cases the man is completely unaware of the defect, it having caused him no trouble at any time. I have been interested to note that large, complete old hernias have existed for years without causing any inconvenience. Of course these hernias are potentially dangerous, and the employee should always be advised their operative cure or the wearing of a truss. I see no reason why a workman with a well-fitting truss, which satisfactorily holds the hernia, should not be assigned to any department where there is not very heavy lifting to be done. The difficulty with these men is that in hot weather they are apt to remove their trusses because of discomfort, or that for some other reason they fail to wear them. It is for this reason that many large factories refuse to take on their force men with hernias.

Defects Due to Previous Sickness. Defectives of this type may be roughly divided into two classes,—those due to chronic or metabolic disorders and those due to some previously acute condition. In the first class belong cases of diabetes, high blood pressure, arteriosclerosis, and nephritis. Workmen of this type require more medical supervision than careful placing in the factory, though of course it is obvious that men with high blood pressure, arteriosclerosis, etc., should not be given work of an exacting type, where speed and heavy labor are combined. The workman of this type in my experience is usually a man of 45 years or over, whose defect has been present over a long period of time, and who has naturally adapted himself to it in selecting his type of work, so that these men instinctively apply for work to which they are fitted. Of course this is not always the case, but its frequency is interesting. The defectives applying for work, with defects the result of previous acute disease, are mostly cases of endocarditis or tuberculosis. The first of these conditions is fairly safe in any position in the shop except those where there is great heat, great humidity, or excessive physical work. In saying this I am supposing that compensation is complete. Of course, if compensation is disturbed, very light work must be selected for the employee, and if it is broken I do not believe that he should be allowed to do any work at all until compensation is fully restored. My experience with hearts has been that it is not the factory work which harms them so much as what happens outside of the factory. Thus one of our employees was specially trained as a blacksmith; he had, however, an hypertrophied heart with chronic valvular disease. I told him that it would be impossible for him to continue the heavy work of a blacksmith. He asked me if it would not be possible for him to continue if he stopped outside athletics. I decided to try what the effect would be. In the course of two years his heart had come in two inches, and at no time was there the slightest sign of disturbed compensation.

Tuberculosis, when arrested, is no bar to employment in a modern factory. Of course the work must be selected and the patient watched, but many cases will do moderately hard work for years without breaking down or signs of activity. Active tuberculosis has no place in the factory.

From the above it will be seen, first, that in many cases it is unnecessary to reject defective employees applying for positions, even though the defect be regarded as severe; second, that medical supervision has a tendency to prevent beginning defects from becoming more pronounced; and, third, that by the supervision of the employee and the close personal touch which the doctor is able to maintain, many defects, which are now found in older men, may be prevented from appearing in the present generation.

THE ESTABLISHMENT OF A FIRST-AID HOSPITAL IN INDUSTRY.

BY HERBERT J. CRONIN, M.D., CAMBRIDGE, MASS.

INDUSTRY needs today the physician to help it conserve its workers from the results of disease and accident. The unlimited supply of foreign labor has ceased and may never be resumed. War will drain hundreds of thousands of young men from industry and further diminish the present supply of labor. Industry may be forced to use classes and types of labor previously considered unsuitable. With such possibilities of a scarcity of labor, it is essential that the fullest efficiency of the present workers be maintained. Such efficiency means that the worker give his best effort during working hours, and that he lose no time through accidents or sickness. The physician can aid industry to develop this efficiency.

Industry must produce unlimited war supplies if we are to win the war. Such supplies include nearly everything that is used in civil life, in addition to munitions. England made serious errors in her treatment of industry. Skilled workers were enlisted in the army and replaced by unskilled men and women. Longer hours, attempts at speeding up, larger forces of labor—all were unsuccessful, and production decreased. The army could not proceed, conditions were critical. Production was increased only by a return of the skilled workers and a re-establishment of the former working conditions.

Now in this country, with war conditions as an excuse, an attempt is being made to abrogate the labor laws that have been developed after years of study and effort. Proposals are made to lengthen the hours of labor, and modify the regulations for the work of women and children. All such legislation should be forcibly opposed, because not only will it injure the health of the workers but it will not accomplish

the results claimed by causing a larger production.

A bill is before Congress to establish a Public Health Officers' Reserve Corps. Provisions are made in this bill for the maintenance of a force of physicians to guard the health of industrial workers and maintain their efficiency during the war. Industrial physicians should enroll in this corps if it is established. It will in no way conflict with the Medical Officers' Reserve Corps nor free a man from active service.

THE FIRST-AID HOSPITAL.

The establishment of a first-aid hospital in the factory is the first step that should be made by the physician who assumes medical direction of an industry. With the hospital as a center, all other medical activities for the plant can radiate. Careful study of the individual plant will decide the best additions to the medical service.

The hospital should be situated near the center of the plant's greatest activities. The building should be quiet, as pounding and vibrating machinery prevents careful stethoscopic examinations. Good light, and accessibility to the employees and the ambulance are also required. The size of the hospital depends entirely on the number and sex of the employees, as well as the character of the work. A plant with many women employees requires a large number of beds. Provided asepsis is complete, a relatively large amount of work can be done in a small dressing-room.

Hospital Equipment. The equipment should include an outfit of instruments that would be suitable for minor surgery; a few eye, ear, nose, and throat instruments, the common surgical drugs and solutions, and an instrument and dressing sterilizer. There should be running water, either in a sink or a lavatory, with a toilet in the room or nearby. The furniture needed is a few steel chairs, dressing tables, instrument cabinet, examining table, screens and a cot, with the usual office furniture, as a desk, typewriter, and records.

The construction of the hospital is limited by the appropriation granted, but if this is moderate, it is best to install a composition material floor. The walls may be painted with a white enamel paint or finished with porcelain brick, which will easily wash. Prismatic glass in the windows is opaque and diffuses the light without shadows. Hanging, reflecting electric lights give a soft light throughout the room, while a nitrogen stand-light is indispensable for close work. A cot built like a small hospital bed is more satisfactory than the regular bed, because a patient will throw himself on the cot who will not lie in a bed. Black rubber sheeting can replace linen sheets on the cot and the table.

A graduate nurse who is skillful with surgical dressing is essential. The routine clerical work can be done by a stenographer. In the average

small or medium-sized plant, a physician is needed but part of the day. An hour or so every day, or even every other day, can accomplish much. In the larger industries that can afford to have continuous medical service, it is debatable whether the employment of several part-time men is not better than the full-time man.

Necessary Diagnostic Aids Not Needed in the Hospital. An x-ray machine is not needed in the average first-aid hospital. It is more economical to make arrangements with some local institution for the taking of plates. Examinations of throat cultures, blood smears, Wassermanns, sputa, and Widal's can be done at the state or city board of health laboratories without expense. The free anti-tetanic and diphtheria antitoxins of the state can be used, as well as the smallpox and typhoid vaccines. Thus a physician can bring to the industry all the aids to diagnosis and treatment that are used by him in his private practice.

A plant hospital should be operated strictly as a first-aid hospital. Cases should not be kept there more than a few hours, and if further treatment is required, they should be transferred to a local hospital. For this purpose, arrangements should be made with some hospital to receive all cases sent by the factory, and the plant physician allowed to treat the cases, or act as an associate consultant. For transfer of the patients, a satisfactory ambulance service is essential.

Group treatment is insured in difficult cases by making arrangements with a group of specialists to consult and treat the cases with the plant physician. The insurance company which carries the compensation insurance will provide their staff specialists in compensation cases.

Duties of the Hospital. The hospital should treat all cases of accident and sickness that occur inside the plant, and medical conditions that arise outside the plant which interfere with the employees' efficiency. The hospital duty is to keep the men able to work and in the plant. An employee cannot give full service if he has a throbbing abscess, but open the abscess and he returns to work with a different spirit. Traumatic cases return to work immediately if they receive satisfactory attention. The treatment a few minutes after the occurrence of an injury prevents the introduction of infection, with the possibilities of prolonged incapacity. Where men are unable to resume their former occupation after an accident, a slight readjustment of their duties by the physician may keep them in the plant. The men like a first-aid hospital because they lose no time from slight injuries, while it is satisfactory to industry because the men are held in the plant.

FIRST-AID STATIONS.

First-aid stations should be established at convenient points throughout a factory. Such

a station consists of a stretcher with blankets, and a first-aid jar, containing the necessary first-aid equipment. The Army and Navy stretcher is the most satisfactory one for this use; it is six feet long, folds together, and has feet so that it can be used as a cot. Blankets are folded in between the poles, are easily accessible and always clean. For delirious or unconscious patients, long straps of leather or canvas should be included within the stretcher, to prevent unskilled stretcher-bearers from rolling the patient off the stretcher.

The best first-aid outfit—small but yet complete—is the standard first-aid jar of the National Affiliated Safety Organizations, which was designed primarily for industrial use. The jar should be placed in a glass-sided cabinet. A few packages of sterile sponges should be included within the cabinet. If there is a first-aid hospital in the plant, the jar should be used for emergencies only, or at night when the hospital is closed. The jar is very convenient for the physician or nurse when attending cases in the factory that could not be removed to the hospital. Immediate attention can be given the patient with the materials at hand.

THE N. A. S. O. FIRST AID JAR.

The jar is made of heavy glass; the contents are visible and easily accessible. Any ordinary emergency can be handled with the materials in the jar and it can safely be entrusted to laymen.

The use of the first-aid stations must be familiar to the employees. Selected men from each department should receive three or four lectures on first aid. It is best to confine these lectures to the barest essentials of first aid,—how to stop hemorrhage, first dressings, transportation on the stretcher, and resuscitation. Special stress should be given the **particular** hazards of the industry.

Use of the First-Aid Station. When an accident occurs in a department, the foreman sends for the nearest stretcher and jar. The patient is placed on the stretcher and covered with blankets. The straps are applied over the thorax and the legs. The nurse, on arrival, takes charge of the case. If it is merely a fainting attack, the patient is removed to a quiet corner, with as little commotion as possible, and there allowed to recover on the stretcher, which acts as an excellent cot. The more serious cases are transferred to the plant hospital, and if they need prolonged bed treatment, are removed to an outside hospital. They are kept on the plant stretcher, and are not moved from it until they are put to bed. This insures that the patient is warm, comfortable and secure, while the discomfort and shock caused by handling the patient is obviated.

A STUDY OF THE PROCESSES IN THE INDUSTRY.

The particular health and accident hazards of the industry should be studied by the plant physician. All the processes of the industry and the chemicals used should be known. Consultation with the plant chemist will aid the physician in gaining this knowledge. Employees may be totally ignorant of the materials handled, and it is difficult to instruct them on the dangers, because they may be stampeded and leave their positions. The chemicals and processes of every industry cause diseases and physical conditions due to such processes. For instance, severe abdominal pains, that simulate appendicitis, may be the beginning of lead poisoning; skin diseases may be caused by chemical irritants; and bronchitis by the gas and fumes.

CARE OF WOMEN EMPLOYEES.

The care of the women employees is a special work in itself. The accidents to women are usually minor contusions and lacerations. The acute illness of menstruation, often with syncope, is the commonest medical condition. When a girl faints in a large department, the work of the department may be disrupted for some time. Immediate attention by the nurse, the placing the girl on the cot-stretcher, and removal to a quiet corner till she recovers, will return her to work perhaps within an hour. The mental effect of the immediate treatment and quick recovery is excellent on the rest of the employees. Sanitary napkins should be supplied the girls at the first-aid hospital.

VISITING NURSE.

The visiting nurse is a valuable adjunct to the first-aid hospital. The nurse visits the homes of the absentees to find out if they are sick, and if so, are they receiving adequate medical treatment. Many of the foreign-born laborers cannot speak English, live in squalid conditions in boarding houses, and when they become sick, may lie for days unnoticed. If the nurse reports conditions unfavorable, the plant physician can use all the medical agencies for the treatment of the case that he would apply to a charity case in private practice. The case might be sent to the municipal hospital, or the public or private charitable societies asked to give their assistance. Proper medical attention means an early return of the man to industry.

PHYSICAL EXAMINATIONS.

The physical examination of employees engaged in hazardous occupations is also a part of the work of the hospital. Periodic examination, with instructions, of the men exposed to poisonous processes will prevent future sickness. The examination of all employees before employment, to discover if they are suitable for the work, usually requires larger and separate quarters than the first-aid hospital.

The work of the physician in industry is practically unlimited. He can branch out into many fields of activity. He can be a large factor in the campaign to prevent accidents; he can supervise the sanitary conditions of the plant; can advise the management on questions of proper lighting, heating, the humidity, fatigue, and the prevention of dust and fumes.

War may return many of our young workers partly maimed,—an arm or a leg gone. Society will not be able to care for them, and they will demand a chance to make a living. Industry must find a way to utilize these men. The physicians can aid in providing suitable artificial limbs, and by placing them at work they will be able to do.

DISCUSSION.

DR. A. N. BROUGHTON, Jamaica Plain, said that very few employers appreciate the value of a complete hospital equipment, and it is a matter of education to get an equipment such as is provided by the Norton Company of Worcester. Viewed in the right light, it is a saving of expense. There is no reason why a city or town should bear the expense of establishing and maintaining an x-ray outfit or a diagnostic laboratory, and there is at present no comprehensive plan for taking care of industrial injuries. The matter should be studied on a broad scale, and facilities should be provided.

DR. J. J. MINOT, Boston, spoke as the chairman of the Committee on Health Industry of the Boston Association for the Relief and Control of Tuberculosis. He said that this committee is now in its third year. Its object is to get employers to have a nurse who is trained in public health work, in their

employ. Members of the committee visit employers of all kinds, factories especially, which employ enough hands to make it possible for them to have a nurse. We explain and show the value of it. When a nurse is employed she is in constant attendance, cares for all accidents as they occur, handing them over to physicians after the first dressing; she sees anyone who feels sick, who needs aid or assistance in any way—physical, mental or moral. She looks after the general hygiene of the factory, gives noon-talks on health, visits the houses, helps in matters of feeding and care of children, and assists in family economies. At first it took a good while to get a hearing from the employers; now they are beginning to understand the value of such a person, and we are consulted by many, some even from a distance. We gladly find a nurse for anyone who can be persuaded to take one, and in case there are not enough employees to warrant a full-time nurse, we arrange for part-time nurses. Rest rooms and rooms in which to do dressings are arranged for under our supervision. In our experience, no one who has ever employed a nurse has given her up. Where there are many employees, we try to have physicians employed, as well as nurses. Only the highest grade trained nurses are sent out. We supervise them for some time, but have no responsibility and make no money charge. Recently the Anti-Tuberculosis League has joined with us, and now we undertake the work for the entire State, feeling that our efforts have been of great value to the community.

DR. E. J. MCCARTHY, Malden, would like to know how many physicians in the State are being employed in commercial establishments. This institutional work is a wonderful opening for the physician. Much work has been done to prevent accidents from machinery, but the health aspect has been limited; the hazards from dust and gases must be taken into consideration. He thought that the medical profession should take up the problems of industrial diseases and give them intensive study; the general practitioner should be awakened to appreciate the many aspects of industrial diseases.

DR. A. N. BROUGHTON emphasized anew the need of education of the employer and the insurance companies, who were only too apt to get the cheapest medical attendance that they could, thus often depriving the employees of adequate care.

Original Articles.

CHANGING METHODS AND ADVANCES
IN THE TREATMENT OF PROGRESSIVE
DEAFNESS FROM CHRONIC SECRETORY
OTITIS MEDIA.*

BY FRANCIS P. EMERSON, M.D., BOSTON.

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FOR the reason that otology is not an exact science, there are problems connected with its practice that should be reconsidered at stated

* Read before the American Laryngological, Rhinological and Otolological Society, Atlantic City, May 31, 1917.