

MEDICO-SURGICAL SUGGESTIONS

Vol. VIII.

NOVEMBER 1939.

No. 11.



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A MONTHLY JOURNAL OF PRACTICAL MEDICINE & SURGERY
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VOL. VIII NOVEMBER 1939 No. 11

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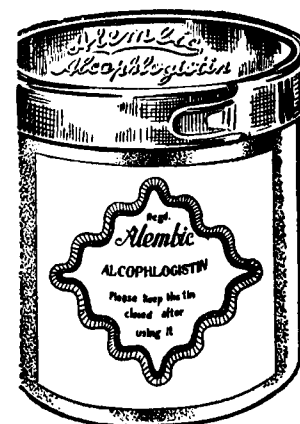
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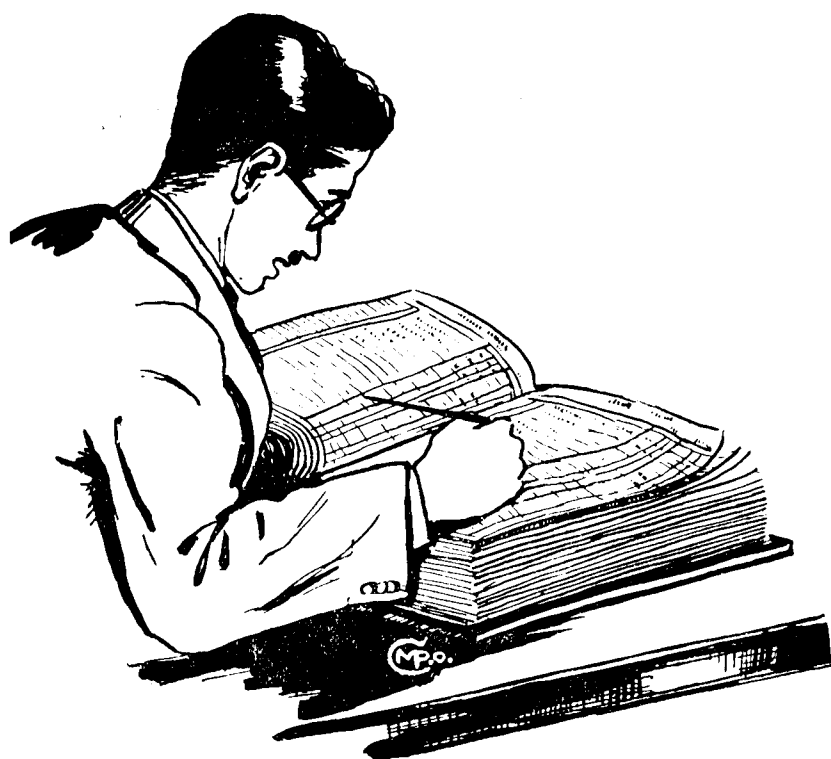
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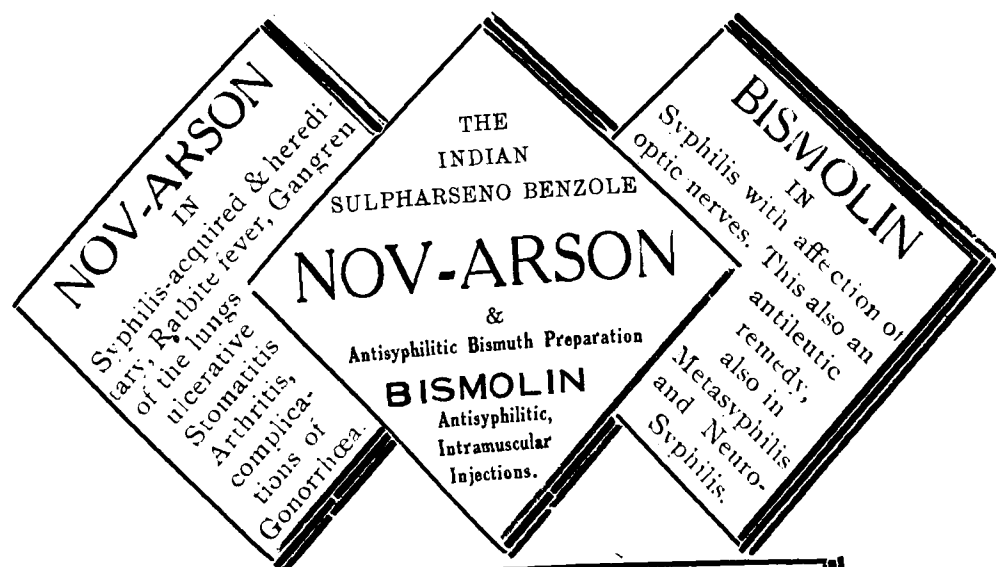
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VOL. VIII

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Articles.

WAR GASES

CAPT. G. S. CHOPRA, M.B.B.S., A.I.R.O.

School of Tropical Medicine, Calcutta.

With the development of science and the discovery of poisonous gases the modern warfare has become a thing of terror. The civilians and the military populations are equally vulnerable to attacks by the air. The innocent citizens although they may be far away from the actual war zone, may be subject to air raids leading to tremendous losses of life and property. In April 1915 the Germans first used the chlorine gas. It was let out from cylinders emitting a hissing sound which gave rise to faint greenish cloud hanging lower on the ground. Later on in 1917 mustard gas came into the field. It was known as yellow cross shell gas. Both these gases caused heavy casualties during the great war as no preventive methods were known at that time except the old form of respirators which were invented in 1917-18. It is therefore necessary to give a brief resume of the war gases, the pathological results of their action, and the treatment and prevention of the casualties in case of gas air raids. Due to ignorance of the general population to the effects of poisonous gases the loss of life was very heavy in the Abyssinian war most of which could have been prevented if the general population had been trained in the air raid prevention before hand. It is necessary to make the citizens conversant with the nature of war gases because those who are ignorant of them would be in a panic. We must remember that the panic may nullify any effort at the prevention of the after-effects of an air raid. The public should be instructed as to the measures to be taken by them in case of an air attack and in the use of gas masks.

CLASSIFICATION OF WAR GASES.

I. *Non persistent*:—When released these gases disperse quickly, and cease to be effective after a short period, the length of which depends on the weather conditions and the nature of the soil.

II. *Persistent gases*:—They are generally in liquid form and contaminate the area in which they are released and continue to diffuse in vapour form for quite a number of hours and sometimes even days.

The gases can also be grouped according to the effects they produce:

- (a) Eye irritant or tear gases.
- (b) Nose irritant or sternulators.
- (c) Lung irritant or choking gases.
- (d) Blister gases.

(a) *Eye irritant or tear gases*—such as chloraceto—phenone (C. A. P). ethyl-iodo-acetate (K. S. K.) bromo benzyl-cyanide (B. B. C.)

The tear gases, as their name signifies, cause a copious flow of tears and also a smarting pain in the eyes. They are generally used by the police for dispersing unruly mobs. The action is immediate, selective and temporary, recovery taking place on removal from the infected area.

(b) *Nose irritant group or sternulators*—They are arsine compounds (D. A., D. M., D. C.) Chemically they are known as Diphenyl-amino-cyan-arsine. Diphenyl-amino-chlor-arsine and Diphenyl chlor-arsine. This group has also a selective action on the nose. In high concentration or after lengthened exposure burning pain spreads to the naso pharynx and chest. Beyond a mental condition of depression which may last longer, recovery takes place on removal to a freed atmosphere. For both groups an efficient respirator is cent per cent protective.

(c) *Lung irritant or choking gases*. The lung irritant gases are very lethal in their effects; they cause an initial irritation of the eyes, nose and throat, amounting to burning and lachrymation but their predominant effect is on the respiratory passages and lungs in particular. They inflict grave injury and prove deadly to the unprotected. The chief gases of this group are phosgene (C. G.) chemically di-chlor-carbonyl; chlorine which was the agent in the first cloud gas attack in April 1915; diphosgene, used mostly by the French and German; chloropicrin (P. S) also called "Vomiting gas", tri-chlor-nitro-methane and acting very much like chlorine.

Phosgene and di-phosgene have a delayed action on the lungs, a most important feature from the treatment standpoint. The pathological changes following severe exposure to the long irritant gases, particularly phosgene, are:—

1. Emphysema, of varying degree, but permanent.
2. Fibrosis of local or more general type according to the complications than ensued
3. Persisting bronchial conditions, when the upper passage are effected.

4. Lack of tone in the myocardium though not necessarily a myocarditis, but leading to tachycardia, and lack of cardiac response.

(d) *Blister gases*. There are two examples of this group, viz. mustard gas or (H. S.) and lewisite.

Mustard gas, (H. S) (Yperite in French and yellow cross in German).

Chemically this is di chlor-ethyl-sulphide $(CH_2ClCH_2)_2S$. It is a heavy, oily fluid, clear when pure, darker in the impure state, with a boiling point of $217^\circ C$., and having a faint smell of garlic or mustard. It first came into use in July 1917, and then predominated in gas actions, either utilized by itself or in mixtures, till the end of the war. It proved to be the most potent of all gases and largely replaced those in use at earlier periods.

Mustard gas has no selective action like phosgene but, either in the form of vapour or liquid, effects every tissue structure which it comes into contact. It is readily soluble in fats and oils and owing to this high lipoid solubility its power of penetration are rapid and marked. The skin for instance, absorbs it, not by corrosion but by lipoid solubility, akin to blotting paper soaking up ink. Owing to the delayed action some hours may elapse before parts are affected and unless protected by a mask the eyes and the respiratory passages bear the brunt of injury. The external skin lesions, erythema, swelling and acute inflammation, blister formation and secondary infections causing even necrosis, are very common. The exposure also effect the mucous membranes, conjunctivae and upper respiratory passages. The trachea and larger bronchi may be the sites of necrotic tissue destruction and slough formation while in some cases of the upper bronchial tree have been coughed up. The lung structure itself, beyond perhaps some areas of emphysema, or collapse, may escape. In contra-distinction therefore to phosgene, mustard gas affects the respiratory tract from above downwards. Secondary infections of the lungs are likely to result in broncho or septic pneumonia, with pleurisy.

There is no evidence to show that any general or systemic infection occurs from absorption of toxic products of mustard gas, apart from supervening sepsis. The consequence is that systems other than the respiratory remain practically unaffected. The abdominal organs show little change, beyond perhaps some petechial hæmorrhages. Occasionally tainted food and drink have been held to be responsible for continuance of gastro-intestinal symptoms. The kidneys show no characteristic change, though a transient albuminuria due to septic absorption may be present. Beyond a leucocytosis present due to the same cause, no particular changes occur in the blood.

Lewsite. (*B*-chlor-vinyl-Di-chlorarsine). A colourless liquid which gives off an invisible gas, is rapidly destroyed by water and any alkali and penetrates materials in the same way as mustard, has a low freezing point. Characteristics are similar to that of mustard contains arsenic, invisible in vapour form smell of geraniums, has irritant action on eyes. stinging sensation on skin. It is persistent in action like mustard gas. It must be remembered that lewsite though not used in the last war, is likely to be a weapon of the future.

There are differences of importance in its action, but the general effects correspond to those of mustard gas, with which it is classed as a blister gas. The fluid in the blisters however, contains arsenic. The late results are practically the same, except that arsenical absorption may lead to neuritis.

Sequelae, and after effects of gas poisoning. The after results mainly occur in the:—

1. *Respiratory system.* Sequelae, when occurring are similar in the main to those so commonly seen in cases of long continued bronchitis. From a clinical standpoint, only an authenticated history would distinguish. That is to say the emphysema initiated at the "Gassing" is progressive, bronchiectasis of varying type and extent, increases, and fibrosis, usually of the bronchial tree, distribution, proportionally develops, increasing dyspnoea, this usually having an asthmatic character. The clinical features noted with the more severe types of bronchiectasis are likely to be acute, prolonged and very serious. Persistent pyrexia of a septic type, much blood stained sputum, and occasional profuse haemoptysis, loss of weight with continued general deterioration, may readily suggest the presence of supervening tuberculosis. The sputum, however, remains negative, and autopsy has shown in such cases the absence of tuberculous lesions. Bronchiectatic cavities or pulmonary abscess, even gangrene of the lung, may develop, but are not to be distinguished from similar conditions due to other causes. It was early anticipated that pulmonary tuberculosis would have a high incidence in men who had been gassed, but the general experience of the chief combatant nations since the war has been quite the reverse. No material increase of pulmonary tubercle in ex-servicemen can be attributed to gassing.

The development of dyspnoea of the asthmatic type deserves special mention. Various factors tend to induce it. Increasing emphysema, lack of cardiac response, pulmonary fibrosis, vascular congestion and anoxaemia are important. Reflex effects from the gastro-intestinal tract, including nasal and oral conditions are also common.

2. *The eyes.* After an initial short delay, exposure to the gases mentioned causes intractible acute conjunctivitis, haziness

of the cornea and (according to the severity of the exposure) followed by keratitis, after ulceration with hypopyon and iridocyclitis.

Photophobia.—This varies from a mild to an extreme degree, in the latter instance requiring the use of tinted glass.

Lachrymation.—Varying according to the severity of the condition present. Visual acuity is always involved.

Congestion of the conjunctiva.—Is a feature in the case of the bulbar portion, for this is marked with enlargement of the vessels; in some cases there is a naevus-like formation. No vitreous changes have been noticed, and so far as can be observed the fundus is normal. The prognosis is bad, and not infrequently enucleation for the relief of pain and the removal of a useless organ has had to be performed.

3. *The skin.* Any persistent or relapsing skin conditions are unusual; in fact so few cases are known that beyond an occasional persistence of a mild dermatitis or chronic furunculosis, the latter from secondary infections, no trouble of serious import need be anticipated. This is perhaps surprising, considering the severe skin effects that characterised mustard gas lesions.

4. *D. A. H. and Irritable Heart.* Though these conditions with precordial pain lack of exercise response and dyspnoea were persistent and frequent after effects during the convalescent periods, following gassing from lung irritant and mustard gas, time and treatment appeared to remedy these conditions.

5. *Functional Nerve Conditions.* These conditions are the sequelae of the original gas effect but persist afterwards due to physical causes. Thus aphonia would readily occur from laryngeal inflammatory effects from the irritant gases, and persist either as that, or even mutism physically induced or partly influenced by the early requirements of treatment. Stammering is another form in which the same factors might be a dominant influence. Blepharospasm readily might find origin in the ocular spasm from eye irritant gases, or even extend subsequently to habit spasms. Migraine attacks have on occasion been ascribed to vomiting when gassed.

DETECTION OF GASES

The gases may sometimes be detected from the nature of the cloud formed at the time of bursting of a bomb, peculiar smell, effect produced on the persons, and by means of special test.

1. *By Visible Signs.*—A gas bomb has a thin shell with a large amount of gas in it. It is made especially to explode and discharge its contents on the surface of the earth. In some cases, a cloud appears on the part where the bomb drops and drifts down wind. The cloud of gas is dangerous, but as it travels down with the wind and becomes more and more diluted, it soon loses its power of doing

harm. *Non-persistent gases* like chlorine, phosgene, sneezing (nose-irritant) gas, choking gas and one type of tear gas form clouds of this nature. When however a gas bomb containing *mustard gas* bursts, there is a *splash of liquid* at the place where the bomb drops. The liquid drops, sprinkled on the ground or any object, continue to give off poisonous vapour for a long time until the liquid is all evaporated.

2. *By the effect on the body.*—Tear gases only give rise to a copious flow of tear from the eyes. Sneezing gases (nose-irritant) produce sneezing and coughing. Phosgene and Chlorine cause a choking sensation. Lewsite—produces a *burning sensation in the eyes and nose*. It is however easily detected from tear or nose-irritant gases by its strong *geranium-like smell*. Mustard gas does not produce any immediate sign, and is therefore the most dangerous and treacherous of all the gases used in war.

3. *By Testing Apparatus.*—There is a chemical which has been found to change from yellow colour into red on coming in contact with liquid blister gases. Advantage is taken of this quality for the detection of these liquid gases. The chemical detector may be had in the form of a *yellow paint*. If the liquid content of a bomb containing *blister gas* is *splashed* on anything painted with this yellow detector, the *yellow colour is at once changed into red*. By this means it is possible to find out the presence of liquid mustard gas or lewsite whether sprinkled after the bursting of a bomb or sprayed from above. Electric and telephone poles and letter boxes in the streets should be painted yellow with this chemical. The window ledges of buildings in towns and cities should also be painted with it. After an air raid the change in colour of the window ledges will help a citizen to take immediate measures for counteracting the bad effects of the poisonous liquids.

ORGANISATION OF AIR RAID PRECAUTION

Any measure for the protection of the lives and property of the civil population, in peace as well as in war, comes within the duties of the police and the civil authorities. An air raid preventive officer has been provided for each important port town Calcutta, Bombay and Madras by the Central Government who has got to work in collaboration with the provincial Governments. And air raid preventive (A. R. P.) volunteer corps may be formed on the above line under the direction and control of trained police officers. Each unit may be under the charge of officer not below the rank of an inspector of Police, having a thorough knowledge of A. R. P. work. In time of peace the volunteers will be trained in preventive work. During air raid they will be required to be on duty at their posts as full time workers. Volunteers should be trained in air raid preventive measures. The efficiency of the force may be maintained by courses of

practical instruction from time to time. Mock air Raid signals should also be arranged, so that there may not be any disorder during an actual air raid. Success depends on good system of communication between various services. Quick information should be given to the section whose aid is required.

A.R.P. Centres.—In large cities and industrial areas there should be A. R. P. centres in suitable buildings preferably attached to the police stations. The A. R. P. establishment in a town should consist of :—

1. Air-raid Wardens—their duty is to enquire and report air raid damages.

2. First Aid and Rescue Parties—for bringing in and giving first aid to persons injured in an air raid.

3. Decontamination Squads—Their duty is to treat the places contaminated with gases in order to make them harmless.

4. Fire Brigade.

A stock of gas masks, protective clothing etc., should be kept in each station. Treatment centres should be set up for treating persons contaminated with the gases.

Gas Mask. Most of the war gases attack the nose and the eyes ; so it is necessary to protect them. The best means for the protection of the nose and the eyes is the use of a good gas mask (Respirator). It will prevent gas vapour from passing through it. Two types of gas masks are available now, one for the general citizens, *civilian type*, and the other the *service pattern*, for those who will have to work for long hours in area contaminated with poisonous gas.

Service Respirator. The service respirator consists of a facepiece and a container containing charcoal and cellulose to absorb gases. The facepiece covers the eyes, nose and mouth. It is made of rubber and is shaped to fit the face. In front of the face piece there is an outlet valve. Attached to this valve is a flexible tube through which the air comes from the container. The eye-pieces are made of glass discs which do not splinter. The face-piece has elastic bands for fitting it on the head. The tin container is filled with layers of charcoal and cellulose. The cellulose catches up the smoky particles in the gas ; while the charcoal absorbs the gas itself. The container thus serves as a filter of poisonous gases contained in air. The air enters and passes through the container. It is thus freed of any poisonous gas. After purification the air passes through the flexible tube into the rubber face-piece

2. *The General Civilian Respirator* is smaller in size ; and its tin-container is placed just in front of the face piece. An oblong celluloid sheet passes across the eyes.

If no gas mask is available then ordinary lint piece soaked in water and tied to the mouth will prevent to a certain extent the injury by the gases.

PREVENTION AND TREATMENT OF GAS CASUALTIES.

(A) *Preventive measures for out door movements.* The public should be warned to avoid going out of doors during and after an air raid. If anyone is obliged to go out he must wear a gas mask. The general civilian respirator is recommended to the public. An officer on duty may be required to go into streets and areas contaminated with poison gas after an air raid. He should do so only with a gas mask and by putting up of the protective clothing. Any unnecessary exposure to poison gas should however be avoided. Whenever there is suspicion of the presence of gas, a gas mask and protective clothing must be worn to avoid risk. The Service Respirator is made for the police officers and for those who may be on duty during an air raid and have to work for long hours in an area contaminated with gas. The gas mask will protect the nose and eyes from the poisonous vapour; but it cannot protect the other parts of the body. The skin is liable to injury by the liquid or vapour forms of gases. Officers on duty in gas contaminated area should therefore wear the protective clothing. Oil skin clothes, gloves and rubber boots are used for this purpose. This dress prevents penetration of gas. One cannot however work long hours in this equipment and it should therefore be worn only for short periods say, half an hour when necessary. Before putting on protective dress, it is necessary to remove one's clothing. The order of dressing should be as follows, first put on clean under-clothing and socks, trousers, boots on and the boot covers, coat, gas mask in an upright position, the gloves which are tied at the wrist, and last of all the head dress or the helmet.

The various articles of clothing should be removed in the reverse order as follows the head dress or a steel helmet first, next gloves, the gas mask and the haversack, the coat, the boot covers and the boots, the trousers and last of all the under clothing. When the boots are taken off, the man must not put his feet on the ground at that place as it might have been contaminated by the boots and clothing. He should move his feet to another side of the stool on which he is sitting and put them there.

(a) PROTECTION IN THE BUILDINGS.
(gas proof and splinter proof shelters)

Object of these shelters is to enable the important industrial centres to carry on their work in spite of the air raid and to prevent casualties and to protect the property. It will be impossible to find the gasproof shelters for everyone in a vast and open country like India. Although in England everything is being done to provide shelters for persons "in the street". Full use is being made of the underground railways and trenches have been dug in most available open spaces. Certain factories have made the most extensive system of underground protection for their employees. But many people will remain in their homes where some form of protection

should be prepared in case of an air attack. In large workshops and factories and in the various business establishments something can be done and should be done for the employees. Key workers who have to remain on duty should have some form of shelters.

(b) METHODS OF PROVIDING SHELTERS.

Trenches.—This presents a problem in Calcutta where it is too wet to dig in the ground very far, and in any case trenches would get flooded in the monsoon. However a shallow trench is better than none at all and it is always possible to compensate for the shallowness by building up a sandbag wall on each side of the trench. Trenches form a good protection against anything but a direct hit, and they have the advantage of being away from buildings as many casualties occur through falling of debris. Trenches must be made zig-zagged.

Indoor protection Ground floor should be chosen always, avoid over-crowding. It is better to have a number of shelters than to crowd more than 50 persons in one shelter, 75 square feet of surface area (walls, ceiling and floor) per head should be allowed. It must be capable of being made gas proof, the fewer the openings, the better, two exits should be provided. It is a good thing for the windows to face another building or wall which saves it from flying splinters and blast. Internal corridor may form a good shelter when closed at both ends for protection against gas. Windows and doors must be protected and also the wall if they are less than 13 inches thick. In any case it is better to sand bag up the walls if at all possible. Boxes of earth are an excellent substitute for sandbags. Roof must be strong enough to withstand all debris falling on it. In case of the windows there is the danger of glass shattering due to blast even when bomb falls some distance away. Sandbag wall about 2 feet thick should be built up to prevent flying splinters and blast. Sometimes fine mesh wire netting on the inside of window will prevent glass flying. Cellophane or paper may be gummed on inside surface of glass. For gasproofing in event of window breaking old piece of blanket or carpet should be kept handy for nailing inside the window frame, otherwise it is a good thing to keep handy a frame which fits accurately the inside of a window, blanket being fixed in the frame. Blanket should always be kept damp with water. All cracks must be filled up either by pasting over with paper or by filling in. All chimneys of fire places should be stuffed up with paper or rags, damp paper seals very well. Waste pipes, overflow pipes and ventilators must receive attention particularly the ventilators under the floor as gas may be drawn through them.

Outside the shelter, if it is proposed to build upon a protection round the walls, it should be done either with sandbags, earth boxes or sleepers, etc, it should be built up to about 5 feet above internal floor level.

Air locks.—Their provision is advisable in shelters where people are likely to be continually going in or coming out, such as signal centres first aid posts and so on. In a private house they are really unnecessary but a good thing to have a gas proof blanket handy and ready for nailing up. At first aid centres it is necessary to have an airlock with space of 9 feet inside between curtains, this allows for stretcher to be carried in without it being necessary to lift both curtains at once. Otherwise about 4 feet is a sufficient space.

It is unlikely that persons will have to remain in a shelter for long periods, conditions will have to be pretty bad before we come to that stage, air raid after air raid with little respite, or a very heavy gas attack, or possibly an odd mustard gas bomb dropped close to a shelter, in the latter case it is presumed it will be reported and a decontamination squad will soon clear the contamination. However it would seem advisable to have drinking water, emergency lighting, a bucket of sand or fire extinguisher handy in a shelter. Other articles can always be added if the conditions become worse. When considering the building of shelters it is advisable to realize what thickness of material is necessary to stand up against the blast and splinters from bombs dropping not less than 50 feet away, an average has to be taken for a 500lb. bomb.

Various shelters are being experimented in England but in the meantime it is advisable to improvise with the material available, and a lot can be done in this respect in India. In Bombay, Calcutta, Madras, Cawnpore, and other industrial towns and cities, all important buildings should be provided with a gas protected room for the safety of its inmates. In the selection of a room preference should be given to a room on the ground floor. As gas drifts along with the wind, it is advisable to select a room least exposed to the prevailing winds. In Calcutta a room on the ground floor situated on the northern and western side of the building may be utilised. The windows of the room should be small and fitted with non-inflammable cellophane sashes. If they are not available then the windows should be covered with ordinary paper. All the cravices and holes should be closed by paper. Glass sashes are liable to be broken by the shock of bombs even exploding at a distance, and so should not be used. The doors and windows should fit well. They should be covered with gasproof curtains. An ordinary blanket damped with water makes a good gasproof curtain. The room should be sufficiently large to accommodate all the members of the household. In India, closed rooms may be safely occupied upto 12 hours if the surface area is 100 square foot for each person. An ordinary room 10 ft. long, 10 ft. broad and 10 ft. high is sufficient for 5 persons.

MEASURES TO BE TAKEN JUST AFTER AN AIR RAID IS OVER.

Immediately after the attack is over the rescue and first aid parties should go along with the decontamination squad. When

all is over gas clear signal should be given if necessary. The Fire-fighting squads should also go out immediately if required. Police should prevent any attempt at looting, should keep the public away from scene of the damage (buildings may have to be roped off particularly if unsafe). When the casualties are cleared and gas clear signal has been given the repair gangs start work. It would seem advisable for all branches of A. R. P. organization to make full use of air spray detectors and detector paint. Air spray detectors should be put out on the receipt of warning.

(d) FIRST AID.

There is First Aid for each group of gases; it is essential that the correct treatment should be applied as soon as possible. Severity of the injury caused by the gas depends on various factors such as concentration, the amount inhaled, the duration of exposure etc. The respirators must be kept on while still in gasses area even though the patient suffers discomfort by doing so.

FIRST AID IN CASE OF INDIVIDUAL GROUPS OF GASES.

(i) *Choking gases.*—Members of this group produce serious damage, and they are dangerous to life. The symptoms are coughing and difficulty in breathing, tightness of chest and rapidity of breathing and pulse. There may be delayed action in some cases particularly in case of phosgene. All suspected cases must have rest from the outset and stretchers must be used for all cases and patient never allowed to work. Shivering is usually marked in these cases, therefore patient must be kept warm. A certain member of cases may suffer from pain in the chest and there may be little or no coughing, which is a prominent symptom in others. Retching and vomiting are frequent. Artificial respiration must not be attempted, it may do more harm than good. Some lung irritants like P. S. or chloropicrin also have the properties of tear gas in stronger concentrations. Alcoholic drinks should not be given, they cause quickening of respiration, hot sweet tea is a good substitute.

Blister gases.—There are two main causes of casualties occurring from these gases viz. those resulting from vapour and those resulting from contact with the liquid or contaminated material.

(1) *Casualties from vapours.*—Mustard and lewsite vapours attack the eyes, there may be a delayed action, (i. e. a few hours afterwards) when there is smarting, watering and closure from swelling pain on exposure to light. There is a profuse discharge from between swollen lids and the tears trickle over reddened cheeks which may cause blister on the cheeks. Actual destruction of eyes is rare. The treatment consists in washing the eyes with saline solution one teaspoonful to one pint of water. The eyes should be washed with plain water if salt is not available. One or two drops of medicinal paraffin instilled after washing will prevent the eyelids from sticking together. The vapours may also cause

inflammation of the throat and the wind pipe. Dry burning mouth and throat with harsh cough, may be treated with alkalis. Laryngitis and partial loss of voice, resulting from prolonged exposure of the damage to lungs and pneumonia should be treated with rest and respective treatment in each case. Vapour also attacks the moist areas i. e. bends of elbows and knees, armpits, crutch and inner sides of thighs. It causes erythema, fine rash, blistering and ulceration (depending on concentration and time of exposure.) The treatment in these cases should be started as early as possible. Bleaching powder made either as a paste or an ointment the former is the best remedy and is made by adding water and stirring to make a kind of thick cream, usually equal parts of bleach powder and water are added. Bleach ointment is made by mixing two parts of bleaching powder to one part of vaseline preferably white vaseline. This anti-gas ointment is also issued on service to the troop. The contaminated area and the surrounding skin should be covered with ointment or paste, rub in well for a minute or two, remove by wiping with dry rag in case of ointment and by washing off with water in case of paste. Later on the patient should have bath with soap and water. The patients should be evacuated from the infected area as soon as possible.

(2) *Casualties from the liquid*:—A splash from liquid mustard gas damages eyes permanently unless immediate treatment is undertaken. The common symptoms after exposure to liquid gas are immediate irritation, these effects possess of in an hour or so, later on the symptoms already described develop from exposure to vapours.

The treatment in these cases also consists in immediate washing with saline solution or water. The smallest spot will cause blister to the size of a shilling, the poison penetrates into skin being freely soluble in fat and damages at once the outer layer of the skin, produces erythema and blisters followed by an ulcer. If the patient knows he has been splashed and comes for immediate treatment, swab the affected part with petrol or paraffin, be careful not to let liquid run over other parts. Later on scrub with soap and water until the skin turn pink. Apply bleach paste, rub in and leave it for a couple of minutes and then wash off. Apply the protective ointment at once as already described. Time is an all-important factor in dealing with blister gases. The blisters should on no account be broken except by a doctor. On the other hand it is advisable for lewsite blisters to be broken on account of possible arsenical poisoning. Water rapidly destroys lewsite, thus washing without bleach will also be effective. If the clothing are contaminated remove them from the body of the patient, and keep them in a closed bin. All washable clothing should be boiled in water for an hour and then washed with soap and water. Shoes should be brushed with bleaching powder. At each A. R. P. Station there

should be arrangements for the treatment of clothing and other articles contaminated with gas. The contaminated clothing should be sent to the centre as soon as possible for the necessary treatment.

Nose gases.—They have a delayed action. There is burning pain in the nose, throat and the gums which may cause violent sneezing and coughing. There may be vomiting and depression. The treatment consists in administration of stimulants and washing the nose and throat with soda bicarbonate (two teaspoonful to one pint of water) this solution removes the gas particles. The patient may also be allowed to drink this solution to ease vomiting.

Tear gases.—Symptoms are pain, tears and spasms of eyelids. They seldom have any ill effects. The treatment consists in washing the eyes with the saline solution as in the above case. In the end it is important that all gas cases should be removed from gases area and respirator should be kept on till the area is declared clear of gas.

From the foregoing description of the gases and their symptomatology and their prevention it appears that if we are prepared the damage with gas is not so great as with the highly explosive bombs and most of it can be avoided.

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- (1) Pace, J. P. *The Med. Press & Circular* April 28, 1937 p. 386.
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Modern Methods of Treatment.

THERAPY OF COUGHS.*

CHRONIC COUGH.

While, no matter what kind of a cough is being treated, discovery of its cause is desirable, a correct and complete diagnosis becomes the paramount necessity in the treatment of a chronic cough. The great *vis medicatrix naturae* (the healing power of nature) gives assurance of a natural tendency for coughs to cease. When this tendency does not assert itself, one must discover what it is that keeps it from doing so. In the last analysis, this will always be found to be due to either "irritation plus," "nutrition minus," or a combination of the two.

"Irritation plus" lies most commonly at the bottom of a chronic non-productive (useless) cough; and this "plus" of irritation may be the result of (a) excessive irritability, (b) extrabronchial irritation, or (c) inhalation of irritants. It is in the last mentioned kind that the cough may also be of the "useful" variety.

(a) Nervous irritability results in the "nervous cough," which may become a lifelong habit, indulged in most especially when the individual is embarrassed, as by a pause in conversation, or when he is reminded of the cough, as by being asked whether the cough troubles him a good deal. It is apt to cease suddenly when the mind is distracted and to disappear at night. It is nearly always accompanied by other phenomena of nervousness, and may be displaced by other manifestation of neurosis. In spite of its chronicity, it has but slight effect on general nutrition and there are no physical changes. Such a cough should be cured by psychotherapy in one or all of its modalities, as they may be required: Suggestion, re-education, mental hygiene, psychoanalysis. Regarding the symptom itself it is best to employ the "policy of neglect." By this is meant paying no attention whatever to the symptoms while giving most solicitous care to the patient as a whole. Such a policy acts as a powerful suggestion that the symptom is not really of any importance, just as direct treatment of the symptom may serve to maintain by fixing the patient's attention on the cough.

It will not do, however, to dismiss a cough lightly as being merely of nervous nature, because the cough of early tuberculosis may masquerade thus, until when this cough throws off its mask it may be too late for the cure that might have been easy at first. Hence the fundamental principle in all chronic coughs must be "suspect tuberculosis," as this is the single most common cause of a chronic cough. While it is a grievous error to pronounce this suspicion until

one is convinced of its correctness by positive evidence, one must not rest content until the patient either stops coughing or until it is known definitely why he cannot, and one is ready to apply the correct remedy that will cure or at least relieve him.

(b) Extrabronchial reflex irritation is often spoken of as the "reflex cough"; a faulty designation, for all coughing is reflex. Even though, from a theoretical standpoint at least, the possibility of a "stomach cough," a "uterine cough," a "nasal cough," or an "aural cough" must be admitted, these are so rare in practice that it is just as well to forget about them. On the other hand, one should, remember the fact that the pharynx is the most important tussogenic zone next to the tracheal bifurcation and the bronchi, that chronic tonsillitis is perhaps the fourth most common cause of a chronic cough, and that mouth breathing no matter what its cause—maintains bronchial irritation by insufficient warming and moistening of the inspired air. Next to attention to the chest, all chronic coughs demand attention paid to the throat, irritation of which might also be maintained by discharges from the paranasal sinuses.

In infants and children, extrabronchial coughs are very common. The usual history of a cough starting when the child is in a recumbent position is almost always elicited. The cause may be reflex from the irritating secretions in the nasopharynx, especially chronic, infection in the adenoid tissue. In children, a useless or at least excessive cough that hangs on and resists ordinary remedies may be due to pertussis or to mediastinal irritation. Enlarged mediastinal lymph glands may maintain a cough that can often be cured by appropriate X-ray treatment. This may also cure the dangerous cough of thymus enlargement, the presence of which should be suggested by the triad of cough, dyspnoea and stridor occurring in an infant. The rule should be formulated that every case of chronic cough requires a roentgenographic examination of the chest. This enables one to diagnose and, in consequence, cure not only the conditions just mentioned, but also early tuberculosis; and it also gives the correct indication for treatment of the "brassy" pressure cough of aortic aneurysm or of a tumour (possibly carcinoma) pressing on the trachea or bronchi. In the "pressure cough" the patient is entitled to all the antitussive in the form of opiate that he needs to keep him as comfortable as possible under the circumstances.

(c) Inhalation of irritants may result in a productive (useful) cough that will not cease until the source of the irritation is discovered and removed. This is not infrequently the excessive use of tobacco. Hence in all chronic coughs the use of tobacco should always be interdicted or at least greatly restricted. Occupational exposure to irritative dust or vapours, as in mining, polishing, stone

* Continued from October 1939 issue.

cutting, cement mixing or milling, may be the cause of a chronic cough, which may demand change of occupation, if proper ventilating devices to protect the worker are not sufficient or available. The rule of employing roentgen examinations in all chronic coughs should enable one to detect pneumoconiosis and to insist on change of occupation before the disease has progressed to the crippling stage.

"Nutrition minus" is the most common cause of the chronic useful cough. In such cases, inhalation of irritants having been excluded, one must look for a nutritional disturbance that prevents the healing of the inflammation responsible for the secretion. This nutritional disturbance may be found in one or three great groups (a) impaired blood supply, (b) a dyscrasia, or (c) local tissue change; and it may be a combination of factors from two or all three of these groups that may account for the chronicity and require correct evaluation of their relative importance for successful therapy.

(a) Impaired blood supply. Heart disease is one of the three most common etiologic factors in maintaining a chronic cough. When this combination is present, the two must be dealt with simultaneously, as the combination may result in a vicious circle.

Anæmia, when present, deserves radical treatment, as laid down under this heading for, without a generous supply of good red blood, healing is always languid.

(b) Dyscrasias. When a nephritic or a diabetic patient develops a bronchitis, treatment of the cough must be combined with the correct treatment of the systemic condition to secure satisfactory results.

The presence of an allergy must be most especially suspected when a spasmodic factor is present; the combination of bronchitis and asthma.

In the absence of well defined metabolic disease, the ill defined condition called "poor resistance" may be responsible for the maintenance of a chronic cough. Such impaired resistance should be met by one or more of the following remedies:

1. Cod liver oil. It is probably because the impairment of resistance is in many cases an avitaminosis, most especially in children, and because of the frequency with which rickets is the cause of chronicity of bronchitis, that cod liver oil has acquired a great reputation in the treatment of chronic coughs. There is no doubt that cod liver oil may be an excellent medicine for a child or an adult whose nutrition is poor, and who is subject to a winter cough; for cod liver oil is also a fattening food, which makes it superior in those below par in weight to the more concentrated vitamin (A and D) preparations. Cod liver oil should be administered to children in teaspoonful doses and to adults in doses of tablespoonfuls, though it may be well for either to commence with a smaller dosage and gradually work up to the desirable quantity. It is best given two

hours after meals. It may be floated in orange juice (which may decrease the vitamin C effect) or it may be administered as Aromatic Cod Liver Oil (prescription 15), if the patient objects to the flavour of the oil. Cod Liver.

PREScription 15.—*Aromatic Cod Liver Oil.*

R. Saccharin 0·10 Gm.
Compound Spirit of Orange 5·00 cc.
Cod liver oil 250·00 cc.

M. and filter. Label: Tablespoonful three times daily two hours after meals (in chronic bronchitis with malnutrition).

Oil Emulsion, containing only 50 per cent. of oil, may meet the indication when the patient refuses to take the oil itself in any form because of its "oiliness." It would, of course, be a mistake to employ Cod Liver Oil in a case of malnutrition to the extent of interfering with the ingestion or digestion of other food. Indeed, anorexia and fever are the two most important contraindications to Cod Liver Oil. When it produces diarrhoea, it must also, of course, be stopped. "Not to employ any medicine that upsets digestion or impairs the appetite" should, indeed, be a fundamental principle in the treatment of all chronic coughs, as the cure may depend more on improvement of nutrition than on any good the medicine may do.

It should also go without saying, were this principle not so frequently neglected, that it takes proper diet, not medicine, to "build up" a patient, and that, before Cod Liver Oil is even started, one should be sure that the nutritive value of the patient's diet has been increased to the limit of his digestive capacity.

2. Arsenic. One may think of arsenic as a possibly useful alternative when other medicine does not seem indicated or is not well borne in the case of a chronic cough. It may display the same kind of healing tendency in chronic bronchitis that it does in some chronic skin diseases; e. g., psoriasis. Properly given, it may improve appetite, digestion, and bowel evacuation, favour gain in weight and lessen anæmia, and make expectoration easier, possibly in a manner similar to that by which iodide acts, catarrh of the respiratory mucosa being one of the earliest untoward symptoms of arsenic action. Indeed, in a case of chronic bronchitis in which iodide is not well borne one should always think of arsenic as a possibly useful succedaneum. When anæmia is present, the arsenic may well be combined with iron (prescription 16).

PREScription 16.—*Arsenic and Iron.*

R. Arsenic trioxide 0·03 Gm.
Reduced iron... 2·00 Gm.

M. and div. into thirty pills. Label: One to two pills three times a day after meals (in chronic bronchitis with anæmia.)"

3. Proteotherapy. "Poor resistance may not only be due to obvious malnutrition but also be present in the less obvious form of

deficiency in immunization reactions on the part of the patient's system. Focal infection may be responsible for this, and should therefore be searched for and properly treated. Attempts at raising antibacterial resistance by some form of proteotherapy are also in order. Which one of the many possible varieties is best cannot as yet be stated with certainty. One may prefer, as probably its most rational form, the properly graded administration of autogenous vaccine.

4. Ultraviolet rays, be they applied in the form of sun's rays (heliotherapy) or of the rays from a carbon arc or a mercury vapour lamp, have a stimulating effect on metabolism, and resistance to infection, provided the optimal dosage is not exceeded, and provided the patient is free from fever or a tendency to fever. It is always best to start with a dose that will certainly be safe, and to increase it very cautiously until the skin is tanned, when tolerance may be considered to have been established, and much larger exposures may be safely borne; but these must always be well within the limit of producing depression or exhaustion. Pigmentation of the skin is essential to success, and usually coincides with clinical improvement.

5. Hardening. The "poor resistance" may also be due to insufficient systemic reaction on exposure to chilling influences. Such patients are liable to "take cold" frequently, have difficulty in getting over colds, and ultimately develop a cough that hangs on all winter but disappears during the summer. This might be one of the differentiating features in leading one to suspect more or less strongly the presence or absence of early tuberculosis, for in the latter condition the cough is less likely to be quite as seasonal, but to continue throughout the year, though it may be less troublesome during the summer. Such individuals should be taught the hygiene of clothing. They must by degrees be inured to outdoor life. They can be greatly helped in this by a graded course of "tonic" hydrotherapy, a form of water treatment in which a "good reaction" is the *sine qua non* to success.

Hardening treatment is contraindicated in individuals at the extremes of life, in those enfeebled by any severe systemic disease, such as nephritis, and in rheumatic, neuritic, or neuralgic conditions. During menstruation, and in the presence of acute catarrh, no matter of which mucous membrane, hardening procedures should be temporarily abandoned.

6. Climatotherapy. Change of climate should be insisted on for all those suffering from a winter cough who cannot be subjected to "hardening" or who will not undertake it. Certainly nothing is more rational in therapy than to rescue those who are well during the summer and ill during the winter from the tax that winter puts

on their system, most especially as in the cases of "chronic bronchitis" the results of the inclemencies of weather tend to become progressively worse, eventuating in ultimate pulmonary and systemic crippling, premature old age, and a welcomed early death. Such individuals should spend the winter in a warm, sunny climate. For those with profuse expectoration, dry climates are more suitable; while, for those with little expectoration and excessive cough, a moderately moist climate is to be preferred. During the summer, forest areas in moderate elevation as free as possible of wind and dust are best.

To the poor, who cannot afford to travel, the artificial tropical climate of indoor confinement may be the means of minimizing suffering and of prolonging life. Under such circumstances special attention should be paid to uniformity of temperature (from 68 to 70 F.), and a sufficient degree of relative humidity (from 40 to 60 per cent).

Much night coughing may be spared a sufferer from chronic bronchitis if his bed is warmed before he enters it, and if he is given, at bedtime, a hot drink, such as a glass of hot lemonade. Another glass of hot lemonade first thing in the morning will lessen the difficulty these patients experience in clearing their chest of mucus that has accumulated during the night.

Absolute rest in bed even for weeks or longer may be the sovereign remedy for a cough that hangs on, especially if it is accompanied by a considerable degree of malnutrition and particularly if a slight elevation of temperature exists. In this manner a case of incipient tuberculosis may be cured before it is diagnosable.

(c) Local tissue change. This condition must be prevented by all means at hand. Unfortunately, this is impossible in case of pulmonary carcinoma, which should be suspected in an elderly person, especially a man, who develops, in addition to cough, pain in the chest, wheezing, possibly hemoptysis, and who loses weight rapidly. The suspicion should lead one to look carefully for metastases, which develop early in these cases, to examine the chest for even minimal X-ray changes, and to employ bronchoscopy. The early diagnosis may avoid useless treatment and discredit of the therapist. The employment of adequate roentgen therapy will diminish the suffering, which should also be assuaged as completely as possible by the use of an antispasmodic even to the point of the narcotic habit.

Pulmonary emphysema and bronchiectasis are the most common causes, next to tuberculosis, and heart disease, for the maintenance of a chronic cough. Dilatation of the bronchi and of the alveoli of the lungs are, indeed, invariable results of any chronic severe cough, no matter what its origin; and once these conditions have become

established, they maintain the cough even after the original cause has disappeared.

Bronchiectasis, a common cause of what has in the past been called "chronic bronchitis," is now not only definitely diagnosable, thanks to opaque medium roentgenography, but also relatively amenable to treatment by postural drainage, injection treatment of the cavities, bronchoscopy, and pulmonary collapse therapy.

As pulmonary emphysema leads to congestive heart failure, which in turn maintains cough, there exists here a veritable chain of vicious circles. Remembering the essential incurability of these changes, once they are grossly developed, one should resolutely employ all the various means at command to break in on these vicious circles at some one or all points, aiming to establish for the handicapped individual some level of tolerable existence, which the skilful physician may often maintain in a co-operative patient for many years.

—(*The General Practitioner*, July 1939).

EMERGENCY MEDICAL SERVICES.

[The following is an abridged version of a circular (E.M.S./Gen. 245) issued to medical officers of health and group officers by the Ministry of Health in connexion with emergency medical services.]

TREATMENT AT FIRST-AID POSTS.

First-aid posts have been set up with the intention of protecting casualty hospitals from a rush of minor and ambulant cases and providing early treatment in those districts where the hospital is some distance away. The function of the first-aid post is:

(1) to treat and send to their homes the slightly injured and those suffering from nervous shock;

(2) to arrest hæmorrhage, relieve pain, and so prepare those casualties who may be found to need institutional treatment that they can be transferred to the casualty (receiving) hospital with the least possible harm—that is, by having taken steps to prevent any immediate deterioration.

FUNCTIONS OF FIRST-AID WORKERS.

First aid posts, whether fixed or mobile, will be staffed by both qualified and unqualified personnel. The suggestions made must be regarded as embodying the views of the consultant advisers as to the early treatment which is indicated whether this be practicable, only at a casualty (receiving) hospital or at a first aid post. As there will be a doctor in charge of each post it will be for him during the peace time collective training of his personnel (Circular 1831) to determine and give instructions as to the extent to which treatment

will be undertaken and how far they may act independently of his assistance and advice.

The duty of the first-aid worker is not to try to accomplish too much, as this may be done at the expense of the patient. He must not assume that he has learnt in a few weeks or months what has taken the doctor and the nurse years of training and experience. Self confidence, unless restrained by knowledge and the exercise of common sense, leads sooner or later to trouble. The first-aid worker is a very essential factor in the Emergency Medical Scheme, and without his help casualties would fare badly, but his value depends directly upon the manner in which he carries out what he has learnt. First aid classes have given the initial grounding in the work and it is practice and application which is subsequently required, while many of the items referred to are covered by the first-aid manuals, it is the opinion of consultant advisers to the Ministry that it cannot fail to be helpful to place emphasis on certain points in view of the type of emergency work actually to be performed.

GENERAL GUIDANCE.

Dressings.—Every care should be taken to handle dressings as little as possible, and make sure that the surface of the dressing to be applied to the wound has not been touched, since further infection may be added to a wound already infected. A dressing that has already been put on should not be removed merely to see the wound unless it is thought that with a clean dressing the patient might be sent home or unless there is some clear indication for removing it.

Small Skin Wounds.—Small fragments that result from the explosion of bombs or modern high explosive shells may cause quite trivial wounds but inflict serious injury to underlying parts.

Severe Injuries to Soft Tissues.—These may frequently be present without fracture and should be dressed after the removal of any superficial foreign body and immobilized by splinting. Wounds of the large muscles—for example, the upper thigh—may be associated with considerable shock occasionally even to a dangerous degree in spite of the absence of damage to bone or severe hæmorrhage.

Multiple Wounds.—Many such cases must be expected and their treatment often presents very grave difficulty. Their chief importance lies in the amount of shock produced and the possibility that the chest and abdomen may have been treated by fragments that have entered through other parts of the body.

Haemorrhage.—The application of a tourniquet is very painful. In addition it seriously endangers the vitality of a limb. It should therefore be applied only after careful consideration. In ordinary circumstances it should be relaxed after fifteen minutes to see if the bleeding has ceased. Pressure of work may render this impossible,

11/11/39

but under no circumstances should a tourniquet be left on for more than an hour. If there is any chance of renewed hæmorrhage, a tourniquet should accompany the patient in the ambulance when evacuated. A tourniquet should be applied just tight enough to stop the hæmorrhage: if it is too tight it may cause serious injury to the limb. Always ensure, that patient with a tourniquet on is prominently labelled and that the time of application is endorsed on the label.

Partially Detached Limbs.—Limbs hanging by shreds of soft tissue, where there can be no hope whatever of saving the limb, should be removed even at an aid post. A general anæsthetic is to be avoided and is seldom necessary; the morphine which has been administered will usually suffice. The affected limb should be splinted.

Abdominal Wounds.—Missiles may have penetrated from any aspect of the trunk or nearby parts of the neck, limbs, or through the buttocks. The entrance wound may be insignificant. Pain in such cases is usually present but rigidity of the abdominal muscles may be absent. If a blood vessel has been ruptured the pulse will increase in rate. Protruding intestines should be left *in situ* and simply covered by a moist, warm gauze dressing. Morphine should be given when there is pain or restlessness. The chance of recovery depends on early operation and so on rapid evacuation. Special note should be made at an aid post on the Casualty Card, M.P.C. 46, if it is believed penetration may have taken place as shown by the pulse rate and rigidity: this is especially valuable if morphine has been given, since the drug may subsequently mask the more urgent symptoms for a time.

Burns.—No attempt should be made at cleaning these. They should simply be covered with a suitable dressing. The burn dressing, (picric acid) should be moistened before application. Picric acid does not interfere with efficiency of tannic acid dressing applied later. Morphine will probably be required.

Morphine.—This should only be given in such dosage as the medical officer indicates.

A. T. S.—Tetanus antitoxin should be given to all casualties with open wounds. The routine dose is 2 c.cm. of the standardized serum (2,600 international units). This serum will go through an ordinary hypodermic syringe needle.

ORTHOPAEDIC INJURIES.

The general treatment for orthopædic cases will depend upon the presence or not of open wounds complicating fracture or injury. Those with wounds will require the preliminary treatment for shock, hæmorrhage, and an injection of tetanus antitoxin. Those without wounds may be suffering from a considerable amount of shock for which treatment is required.

Simple Fractures.—Fractures and extensive wounds are the kind of injuries of which most will be seen. Apart from stopping any hæmorrhage, the worker should do his best to immobilize the part as quickly and with as much gentleness as possible. Fractures should be splinted, but no attempt should be made to "set" a fracture at a first-aid post. It is quite easy to convert a simple fracture into a compound one unless the limb is gently handled.

Nerve Injuries.—If obvious signs of damage to a peripheral nerve are observed, apart from noting this on the Casualty Card, M.P.C. 46, and immobilizing the part, no time should be spent on neurological investigation.

Wounds of Joints.—These should always be carefully immobilized on splints after the wound has been covered with an appropriate-sized dressing.

Compound Fractures.—As with all wounds every effort should be made to anticipate and prevent shock, or combat it if already present. Keep the patient warm by avoiding unnecessary exposure and covering him with blankets, if necessary. Cut away the clothing rather than remove it wholesale to expose a wound. Morphine grain $\frac{1}{4}$ to an adult and in smaller doses for children is definitely of value if the wound is severe or very painful. Efficient immobilization of a compound fracture at the earliest possible moment is all important. It is wholly inadvisable to be too thorough in searching for the presence of a fracture; if in doubt treat it as if it were one, since handling may increase the shock and possibly spread contamination in a wound. Gentleness is the essence of first aid for fractures. No attempt should be made at an aid post to "set" a compound fracture: only gross deformity should be corrected. Immobilization is the object, and the more efficient this is the better. Particular care should be taken to see that the turns of bandage above the fracture are not too tight and so interfere with a probably already enfeebled circulation.

[Detailed suggestions are given in the circular as rough guides to the best methods of temporary fixation for compound fractures of various bones.]

HEAD INJURIES.

On reception of head wounds the general treatment for shock and against tetanus should be as for other wounds, but doses of morphine greater than $\frac{1}{6}$ grain should be avoided. Non-penetrating wounds would be treated in the manner of any other kind of wound. Open head wounds—that is, where the skull has been penetrated—would not ordinarily reach an aid post, but where they do they should be treated with special antiseptics that will not cause damage to brain tissue. The ideal procedure in such cases set out below would be generally beyond the capacity of the first-aid posts, although they have been provided with the necessary material, and therefore after such treatment as is felt can usually be undertaken

and the application of a non-irritant dressing, they should be evacuated as soon as possible to the casualty hospital in the vicinity that has been indicated as suitable by the group or other officer in charge of evacuation.

Penetrating Head Wounds.—The procedure which should be carried out as early as possible:—

- (1) Apply artery forceps to bleeding points in scalp.
- (2) Lightly pack the wound with gauze soaked in aqueous solution of azochloramid (Azochloramid should be dissolved in sterile water).
- (3) Close-clip hair from the scalp over a wide area around the wound. It is of first importance to ensure that hairs and dirt do not get into the wound.
- (4) Remove the azochloramid pack and examine the wound, removing dirt and loose chips of bone from beneath the scalp, but do not touch the brain.
- (5) Pack the wound *lightly* with gauze soaked in the aqueous solution of azochloramid.
- (6) Remove any artery forceps from scalp, and if bleeding has ceased, apply an external dressing without stitching the wound. If there is bleeding stitch the scalp loosely together over the gauze, leaving the gauze protruding between stitches.
- (7) An external dressing of gauze soaked in euflavine should be applied to the wound, followed by a firm bandage.
- (8) If available give two and half gramme tablets of sulphapyridine as a prophylactic against meningitis (note this on the Casualty Card, M.P.C. 46, if given at the aid post).

CHEST INJURIES.

The general preliminary treatment for shock, hæmorrhage and prevention of tetanus should be carried out as for other wounds. In addition two and half gramme tablets of sulphapyridine when available can be given for such benefit as it may offer as a prophylactic. When such of these measures as it has been found possible to carry out in the first-aid post have been taken, the case should be sent to the nearest casualty (receiving) hospital as soon as any condition of shock will allow.

Non-penetrating Injuries.—Patients with injuries due to crushing, which are generally associated with fractures should, if dyspnoea is considerable and other circumstances permit, be placed in a slightly raised position. The chest should be strapped from below upwards with adhesive strapping extending over the middle line in front and behind, care being taken to ensure that this will not produce perforation of a rib fragment through the skin or into the lung.

Tension Pneumothorax.—If dyspnoea is urgent and increasing, a "tension pneumothorax" may be present. This can be determined by evidence of gross displacement of the apex beat to the opposite

side, a high percussion note, and absence of breath sounds. In such cases a short sterile serum syringe needle should be inserted into the pleura under local anæsthesia (1 per cent novocain or 1 per cent procaine) through the skin over the second intercostal space in front, just internal to the mid-clavicular line, and the excessive air in the pleura allowed to escape. This operation may require repetition or, if the escape of air from the lung into the pleura is continuous and rapid, the needle should be left *in situ* fixed by adhesive strapping and surrounded by sterile gauze.

Penetrating Injuries.—Small penetrating wounds of the chest should be dealt with as circumstances indicate. Either a small aseptic dressing should be applied after cleansing around the wound, or the case should be dealt with as for the non-penetrating injury if symptoms of a similar nature are present.

Open Pneumothorax.—As these wounds give rise to considerable dyspnoea and shock they should be closed as soon as possible.

1. Obvious superficial foreign bodies—fragments of missiles and portions of clothing—should be removed from the wound.
2. Visible bleeding points should be secured with forceps and ligatured. Bleeding from an intercostal vessel can be controlled by passing a suture around the corresponding rib and tying firmly. In some cases two such sutures—one each on the proximal and distal sides of the bleeding point—will be required.
3. The wound should be packed with gauze wrung out 1/1,000 euflavine solution, and the surrounding skin cleaned up.
4. If the nature of the wound permits, the edges should be drawn together by silk-worm-gut sutures, sufficiently closely inserted to close the communication between the air and the pleura. If the wound is too large to permit such approximation, the deeper layers are lightly packed with euflavine gauze (see above) and the superficial part with dry gauze. Overlapping layers of adhesive strapping should be applied extending widely—at least six inches—from the wound edges in all directions.

MAXILLO-FACIAL INJURIES.

The early treatment chiefly entails the prevention of suffocation and the arrest of hæmorrhage in those with extensive injuries. The general treatment for shock against tetanus should be carried out as for other wounds. As soon as regarded safe by the medical officer, cases requiring further treatment should be sent to the nearest casualty hospital that has previously been indicated as suitable by the group officer. A nurse or orderly must remain with the patient during transit by ambulance to the casualty hospital.

Prevention of Suffocation.—The danger of suffocation is most commonly due to loss of control of the tongue. As a result of the injury, displacement of the tongue may occur to such a degree that the air passages may be obstructed. To avoid this happening it is of vital

importance that the wounded person should be placed face downwards with his head hanging over the end of the stretcher, and any foreign material removed from the throat. If the wounded person can walk, he must be made to stoop well forward. The object should always be to keep the tongue well forward. If, in spite of positioning, the patient shows signs of suffocation, the tongue should be seized with a pair of forceps or a suture put through and the tongue pulled forward. No case of this kind should be left unattended until it has passed into medical care.

Control of Haemorrhage—Correct posture will also tend to lessen haemorrhage by keeping the tongue in the forward position, although it may in addition be necessary to plug external wounds and to apply digital pressure.

Relief of Pain.—The ordinary triangular bandage should *not* be used for a lower jaw fracture, as it is likely to increase the displacement of the fragments by its backward pull. The "barrel" type of bandage is suitable and easily applied, and gives an upward and forward pressure well back from the chin, and relieves pain.

Feeding.—Patients despite extensive injuries can swallow fairly well if fed from a feeding cup with about 3 inches of free rubber tubing.

NEUROSES

The first essential in the handling of these patients when they arrive at an aid post is to convince them that their symptoms indicate no serious injury, and that they will soon disappear. This necessitates reassurance and the reestablishment of self-confidence combined with such methods as may lead to even temporary disappearance or abatement of the symptoms. This requires a firm and authoritative but sympathetic attitude on the part of the medical officers and their assistants.

In simply frightened and emotional cases reassurance combined with an appeal to personal and patriotic pride and a large dose of bromide will be usually sufficient. The patients should then be sent to their homes.

When confusion, excitement, loss of memory, or disorientation is the chief symptom, rest, warmth, hot drinks with plenty of sugar, or a large dose of bromide (grains 20–30) or phenobarbitone (grain 1) will be necessary. When patients are restless or excited, a hypodermic injection of morphine (grain $\frac{1}{4}$) or preferably an intramuscular injection of sodium phenobarbitone (grain $1\frac{1}{2}$) combined with hyoscine hydrobromide (grain $\frac{1}{100}$) may be required. The latter is provided in tablets which are easily soluble. It may not be possible to retain these patients for long in aid posts and smaller medical establishments, but every effort should be made to return them to their homes if they improve sufficiently to do so with safety.

When hysterical symptoms predominate, an attempt should be made at once to influence or remove them by suggestion, for instance by showing the patient that a powerless limb is not paralysed or anaesthetic, or by making a speechless patient phonate by coughing and then utter a simple sound as "Ah". Hysterical tremor can be usually arrested by making the patient relax his muscles.

It is of fundamental importance for medical officers to understand that as the incidence of neurosis is determined by psychological factors, the severity and duration of the disorder and its extension to other individuals depends in many cases on the treatment it receives at the onset. If patients in whom the step is not absolutely necessary are transferred to hospital, the conditions from which they are suffering may be accentuated or prolonged, and the extent of neurotic disorder in the population may be greatly increased. Every effort must therefore be made to send, after the preliminary treatment and whenever it is possible to do so, such patients back to their own homes, under escort, if necessary. It will, however, be necessary in many cases to provide for sending these cases home, and consequently the question of transport and escorts will have to be considered by those responsible for organising the aid posts.

As it will rarely if ever be possible for a specialist to visit an aid post, it will be necessary for the medical officer to evacuate those whom it has not been found practicable to send home to a "casualty" hospital. Again, it cannot be hoped that there will even be a specialist on the staff of every casualty hospital, and therefore the medical officer of the aid post should ascertain which of the "casualty" hospitals nearest to his aid post is so provided. This will avoid unnecessary delay in getting the needs of the case decided. The desirability cannot be over-stressed, however, that in circumstances that may be expected every patient suffering from neurotic conditions, unless the symptoms are so severe or prolonged as to make this course impossible, should be sent home. General practitioners should not send cases arising out of their private work to first aid posts, but direct to the special clinics which will be set up in connection with casualty and intermediate hospitals.

WARNING LABELS

First aid parties have been instructed to put a plain label on casualties, with a symbol marked on it, in the following circumstances:

- 'T' for tourniquet.
- 'H' for severe haemorrhage.
- 'X' for penetrating wounds of chest or abdomen,
- C' for gas-contaminated.

It is not an unusual practice alternatively or also to mark the forehead, by means of an indelible pencil, with these code letters. The first aid worker in charge of reception at a first aid post should keep a constant look out for these labels in order to expedite the attention to be paid to these patients.

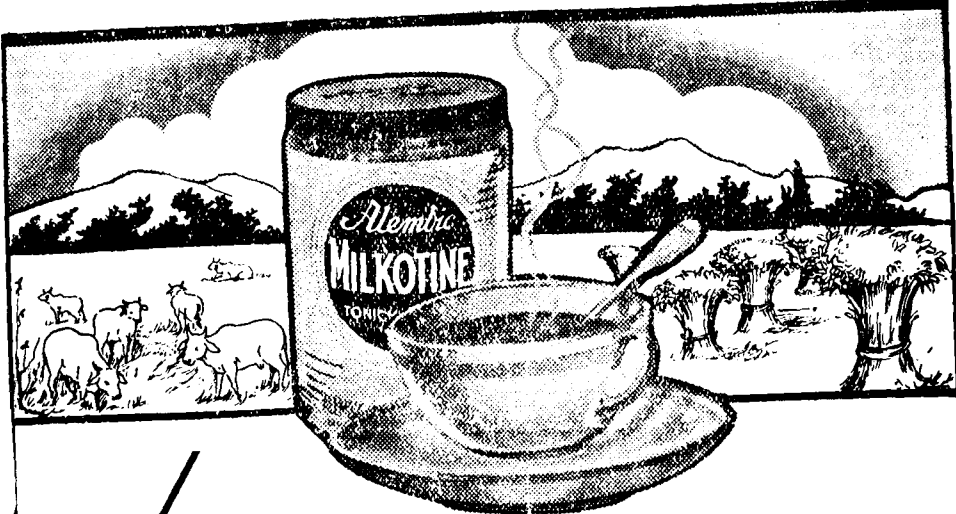
[The circular ends with instructions concerning the records to be kept at aid posts.]

—British Medical Journal.

THE JAPANESE HEALTH COMMANDMENT.

According to the *Fiji Shimpō*, a Nipponese publication, the ancient Japanese commandments as to health and longevity may be summed up in the following manner:—

1. Spend as much time as possible in the open air.
2. Never eat meat more than once a day.
3. Take a very hot bath daily.
4. Wear rough warm clothes.
5. Early to bed and early to rise.
6. Sleep at least six hours each night and at most seven and a half in a dark room with open windows.
7. Rest on the seventh day and during that day do not read or write.
8. Avoid every expression of anger: never exercise the brain too much or too long.
9. Marry early; widows and widowers should remarry as soon as possible.
10. Drink coffee and tea in strictest moderation: do not smoke at all; and never touch alcohol in any form.
11. Avoid hot rooms, and, indeed, all rooms heated artificially.
12. In order to strengthen such organs as may be weakened by age or use, nourish yourself on the corresponding organs of animals.



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Prepared by special process ALEMBIC MILKOTONE embodies in it in a palatable and easily digestible form the body-building nutritive ingredients Milk, Malt, Cocoa, and Glycerophosphates of Calcium, Potassium and Sodium. It is rich in Vitamins A, B & D and supplies the necessary minerals, Calcium and Phosphorus.

It forms a delicious drink with warm water or milk. In Health it serves as a nutritive supplement; in illness, convalescence and general debility it provides so easily digestible tonic food to maintain strength and Vitality and in tired condition and sleeplessness it acts as a refreshing and soothing draught.

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Diagnostic Pointers.

Signs of impending Death.

1. A pulse which is irregular for the first time in disease is usually a cause for grave alarm.
2. When the patient is in the recumbent position and the pulse disappears for the first time, he really recovers except in true cardiac disease or sudden severe haemorrhage.
3. Pulsus alternans when it can be appreciated by the fingers always means death within a short space of time in cardiac disease within certainly a month.
4. If the pulse of an adult is within eighty then it is safe to say that death is at least more than twelve hours away, but this is not always true of the aged, a slow pulse often being present in these patients up to the time of death. On the other hand in old persons a pulse of one hundred and forty means death within a few hours at most. In children if the pulse is under 120 death is extremely rare within six hours. Even in coma a pulse of 100 means that death is at least eight to ten hours later.
5. In an adult with the exception of paroxysmal tachycardia, exophthalmic goitre, pericarditis and pulmonary tuberculosis, a pulse of 140 continued for more than an hour and not due to some accidental complication means death, except in pericarditis any pulse gradually mounting to 160 per-says a fatal termination.
6. In general, in acute diseases a pulse that is steadily increasing in frequency hour by hour pretends early dissolution provided other signs of serious illness are present.
7. Gallop rhythm not associated with rheumatic carditis is always fatal.

Co-operation is not a sentiment; it is an economic necessity. CHARLES STEEDMAN.

Therapeutic Gleanings.

Chronic Intestinal Amoebiasis.

Kurchi bismuthous iodide 10 grains B. D. for 10 days. An alkali (Drachm one of soda bicarb and 40 grains of Sodi Citrate) is to be administered half an hour before each dose. Continue for 10 days then omit for five days. If the disease is resistant do not push, but use standardised extract (half grain of total alkaloid) drachm 1 or 2 twice daily for three months or more if necessary combined with plantago ovata. This is effective.

The Use of Potassium Iodide.

The late Dr. White used to say "Gentleman, when you have to deal with pain in the head tap the cranium of the patient and if you come across a tender spot give iodide of potassium, I don't know why but my experience has taught me the lesson."

Typhlitis.

Apply an ointment consisting of ext. belladonna one drachm, ung iodine one ounce in a pledget of lint 4 inches by 8 inches over the seat of effusion and secondly a grain of extract belladonna as a suppository every 6 or 8 hours until atropism is set up. Then administer an enema of warm olive oil and if that fails an enema of ox gall and soap with a crystal of washing soda added to it.

Migraine.

Ergotamine tartrate (Gynergen) tablets, one, three times a day is found very helpful.

Universal Antidote for poisoning.

R Pulvis Charcoal 2 parts.
Mag Oxide 1 part.
Tannic Acid 1 part.

Administer one drachm in a small glass of water.

Aluminium Hydroxide in peptic ulcer.

Colloidal aluminium hydroxide has been found to be very effective in the treatment of peptic ulcer. Pain is usually relieved within twenty four hours. Patients with marked hyper-secretion were brought under control much easier than with the usual alkali powder.

Stairs and the heart.

It is beneficial for the cardiac patient to walk downstairs when it is possible as it is a resistant exercise and is especially valuable in elderly people in improving a sense of balance. Going upstairs as being potentially dangerous to heart patients has been too much stressed. "Go upstairs one step at a time."

Extracts.

NON-SPECIFIC VAGINAL INFECTIONS AND THEIR TREATMENTS.

J. Bernard Bernstine and Leopold Goldstein discuss in *The Medical World* for March, 1938, the non-specific vaginal discharge. This is not limited to the married individuals, but is encountered in the virgins as well.

The causes of leukorrhœa are various and differ in individuals according to age, social status, and hygienic habits. Among the more important causative factors of leukorrhœa are: 1. infections and infestations, such as gonorrhœa, trichomoniasis, monilia infestation, and miscellaneous infections by such organisms as diphtheroids, streptococci, and colon bacilli; 2. non-infections, as, eczema and allergic reactions; 3. trauma, including pessaries, chemicals, foreign bodies, masturbation, and poorly selected contraceptive devices; 4. conditions due to pelvic congestion resulting from inflammatory lesions of the uterus and adnexa; and 5. neoplasms of the genital tract, benign and malignant.

In this paper they were dealing primarily with the individual whose chief complaint is a persistent or periodic vaginal discharge. Only those individuals exhibiting an excessive vaginal discharge without evidence of gross pelvic or vaginal disease or specific bacteriologic or parasitic invasion have been included. Patients with erosion of the cervix were subjected to cervical electro-cauterization before local treatment for the leukorrhœa was instituted.

Actiology. It is important at this time to remember that the lining membrane of the vagina is not strictly speaking a mucous membrane, but a stratified squamous epithelium. The vaginal secretion has the appearance normally of curdled milk and is strongly acid in reaction and even bactericidal as regards pathogenic bacteria. It contains no mucus. If examined by film method, there is seen a long, thick, gram-positive, nonmotile bacillus, the bacillus of Doderlein.

To date they have studied 127 cases of nonspecific vaginal discharge in patients ranging from 17 to 60 years of age, 92 married and 35 single. The majority of the married were pregnant at the time of treatment.

Symptoms. The cardinal symptom of the patients studied was profuse vaginal discharge. The patients were first examined for evidence of some underlying factor that might be productive of this symptom. Next, the presence of gonorrhœa and infestation with *Trichomonas* or *Monilia* was excluded. They were closely interrogated as to their habits, marital hygiene and the use of contraceptives. The nonmarried group required considerable tact to exclude masturbation and other forms of irritation.

Treatment. All patients were examined by the abdomenopelvic and abdominorectal routes. The cervix and vagina were inspected. The character of the discharge was noted; likewise its odour, consistency and reaction.

It is essential in treating nonspecific leukorrhœa that the agent employed is not irritating. The preparation employed consists of boric acid 2 per cent., glycerine 14.8 per cent., and oxyquinolin sulphate 0.02 per cent. The medicament is incorporated in a water-dispersible jelly having a vegetable gum base.

The patient is placed in a dorsal position, the external genitalia are cleansed with diluted tincture of green soap solution, then thoroughly dried with cotton pledgets. The labia are separated and a sterile speculum is gently inserted. The vaginal canal and vaginal portion of the cervix are cleansed with the green soap solution and dried. Approximately 2 drachms of the preparation are instilled, coating the vaginal walls, cervix and fornices. The patient is permitted to remain in this position for 5 minutes, then a vaginal tampon is inserted and the speculum carefully removed. The patient is instructed to remove the tampon in 10 hours.

The home treatment consists in permitting the patient to apply the medicament into the vagina and to remain in a dorsal position with the hips elevated for 5 to 10 minutes. She then applies a sterile vulvar pad. The home treatments are applied daily, and each evening the patient is instructed to take a douche with normal saline solution, employing 2 quarts of boiled water. Wherever possible, the patient should receive two office treatments weekly.

The therapeutic response varied. Generally, patients receiving regular office treatment responded more promptly than those who received only home treatment. Symptomatic relief was noted in nearly every case within 5 to 7 days. Approximately one-half were entirely relieved of the leukorrhœa. Sixty patients required local therapy over several weeks before definite improvement was obtained. In 9 patients the leukorrhœa resisted treatment. In these individuals an infected cervix was usually found which required cauterization. The associated vaginitis required local cleansing with tincture of green soap followed by topical applications with various antiseptics.

In this method of treatment, improvement depends on the thoroughness and persistence with which the patient observes instructions. Treatment should not cease suddenly, but gradually.

VITAMIN C IN HEART FAILURE.

Investigations by Abbasy on the excretion of vitamin C in man, writes William Evans, M.D., in *The Lancet* for February, 1938, have shown that the volume of urine increases significantly after the administration of ascorbic acid. Any preparation thus capable of inducing diuresis in subjects that show neither oedema nor any manifestations of fluid retention, might be expected to produce a greater diuretic effect in those presenting anasarca from heart failure. I decided, therefore, to submit vitamin C to a controlled clinical trial in patients with heart failure.

The Experiment. Eight patients who had oedema due to congestive heart failure and one who had oedema of unknown aetiology were kept in bed under standard hospital conditions during and for some days preceding the period of observation. Stabilized fluid intake and output values were reached before each trial period began. Vitamin C was then dispensed as redoxon tablets, 3 to 6 tablets daily. The resultant diuresis was compared in each patient with that produced by established diuretics such as digitalis, ammonium chloride and theobromine.

Results. Vitamin C administration was followed by increased urinary output in all of the patients. In two patients the increase was slight, in four it was either moderate to considerable, and in three cases it was great. When compared with the other diuretics, it was found to be as efficient as ammonium chloride during one observation period, but less efficient during two other periods. It was more efficient than theobromine during one period, and less during another. It proved to be as efficient as digitalis during one period, and more efficient during six others. When a quantitative estimate was made of the excess of urinary output over fluid intake in the 9 patients over a period of 173 days, it was found that vitamin C induced greater diuresis than digitalis but less than theobromine, diuretin, and ammonium chloride. In each of three patients where heart failure had occurred with auricular fibrillation, vitamin C induced diuresis actually in excess of that produced by digitalis although never with the same degree of clinical improvement nor with reduction of the ventricular rate. These results, apportioning to vitamin C a diuretic property, direct attention to the need of providing an adequate supply of vitamin C for all patients with heart failure. In order to insure a constant state of vitamin C saturation in heart failure, it is probably enough, if redoxon is not administered, to include in the patient's diminished fluid intake an adequate proportion of lemon and orange juice.

Medical News and Notes.

BOMBAY MEDICAL UNION.

Blavatsky Lodge Building, French Bridge, Chowpatty, Bombay.

CONDITIONS OF MEDICAL PRACTICE IN BOMBAY.

The Sub-Committee consisting of :—

Dr. V. G. Rele, (Chairman)

Dr. S. P. Kapadia

Dr. B. B. Yodh

Dr. N. J. Modi

Dr. Geo. Coelho

was appointed by the Managing committee on 23rd February 1939 to report on the replies received to the "Questionnaire" sent by the Bombay Medical Union.

2. The Questionnaire was answered by 71 persons of whom 48 are members of the Union. Among those that sent replies are practising in the City and Suburbs and 7 outside these limits. Other bodies like :—

- (1) Delhi Medical Association,
- (2) Bagalkot Medical Union,
- (3) Broach Medical Society,

were also interested in the Questionnaire and sent replies.

3. The hours of work are divided into two series by those who keep a dispensary. The morning session is from 8-30 to 11-30 and the afternoon 5-30 to 8. The majority seems to be satisfied with these hours. The patients are visited at all hours of the day, whether they be dispensary hours or not.

4. The charges for medicine vary from annas 8 to Re. 1 for a day's mixture and from annas 2 to annas 8 for powders. The charges for Dressing vary from Re. 1 to Rs. 5. The fees for visits vary from Rs. 2 to Rs. 5 with those who keep dispensaries. With the exception of a few, the bulk do not charge for consultation. Those that do not dispense medicines charge for consultation and these fees vary from Rs. 10 to Rs. 20 for a visit. All charge extra for injections if they are done in the dispensaries or rooms while there is no uniformity regarding extra charges if the doctor pays a visit to the patient.

5. There is not much dissatisfaction at the above rates. Some say they practise in poor areas where even these fees seem high. There is no desire for raising these charges and even in those cases where a lurking suspicion may be seen it is smothered by the force of circumstances.

6. The reply to the question : "Whether fees should be charged in the dispensary?" is preponderatingly in the affirmative, but no suggestions regarding the amount of these are forthcoming. Likewise

it seems nearly the universal opinion that fees should be graded according to seniority of practice, though a few say it will be difficult to work this out.

7. Very few doctors have a holiday. Those in years of practice still cannot get away. But they all want to. All think that they would like to have a holiday; some ask for a month, some ask for a fortnight twice a year.

8. The practice of taking half holiday once a week is gradually spreading. Majority wish that there should be the same day for everybody.

9. Regarding consulting practice the general feeling is that there is nothing like consultation practice. The general practitioners complain that the 'consultants' see cases on their own, keep assistants who do the job of giving injections etc. This they submit, should not be done. A Consultant should only see a patient in consultation with a Doctor and never by himself. He should not keep an assistant.

The majority think that persons belonging to those countries who do not give reciprocity should not be allowed to practice in our country.

A few complain of Hakims, Vaidas and unqualified Homeopaths.

10. There is also uniformity of opinion on treatment of well-to-do patients at public free hospitals. These patients should not be admitted into the hospitals and if admitted should be charged heavily.

RECOMMENDATIONS.

11. The Sub Committee after considering the above, is of opinion that the medical fraternity should be roused to action by greater propaganda and for this purpose suggest that a meeting of the medical profession should be held to discuss these points and create enthusiasm.

12. They are of opinion that re:sessions of work it would be advisable to have one long session and the other short one. The short session will only deal with acute cases and may not last more than an hour. We do not think that a doctor's work increases according to the number of hours he spends in the dispensary. Idle hours in the dispensary are likely to set up enui and a feeling of discontent. We suggest that 2 to 2½ hours in the morning and an hour say 6 to 7 in the evening would be better. The time of the short session should be completely devoted to the dispensary and no visits be undertaken during that time.

13. Certain parts of the City observe a whole day holiday or half a day once a week. This should be universal it is better to fix one common day like Sunday when the doctor will have some chance of spending his free evening in a social way. It has been found that the objection to this half a day closing has mostly come from senior

practitioners and an appeal could be sent round urging all to join. The doctors will always be available for urgent calls.

14. We are of opinion that a beginning should be made so far as charging consulting fees are concerned. The poverty of our people is always mentioned. But the charges can be made to suit the locality. Such charges will increase the income of the doctor, will really instal him as a medical man and not as a chemist and relieve him of unnecessary attentions of the relatives of the patient who expect quick results and want the doctor to change the treatment twice a day. We would suggest a single minimum consultation fee which may be repeated at next consultation or not. This consultation fee may be raised according to the locality. We may mention that many lady doctors charge extra for a vaginal examination and that is willingly paid. If this particular examination, is charged, one fails to see why a complete examination of the patient should not be charged.

15. The Sub-Committee also strongly recommends that there should be a variation of fees according to seniority. The Union must carry on sufficient propaganda to bring moral pressure on the senior practitioner to raise their fees. The present state of fees for visits is so low that we cannot advise the beginners to accept a low fee. The beginner will not get more work by lowering his fee while the senior is wanted by a good many and some of them will pay his higher fees to get the benefit of his advice. It is the raising of the fees that raises the prestige of the man and has a psychological action on the patient. The present system where a raw graduate charges Rs. 2 per visit and an old practitioner who has no time to eat his food also charges Rs. 2; where a fresh graduate with a foreign qualification charged Rs. 20 for a visit while his senior also does the same, must be changed. In Calcutta the fees vary from Rs. 4 to Rs. 64 and there are patients who pay them. By the seniors raising the fees there is a chance of the work being better distributed.

16. An increase in the income will facilitate the Annual Holiday. It is so common to hear that so and so has worked for 20 years without a day's holiday. This is neither in the interest of the doctor nor of the patient. With a large influx of fresh graduates who are now on the loose end it should not be difficult to get a *locum tenens* for a general practitioner. By charging a small consultation fee and by raising the fees for visits an Annual Holiday will come within the reach of many a doctor.

17. The services of extra income for a good many doctors seems to be the examination of lives for insurance. The Union has already sent its protest against the lowering of the fees. We would also urge upon the attention of the Union to the present unsatisfactory state of affairs whereby a doctor is under the thumb of the agent for getting insurance work. This forces the doctor to connive at many

a thing he would not do if he were assured of the support of the Company.

18. There is a strong feeling against the methods of the "Consultants." The common opinion seems to be that a Consultant should not see a case without an introduction from a doctor. This is an ideal interpretation of the term; "Consultant;" but as far as we are aware does not exist in any part of the world. There is always a small group of patients who see the Consultant directly without a middle man. The more practical conception of a 'Consultant' would be that of a person who would be approached for opinion in case of difficulty. It cannot be laid down that a Consultant should not see a case directly but it can be laid down that as far as possible he should not see any patient on his own and this he should particularly avoid when he knows that the patient has a general practitioner treating him.

Laboratories, X-ray Outfits, Electro-cardiographs are the armamentaria to arrive at correct diagnosis and to appreciate the progress of a disease. One cannot reasonably object to a Consultant having these at his disposal by owning them or running them himself with the aid of an assistant. The laboratories should not be used to furnish reports for outside patients nor X-ray apparatus be used to take plates for patients that are not his. What we mean is that a Consulting Physician should not receive only blood or urine or take a patient for an X-ray only without seeing the patient. Further the specialist in these branches of diagnosis will still remain so and will get his share of work when an expert opinion is desired and they too will be raised to the standard of the Consultants. To obviate the financial loss that is bound to accrue, it is advisable that teams may be formed consisting of these various units and the proportionate fees be charged to the patients. The position of the Surgeon should be likewise.

We are of opinion that a consultant should not have an assistant to give his injections etc.; as there is a danger of his retaining the work that should legitimately go to the general practitioner.

Regarding Electric Treatment like Ultra-violet rays, diathermy, short-waves and also injections a consultant shall not offer his services unless he finds the patient and the general practitioner wish him to carry it out after pointing out to them where else such treatment is available. When a patient comes directly the consultant has as much right to utilise the means at his disposal as anybody else.

19. We entirely agree that rich patients should not be treated in free hospitals and dispensaries whether they are supported by the Government or Municipal rate-payers or private benefactions. But here "rich" is a relative term. For instance, there is no need to admit a person earning Rs. 100 a month suffering from malaria for

2 days in a hospital. But we should certainly admit him for a major abdominal operation or a serious illness like typhoid fever. Those earning Rs. 1,000 per month should not be admitted into a hospital unless there is a nursing home attached so that they can be charged proportionately.

20. The Out-Patient-Department is also overcrowded by people many of whom can afford to pay for advice and treatment. The general practitioner legitimately feels that a good bit of work is taken away from him. Introduction of the system of almoners would help in the solution of this problem.

21. To carry out any of the above recommendations we must carry the profession with us. But never has any movement got the majority at once. We must make a beginning and for that purpose contact with the profession must be established by calling frequent meetings and discussions. Then the issues will be crystallised and progress will be possible.

NOTICE.

The Second Annual General Conference of the Association of Surgeons of India will be held in Madras on 28th, 29th and 30th December 1939. Details as to conditions of membership of the Association and other particulars can be obtained from the Honorary Secretary 'Binfield,' Poonamallee High Road, Kilpauk, Madras.

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