair terms of reciprocity.

Dr. M. R. Bail seconded the resolutions.

Dr. A. Viswanathan said that the Indian Medical Council, as at present constituted, functioned only as the handmaid or child of the General Medical Council of Great Britain. It represented neither the Provincial Councils nor the Indian medical men of this country. They should realise the unjust treatment meted out to the Vizagapatam Medical College. As the Prime Minister of Madras said some time back, they should get rid of the tyranny of an outside body. Indian medical men, the speaker said, should realise that medical education would be crippled, if the Medical Council insisted upon the so called standards. The Council, he urged, should be purely Indian in composition and medical in character.

Dr. K. Rama Rao spoke in support of the resolutions, which were unanimously adopted by the meeting.

The Chairman, in his concluding remarks, expressed the hope that the Madras Government would move in the matter as requested.

NOTICE.

I

"The All India Medical Licentiates' Association's Gujrat Branch, Ahmedabad, invites a Thesis on *Puerperal Sepsis*, its causes, symptoms treatment and prevention. The best paper will carry a prize of Rs 35 (Rupees thirty five) only.

The Thesis paper should be addressed to Dr. Jamiatram B. Desai, President, Gujrat-Branch, Pritamnagar, No. 52, Ahmedabad, so as to reach him on or before the 31st December, 1938. All *bona fide* members of the Association can compete.

II

ALL INDIA MEDICAL LICENTIATES' ASSOCIATION.

NOTICE is hereby given that the subject for the Dr. Joseph Benjamin's Thesis Prize of the value of Rs. 35 (rupees thirtyfive) only for the year 1938, is *Enteric Fever* and for the Dr. P. S. Ramachandrier's prize of the value of Rs. 25 (rupees twenty five) only, for the year 1938, is "*Infant Mortality—its causes and prevention.*"

All *bona fide* members of the Association can compete. Intending competitors are requested to write papers from practical point

and on lecture style, and the same should not exceed 1000 typed lines or their equivalent. That the thesis paper be despatched to Dr. Jamiatram B. Desai, 52, Pritamnagar, Ahmedabad, so as to reach him on or before the 30th December 1938.

(Sd.) K. J. BHATT,
Secretary, Gujrat Branch,
Ahmedabad."

Regd. No. M. 2853.

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