THE FUTURE OF THE DISABLED SOLDIER

HUTT

Established 1820.

THE Galvo series of Chemical Fire Extinguishers embrace every description yet produced, namely :—

ALKALI,

TURNOVER, OR SEALED BOTTLE TYPES,

CYLINDER,

CONE SHAPE,

CHURN SHAPE,

CARBON TETRACHLORIDE WITH COMPRESSED AIR, OR DIRECT PUMP,

CHLORIDE OF CALCIUM,

HAND MACHINES,

PUMP OR DIRECT CHEMICALISATION OF WATER FROM THE MAINS,

POWDER TUBES from 2 lb. tubes to 60 lb. bins, or the powder by the ton.

Don't buy Fire Extinguishers until you have written for one of our lists. We manufacture for every industry, and make our machines to suit the requirements for which they are needed. All machines are supplied at manufacturer's prices. We place at your disposal an experience of more than sixty years in the manufacture of these appliances.

WEBB LAMP CO., Ltd.,

ENGINEERS AND FIRE SPECIALISTS.

BUSINESS ESTABLISHED 1806.

Contractors to the War Office, Danish Government, Crown Agents for the Colonies, and over 800 Municipalities, Home and Foreign.

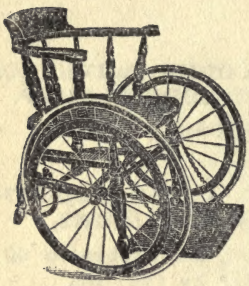
Directors { THE RT. HON. VISCOUNT DEERHURST,
STANLEY W. TOMKINS, ESQ.

Managing Director: J. E. WEBB, C.E., M.R.I.P.H.

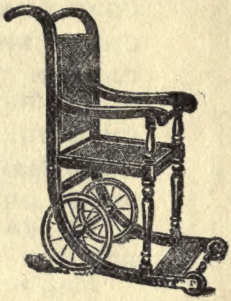
Surgical Manufacturing Co.,

MAKERS OF HOSPITAL EQUIPMENT,

SURGICAL INSTRUMENTS, Etc. . . .

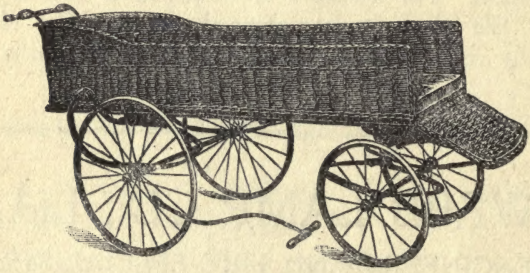


Self-Propelling Chairs,
from £3 10s.



Cheltenham Chair,
£4 4s.

COMPLETE ILLUSTRATED CATALOGUE FREE.



SPINAL CARRIAGES from £3 10s.

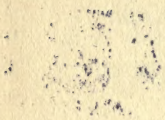
---

83 & 85, Mortimer Street, W.1

(2 doors from Great Portland Street).

Facing first matter

THE FUTURE OF THE DISABLED SOLDIER.



THE FUTURE OF THE DISABLED SOLDIER

BY

C. W. HUTT, M.A., M.D.CANTAB., D.P.H.OXFORD.

Deputy Medical Officer of Health County Borough of Brighton; recently Member of the Brighton War Pensions Committee; Temporary Lieutenant R.A.M.C.

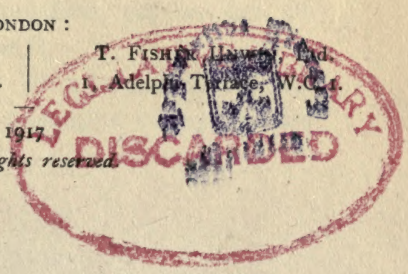
ILLUSTRATED

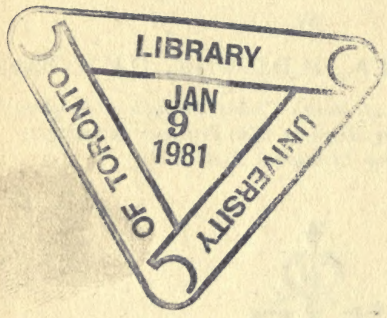
LONDON:

BALE, SONS & DANIELSSON, Ltd.
83-91, Great Titchfield Street, W. 1.

T. FISHER UNWIN, Ltd.
1, Adelphi Terrace, W.C. 1.

1917





PREFACE.

I HAVE written this book in the hope that it will help those to whom we owe so much—the men disabled while protecting our hearths and homes from the ravages of the savage enemy.

It is sad for those left behind to mourn the loss of a soldier killed in the War. But his fight is over; the wounded men, hindered by their injuries, have still to fight the battle of life. Much is being done to help them. Their Gracious Majesties, the King and Queen, whose sons run the same dangers as their subjects, have set us a noble example in this work as in all others appertaining to the War. Much is due to Queen Mary's encouragement of the efforts made at Roehampton and Brighton, to train these disabled men in skilled occupations.

Although much has been done, there is yet still need for further effort. Already the disabled soldier is to be seen begging in the streets. We cannot entirely prevent this degradation, yet we can do away with any necessity for it.

The theme is but part of a larger matter, the provision of training and finding of occupation for

children, adolescents and adults suitable to their constitutions or even physical defects.

I have to thank many friends and colleagues for their help, notably Major Robert Mitchell and M. Edmond Dronsart, formerly of Charleroi. In the following pages I have shown the important part the *école-atelier* of Charleroi has played in the inception of the French Écoles Professionnelles, which are in their turn a testimony to the humanity and genius of our gallant Ally. I have also to thank Miss Mabel Lawrence for reading the proofs.

C. W. HUTT.

Brighton,
June, 1917.

CONTENTS.

CHAPTER I.

CHAPTER II.

CHAPTER III.

CHAPTER IV.

CHAPTER V.

ILLUSTRATIONS.

THE FUTURE OF THE DISABLED SOLDIER.

CHAPTER I.

ARRANGEMENTS FOR TREATMENT.

THE problem of dealing with our disabled men is becoming more and more pressing; the numbers discharged from the Army are daily increasing, the time at which they will have to compete for employment with their sound comrades is gradually drawing closer.

The present is the time to devise and get into working order arrangements for their care and employment.

What is the extent of the problem? Obviously this depends in the main on the gross number of disabled men which no one can estimate accurately, depending as it does on the length and the severity of the fighting.

From the beginning of the War up to May 31, 1916, the causes of discharge from the Navy and Army were as follows:—

		Per cent.
Chest complaints	3,046 =	9·0
Rheumatism	1,365 =	4·0
Heart diseases	2,503 =	7·4
Epilepsy	353 =	1·0
Nervous diseases	999 =	3·0
Miscellaneous disabilities — Bright's disease, debility, gastric ulcer, varicose veins, &c.	2,870 =	8·5
Insanity	168 =	0·5
Eyesight cases	1,381 =	4·1
Deafness	985 =	2·9
Wounds and injuries to legs (necessitating amputation)	1,366 =	4·1
Wounds and injuries to arms or hands (necessitating amputation)	858 =	2·5
Wounds and injuries to legs (not necessitating amputation)	5,345 =	15·8
Wounds and injuries to hands (not necessitating amputation of complete hand)	2,496 =	7·4
Wounds and injuries to arms (not necessitating amputation)	4,688 =	14·0
Wounds and injuries to head	2,446 =	7·3
Frost bite (including amputation of feet or legs)	394 =	1·2
Miscellaneous wounds and injuries (not included in above)	2,122 =	6·3
Hernia	334 =	1·0
	33,719	

Very slight, if any, change has taken place since in the relative proportions of the causes of discharge of men under the charge of the Ministry of Pensions at the beginning of March, 1917.

The number discharged up to December 31, 1916, was about 270,275. Of these a proportion are permanently and completely incapacitated for work; some of the others will find employment without assistance. The total number to be dealt with will, therefore, be considerably less than the above figures might lead us to suppose.

Methods adopted for the Restoration of the Health and the Industrial Efficiency of the Disabled.

Under the present arrangements the naval and military authorities undertake the medical or surgical treatment of the disabled man until he is discharged from the Service as unfit; this usually takes place when it has become clear that the man's services can in no wise be utilized by the Navy or Army. The imperative need of keeping a certain proportion of the hospital accommodation free for a sudden influx of wounded men does not allow of the authorities retaining the men in hospital until their health or functional disability is remedied to the greatest possible extent.

It has been widely advocated that the State should take a liberal view of the duties in this respect, and should assume the responsibility of the treatment of the disabled men.

There are several classes of disabled men to whom this suggestion is applicable :—

(*a*) Those who upon discharge from hospital require prolonged or special after-treatment in order to render them fit to resume a civil occupation. Included in this category are men suffering from heart disease, rheumatism, stiff joints, &c., for which mechano-therapy, hydropathy, electrical treatment or massage may be of benefit.

When there is a reasonable prospect of restoration to health, or more complete restoration to function, a course of out-patient treatment at a military hospital can be arranged through the agency of the Local War Pensions Committee.

(*b*) Those whose disability is due to tuberculous disease.

In the Navy such men are treated for a considerable period in the Royal Naval Hospitals where special wards and shelters are provided.

In the Army, men suffering from tuberculosis are distributed in the first instance among the large military hospitals, whence, in some cases they have been sent to semi-private sanatoria, the cost of their maintenance being paid by the Army. The majority are, however, discharged from the Army as soon as possible, arrangements being made for their admission to sanatoria. If insured the arrangements are made under the National Health

Insurance Act, if not insured by a special arrangement on the part of the Local Government Board. Such men, if their disease is held to have been aggravated by military service, will receive full pension.

But it has become apparent that the accommodation available is insufficient and special institutions will be provided for discharged Service men.

(*c*) Those who are mentally affected, or suffering from functional nervous complaints.

A system adopted by the Army for such patients is as follows : At the base hospital the patients are distinguished into those suffering from severe mental trouble bordering on, if not actually, insanity, and neurological cases (neurasthenia, functional paralysis, hysteria &c.). Patients with mental disorder are sent to another clearing hospital, and unless signs of improvement occur, are passed on to the military hospital for such cases either in England or in Scotland. These patients often respond to medical treatment, and as long as there is any hope of improvement are kept in a military hospital, but when manifestly incurable they are discharged to an asylum.

The neurological cases are sent home to one of the clearing hospitals for such disorders and there treated. If the trouble is slight the patient may soon be cured by a course of rest and good feeding

and return to duties. If more severe he is sent to one of the several special hospitals for nervous diseases for further treatment. Patients with neurasthenia not improving sufficiently by treatment to enable them to return to the Army are discharged from the special hospital and sent to their homes. Return to their former surroundings and suitable employment often effect a cure. Their cases are dealt with not by local committees but by a special medical board which has its headquarters in London and sends out members to examine discharged neurasthenics locally. These boards recommend special forms of treatment and make suitable arrangements with regard to pensions. When necessary, the men are recommended for treatment at the Home for Neurasthenics discharged from the Army, recently opened by the Ministry of Pensions at Golders Green, London, N.W. Treatment is afforded by the Staff of the Maida Vale Hospital for Nervous Diseases, besides medical appliances such as electrical apparatus and whirlpool baths and facilities for psychotherapeutical treatment, workshops for basket-making, joinery, bootmaking and carpentry, and fifteen acres of land for intensive French culture and agriculture are available. All the patients will be encouraged to work. The number of patients is limited to 100. No man will be allowed to stay more than three months, during

which time it is hoped that wise and sympathetic treatment and insistence on work will have cured the vast majority. Several large proprietors, including the Duke of Marlborough and Lord Montagu of Beaulieu, have agreed to employ these men, during and immediately after recovery, on the land; arrangements are being made to form camps, and later on for billeting in country districts.

Men suffering from epilepsy, aggravated by shell shock or Jacksonian epilepsy, constitute a most difficult class of case to deal with; the only solution appears to be the formation of agricultural colonies for such men. Arrangements are being made for their reception at an institution at Chalfont St. Giles, Bucks, where the patients will be under the care of the medical staff of the neighbouring Home for Epileptics.

(*d*) The totally blind are being looked after in a thorough and complete manner by the Committee, of which Sir C. A. Pearson is chairman.

The Committee and their officials have, by means of various publications, informed the public, both medical and lay, of the work carried out on behalf of blinded ex-Service men; no further mention therefore need be made of this branch of the subject.

(*e*) Some at least of the men discharged with deafness could with advantage attend classes to learn lip-reading.

The National Bureau for the Welfare of the Deaf is endeavouring to arrange with the War Office a comprehensive scheme for teaching deaf soldiers lip-reading while still convalescent. A certain number of soldiers have been taught while still in hospital by voluntary teachers through the agency of the Bureau.

For discharged soldiers a Committee has been formed to arrange classes in lip-reading, and at the same time to teach them trades suitable to the deaf.

The method of teaching lip-reading to these ex-soldiers differs considerably from that required for deaf-mute children. Expert teachers are necessary; in Germany amateur helpers have not proved of service. Only six or at the most eight should be taught in the same class. The duration of instruction required is about six months. The difficulty of lip-reading should not be minimized lest the men should be discouraged when they find it takes more time and trouble to learn than they were led to suppose.

As regards partially deaf soldiers; before the War evening classes intended especially for those who had become deaf late in life, and who wished to learn lip-reading were in existence in Birmingham, Edinburgh, Govan, Greenock, London and Nottingham. Doubtless if further facilities were required suitable arrangements could be made.

Men afflicted with deafness due to hysteria should be carefully eliminated by the aural surgeon from this instruction. They need isolation in special centres where energetic vocational training is available. As soon as possible they should be put in the way of earning wages. An early return to their homes has a favourable influence on the mind.

(*f*) Some sixty-four men, considerably incapacitated by paralysis caused by gunshot wounds, are being accommodated at the Star and Garter Home at Richmond-on-Thames, under the auspices of the Red Cross Society. Provision will eventually be available for 250 men.

Subsidiary homes are also provided in Scotland and Ireland. A certain proportion of these men, especially those in whose case the prognosis as regards life is unsatisfactory, will not be satisfied to remain at any distance from their relations and friends; a desirable arrangement would seem for accommodation of four or so beds to be reserved for such men in the important hospitals of various centres near their homes. The residential flats erected at Fulham by the War Seal Foundation should be of service to men suffering from a lesser degree of paralysis; a complete installation for psycho-therapeutic treatment will be provided.

(*g*) Those who, owing to the injury or loss of

limbs, require special treatment and appliances to fit them for civil employment.

For these men the Admiralty and War Office have established a number of orthopædic hospitals, &c. (*circ.* 120) where the men are specially treated. These hospitals also offer facilities for treatment after discharge.

To Queen Mary's Auxiliary Convalescent Hospital at Roehampton all sailors and soldiers who have lost a limb and require fitting with an artificial limb are sent. Until such time as their stumps are in a suitable condition many of these men remain at the Pavilion Hospital, Brighton. Hospitals near Glasgow and Bray, Co. Dublin, deal with Scottish and Irish sailors and soldiers.

Artificial limbs are made and fitted at these hospitals, and men can return there or send their artificial limbs to be repaired or altered free of charge. In the near future some arrangement will be made whereby men can attend at military centres near their homes for such repair and alteration.

CHAPTER II.

TRAINING OF THE DISABLED ABROAD.

The Provision of Training and Employment for the Disabled Sailor or Solder.

Up to this point I have been dealing chiefly with the arrangements for restoring the disabled sailor or soldier, as far as possible to health so as to enable him to earn his living.

It remains to consider the methods available for finding employment and where necessary for training the man to take up a new trade.

We should of course endeavour to learn from our experience of the past, whether derived from the work carried out for crippled children, which exists in considerable bulk, or that carried on for persons crippled when adults, far less in volume.

One of the earliest efforts to provide for adult cripples was that of Pastor Hans Knudsen who founded in 1872 in Copenhagen, an Institution which at first provided for the care and at a later date the training of crippled children and adults. In a period of 25 years, 5,800 cripples of all kinds

were cared for and supplied with surgical appliances: in the workshops 255 children and 175 adults were trained. The patients dealt with were in the main those suffering from defects arising chiefly from congenital and acquired diseases and not from accidents.

Before the present War but scanty facilities have been afforded for the training of adults crippled as the result of accidents.

In Petrograd in 1897 in the orthopædic department of the Maximilian Hospital at the investigation of the Professor Weliaminoff, M. Tcharnomskaia organized a workshop for the making of surgical appliances with the object of teaching a trade to cripples and also to obtain artificial limbs more chiefly. In a period of twelve years, 703 cripples have been taught in the workshops: of these 174 have been found capable of earning the same wages as a workman with sound limbs. Included among the workmen were a number of ex-soldiers suffering from injuries incurred in the Russo-Japanese War.

In France the "*Ateliers départementaux de la Seine*" were founded in 1899 by M. Marsoulan to deal with crippled or invalided workmen.

Most of the patients are almost past work, they are suffering for the most part from such progressive troubles as very large hernias, inoperable varicose veins, hemiplegia, rheumatism causing crippling deformity.

Under the circumstances they cannot be expected to learn a trade enabling them to earn an independent livelihood. They are occupied as far as their capacity allows in making bands, ropes, straps, iron, etc. for agricultural purposes, also reseating chairs, caning chairs, making mats and putting together children's toys. The wages granted them are much more than they really earn. As these people are destined to work in these workshops until they become totally incapacitated for work such an institution can only be regarded as a form of Relief Workshop.

The institution of the Frères de St. Jean de Dieu of Paris, discharges each year about forty young men of 20 years of age, perfectly able to earn their own living in spite of their infirmity. The trades taught are bootwork, tailoring and bookbinding. The training however, extends over some years and is of adolescents affected with defects much less severe than the loss of a limb and moreover defects to which the patients have accommodated themselves since infancy.

In 1908 at Charleroi at the instigation of M. Pasteur and Caty, aided by M. Langlois, Inspector of Technical Education, an *école-atelier* was founded in connection with the large provincial technical school, for the training and employment of cripples and especially men injured by accidents in factories,

etc. The lowest limit of age for admission to the school was twelve years and to the workshops fourteen years.

The School provided classes for (1) clerical work, including the study of French, mathematics, book keeping, typewriting, shorthand and designing, (2) tailoring, (3) harness work and saddlery, (4) boot-making and (5) bookbinding.

The workshops undertook bookbinding, brush making, making of alfa and rush mats, basketwork and the making of artificial limbs and surgical appliances for the workmen.

M. Jeanbrau of Montpellier, visiting the Institution in 1910, was very much struck by the work of a man who had lost both hands, one of the most difficult cripples to deal with. With the help of artificial appliances he was able to make brushes almost as well as a workman with both hands. The stump of his right fore-arm was fitted with a laced leather bucket stiffened with a metal frame-work : to the stump was fixed the head of a hammer, the fore-arm acting as the handle. With a magnet the man picked up a nail, held it in the proper position and then knocked it in with the hammer ; all this was done quickly, easily and in a natural manner.

The experiment proved a success, and subsequently similar establishments were opened at

Tournai and Brussels. When the War produced war-cripples, owing to their previous experience of the problem of disabled men the Belgian Government were prompt in making suitable provision; within a few months of the beginning of the War a large school for disabled soldiers was started at Rouen.

In December 1914 a home for discharged soldiers was instituted at Havre which has gradually merged into a school for vocational re-education.

L'Hospital Anglo-Belge was opened later in December for about fifty men more or less convalescent, in some rooms in one of the military barracks. It has gradually grown and now comprises about 250 beds with two dependent establishments providing an additional 700 beds. Gradually into this hospital, all the aids of medical science were introduced, mechanotherapy, thermotherapy, radiology, electrotherapy, medical gymnastics and gymnastics. In addition artificial limbs were made and fitted at the hospital, enabling the stumps to be educated to their maximal mobility and function.

The accommodation for training these men in useful work gradually becoming inadequate an establishment, "*L'Institut Militaire Belge de Rêéducation Professionnelle*" was created at Port Villez near Vernon, and opened in August, 1915. This institution is not only self-supporting, but has long

ago paid back the Belgian Government the entire capital cost of installation. The land provided was part of a forest; a saw mill was erected, the trees scientifically thinned out, the timber not used for building the huts was sold. The smaller wood was made into pickets and stakes for the use of the Belgian Army. The cost of the buildings 450,000 francs (£18,000) was repaid out of profits on the lumber; the cost of the equipment and plant for the workshops (£12,000) has been repaid out of the profits of the different workshops, which have sold their output at a cheap rate to the Belgian War Office thus effecting a double economy to the Government. A large farm forms part of the establishment; on it horses wounded in the War are cared for and made useful again.

There is at present accommodation for 800 patients; in addition attached to the Institute is a staff of 350 quasi-civilians unfit for military duty on account of age or on medical grounds; they serve as teachers, overseers, manual instructors or as workmen.

The fact that the entire population of Belgium is mobilized for military duty enables Captain Haccour, the director of the technical work, to requisition the services of the very best craftsmen in the different trades for the teaching staff who receive the ordinary pay of a soldier.

The cost per day to the Belgian Government for each man is just over 2 francs; the feeding and clothing cost 1 franc, 54 centimes, the daily pay is 43 centimes, the cost of lighting and heating is 8 centimes per man per day.

Forty-three different trades are taught including almost every imaginable occupation. The workshops provide for instruction in book-keeping, shorthand, typewriting, telegraphy, moulding in clay, wood carving, drawing and designing of all descriptions, wall paper designing and painting, the manufacture of motor vehicles, and electrical machinery of all descriptions, tinsmithing and plumbing, tailoring, bootmaking, basketmaking, poultry farming, and rabbit farming to which fur curing, dyeing and trimming are added.

The Institute makes all the tools used by the workmen besides a large number for the Army. All the printing and photographic work required is done on the premises in addition to much work for the Government. The men are paid in addition to their Army pay from 5 to 20 centimes an hour, according to the work they do; the surplus profits are now being funded for the benefit of the men.

The underlying principle of the whole establishment is constant work; no man is permitted to be idle. In part of the buildings is a small hospital for men who become ill or are temporarily suffering from

their old wounds. Unless these men are absolutely helpless they are required to do some sort of work in bed, the hospital orderlies being efficient instructors of such work as net-making or light basket-work.

Men are only sent from the hospital at Rouen to Vernon, when they are considered to have completed their actual hospital treatment. On arrival at Vernon, the man is received by the officer in command and goes before a Medical Board, who determine the need for any further medical treatment.

Port Villez affords opportunities for treatment similar to those of L'Hospital Anglo-Belge, at Rouen. They make a certain number of orthopædic appliances, especially surgical boots. The men who have not yet finished their functional re-education go through a course of medical gymnastics; these are followed by school gymnastics, including athletics, throwing the disc and javelin, *jeu de balle*, *jeu de paume*, fencing, sword exercises, boxing, running and jumping, the underlying motive of the athletics being to re-educate the sound limbs and make them as effective as possible. The men are put through a graduated course in the use of their artificial legs. Successful efforts have been made to re-educate the hands and fingers of men who have been trephined. The injured limb can only be exercised by medical treatment for a very small part

of the day, an hour at most ; the manual work of the workshops fortunately provides an excellent means of continuing the movement of the disabled parts for several hours during the day.

After the Medical Board, the head teacher sees the man to make arrangements for his general and theoretical instruction. To help him form an idea of the sort of work he would like to take up, he is taken round the workshops to see the different kinds of work and is given an opportunity of talking to the men and the instructors.

Finally the man appears before a Board presided over by the medical director, and comprising the head teacher, the technical director and the doctor in charge of the *laboratoire de recherche sur le travail professionnel* to determine the occupation most suitable for him.

The choice of an occupation is too difficult to leave entirely to the disabled man ; he requires help to make a suitable choice. It is a momentous decision not to be lightly come to ; on it depends in a considerable degree the man's happiness for the rest of his life. The medical examination card is carefully studied, the man is questioned, the extent of his general education ascertained, the degree of his intelligence gauged, special account is taken of his previous trade and social status. When advising the man the following are used as guiding principles :—

(1) He is advised to keep to his former trade if he earned a good enough wage and was satisfied with the work.

(2) If the man must change his work, he is advised to take up work akin to his former work, unless prevented by his injury. A plumber, for instance, would be advised to take up tinsmithing.

(3) If a man's output in a trade would be very considerably diminished by his injury, if he is sufficiently intelligent he is selected for training in official, commercial or teaching work, and is sent to the Institution at Mortain pour les Blessés intellectuels.

When any doubt exists as to the aptitude of a man for a certain trade, either on account of the nature of his injury, or for some other reason, he is sent to the particular workshop and kept under observation by the instructor and the doctor in charge of the research laboratory. It is in these cases that the laboratory affords considerable help; Dr. Nyns follows the methods of Dr. Jules Amar.

When a man is considered efficient in his trade and able to earn his own living, he is permitted to take his discharge provided he can satisfy the authorities that he has secured employment at a satisfactory wage or that he is about to start in business for himself under conditions which will permit him to make an adequate livelihood. He is given a complete outfit for his trade together with

a sufficient stock of raw material. All discharged men before commencing work outside must take three months furlough.

A man who has taken his discharge is at liberty to take up residence again at the Institution. He must report from time to time and satisfy the authorities that he is earning sufficient to keep him from want.

The results of the tuition of 160 *grands blessés* at Port Villez have been ascertained by M. Alleman the head of the teaching staff. He asked the instructors of the different workshops to assess the value of the work under the normal peace conditions of such of the men under their care. The returns are summarized in the following table:—

Length of apprenticeship in months	Number of Men worth Daily Wage of—										Total number of men
	2 fr.	2·50 fr.	3 fr.	3·50 fr.	4 fr.	4·50 fr.	5 fr.	5·50 fr.	6 fr.	6·50 fr.	
4	5	5	5	6	—	1	—	—	—	—	22
5	2	5	6	7	—	1	2	—	—	—	23
6	2	2	9	6	5	4	1	2	—	—	31
7	—	—	—	8	5	4	—	2	9	—	28
8	3	—	2	4	4	—	6	—	3	2	24
9	—	—	—	4	3	—	5	3	—	—	15
10	—	—	3	—	—	—	3	3	—	—	9
11	—	—	—	—	—	3	2	3	—	—	8
Totals...	12	12	25	35	17	13	19	13	12	2	160

The success of this institution is undoubtedly promoted by several circumstances which might not be obtained elsewhere; the men are under military discipline and are sent to Vernon at once on their discharge from hospital; very few of the men have homes to go to and in consequence are content to remain in the institution; owing to the widespread technical education in Belgium most of the men have already a thorough knowledge of some trade; excellent teachers of various trades can be recruited from the Belgian Army: no regimental officer can refuse the transfer of any officer or man to the staff of the institution. Finally, the War Office purchase all the products of the men's work.

France.

M. Herriot, Maire of Lyons, visited the establishment at Charleroi early in 1914 to obtain information with a view to founding in Lyons a similar institution. The War supervening, the school was opened in December, 1914, in the Rue Rechais, not for men injured during work but for crippled soldiers, under the direction of Dr. Carle assisted by M. Azer Basèque, formerly Secretary of the Technical School at Charleroi. Soon after, the committee opened a second École Professionnelle de Blessés at Tourvielle, in an old château on a large farm on the outskirts of the city. At both

schools, all the ordinary trades are taught: at the Château de Touvielle in addition, opportunities are available for teaching fruit-growing and gardening of all descriptions as well as poultry and rabbit keeping.

All the men live in; as the establishments rank as military hospitals the men remain under military discipline under the authority of the officer commanding the Lyons district. The men are chosen from those proposed for the class "Reformés" No. 1 (men with severe and incurable wounds inflicted during action or on any commanded duty, or men suffering from severe and incurable infirmity due to military service); they are granted unlimited leave while awaiting their pensions. Each candidate is thoroughly medically examined. A strict selection is made; no risk is taken of the pupil having to break off his training, even for a time, on medical grounds.[1] The character, aims and object of the men are investigated, only those who would repay for training are accepted. Most of the men are the subjects of amputations, out of 200 pupils 145 had suffered an amputation, forty-eight of the upper limb, ninety-seven of the lower limb.

[1] It would appear from the Belgian experience at Port Villez that some such measure is advisable in a training school not attached to a hospital; of 1,709 disabled men working at Port Villez, 418 required treatment as in-patients in the hospital wards.

The money earned by the sale of articles is divided among all the men working at the trade who have reached the stage of production. Those who have been longer in the school and are, therefore, more efficient, take two-thirds of the money and the later comers the remaining third. The desire to earn the larger share provides a useful stimulus. Again, as the largest possible output is to the advantage of all, the public opinion of the workshop prevents the men from wasting time.

As a result of a Commission formed in April, 1915, which included representatives of the Ministries of War, Marine, Public Instruction, Commerce, Agriculture and the Interior, two schools were founded by the State, and placed under the Ministry for the Interior, one at Paris the other at Bordeaux, for the re-education of disabled soldiers. The Paris school was established in the Vacassy Institute close to a large military hospital of 700 patients accommodated in l'Asile National de Convalescents de Saint-Maurice, the direction of the school being intrusted to Dr. Bourrillon.

The Vacassy was founded some years ago for the re-education and maintenance of those permanently disabled by accidents in Paris; since May 1, 1915, it has provided facilities for the instruction of some 150 disabled soldiers at a time. In addition to the patients under treatment at the hospital, all dis-

charged sailors and soldiers in need of vocational re-education are accepted as far as the accommodation permits. The choice of a large number of trades is available, the instructors being for the most part provided by different Guilds of the City of Paris.

In the period May, 1915, to December, 1916, the number of men admitted was 756. Of these, 591 completed their training. Details are as follows: 315 placed in employment; 208 still undergoing training; 36 returned to relations; 32 left, cannot be traced.

The remaining 165 left the Institution without completing their training for the reasons set out below: 12 transferred to other training centres; 16 returned to hospital; 99 left of their own accord after less than a month's trial; 36 dismissed for breaches of discipline.

It has been stated that men trained at this institution are almost entirely those who have suffered from injuries to the lower limbs. For this reason I give the following details: Of 657 men, 228 were suffering from the effect of injuries to the upper limbs, 395 from effects of injuries to the lower limbs, and 34 from various other injuries.

Contemporaneously, a school was founded at Bourges, and shortly after, another at Montpellier, both being subsidized by the territorial depart-

ments. The school at Montpellier is one of the largest in France; it was opened under the direction of Dr. Emile Jeanbrau, assisted by M. Edmond Dronsart, formerly Secrétaire général des Ecoles provinciales d'Enseignement technique de Hainaut. The school was started in July, 1915, with seven pupils; by November, 1916, over 450 disabled men had entered the school of whom 100 have left, after a complete course of re-education, and are now earning an adequate living by the exercise of a trade different to that followed before the War. Not only does the school aim at the adaptation of the disabled man to a new trade or branch of his former trade suitable to his physical capacity, the maximum use being made of his sound limbs, but the school also works at the improvement of artificial appliances for various trades and especially of artificial arms and the necessary modification of the tools and plant for disabled men. The perfecting of artificial appliances to enable men with amputations of the arm to undertake manual work should prevent the considerable loss of production which would occur if all these men had to take up positions as clerks or minor officials, posts which have considerable attractions for many of the men who lose sight of greater advantages attached to an essential skilled trade.

The trades taught include bootmaking, tailoring,

carpentering, cabinet making, wood turning, French polishing, metal work, harness and saddlery work, tin-smithing, making of orthopædic appliances, designing, bookkeeping, shorthand and typewriting, re-education of the left hand and a preparatory course of general instruction which all the men are required to take, a principle which is also in force at Lyons.

Work usually lasts from 7.30 a.m. to 5 p.m., with a break of two hours for dinner. In the evening classes are held in drawing for carpenters, turners and mechanics, anatomy and drawing for the men making artificial appliances, and in general subjects for the remainder.

The men are persuaded to keep at their former occupation if their injury permits. Dr. Jeanbrau has had men come to him who were carpenters or cabinet-makers before the War, and having lost a leg think they are unable to follow their former occupation. He shows them ex-miners similarly injured being taught this trade and advises them to take up their former work even if at first they have to accept a wage less than that formerly earned.

A feature of the school is the re-education of the left hand; since July, 1915, M. Tamenne, a Belgian refugee, has been teaching disabled men how to use their left hands. Having lost his right forearm when aged 16, he has re-educated his left hand that

he is almost unconscious of any loss of limb ; he needs no assistance to carry out the small operations of daily life. He can shave himself, button collars, tie his tie and his bootlaces, cut up meat, peel fruit, roll cigarettes and get on a bicycle quite as well as a man with two hands.[1] In addition, he has learnt and is able to teach writing, shorthand and type-writing with the left hand only.

Convalescent men from the military hospitals at Montpellier needing this instruction attend daily at the school in the afternoons, from 2 to 4 o'clock ; some 132 have now passed through the course.

M. Tamenne, through the agency of M. Edmond Dronsart, has kindly sent me a detailed account of his method of teaching hand writing. He places considerable emphasis on the men learning to write in a hand resembling as closely as possible their former handwriting. This he holds, contributes in a large degree to the men losing the habit of thinking themselves as disabled or handicapped in any way. To this end the writing taught has the same slope as ordinary writing—not even upright writing is

[1] The exact mode of instruction of the left hand in the operations of daily life was set forth in the *Lancet* (on p. 241, vol. ii, August 5, 1916). This article is a lucid translation of the experiences of Count Zichy, a Hungarian, who, losing his right arm when 17 years of age, from the accidental discharge of a sporting gun, taught himself the greatest possible use of his other hand.

allowed. The position of the body is the same as when writing with the right hand; the desired slope is obtained by the position of the fingers and of the paper. To write with the left hand he says, the man should :—

(1) Place his fore-arm comfortably on the table so as to fatigue the hand as little as possible.

(2) Practise writing between lines about 3·5 mm. apart.

(3) Place the paper in the sloping position shown in fig. 1. (See *Lancet*, April 7, 1917, p. 553.)

(4) Try from the very beginning to give the usual slope to the letters.

If this proves too difficult he should draw faint lines in an oblique direction as shown in the figure, and endeavour to make the up and down strokes of the letters come parallel with these lines.

(5) Always take care that the hand is immediately below the point where he is writing.

The man will find the last two rules difficult to carry out and the efforts to do so will tire his hand; he should leave off for a few minutes and then resume his attempts. After about nine or ten lessons of an hour and a half, this trouble disappears and the man is able to form the letters easily and well; the movements of the hand become more and more precise. During the next twelve or so lessons he should practise writing between lines

about 2·5 mm. apart when the letters will be the size used in ordinary writing; later, paper with single lines should be used. A mistake some of the men make after five or six lessons is to try to rush their learning, with the result that they form the letters badly and lose the ground already gained. Speed in writing can only be acquired with practice and time. M. Tamenne finds that if a man practises for more than a limited time each day, he loses interest and does not do so well in the end.

At first the movements of the hand are uncertain, but care should be taken that the letters are written as much as possible in their usual form, from the moment the man takes up his pen to the end of the last word. It often happens in the formation of the last letter in a word that owing to failure of attention the pen travels below the line (see fig.). Patience is necessary from the start: the man must not want to get on too fast; a lesson of an hour and a half is enough for the first ten days. At the end of this time the men may practise for an hour to an hour and a half in the morning, and for the same time later in the day, until the time comes when he no longer experiences any fatigue during writing.

After two months tuition the men are able to take their place in the commercial class (section de comptables) and carry on as well as right-handed

men. This work is in a way analogous to the attempt to make children ambidextrous. M. Dronsart has had experience of work on these lines among elementary school children, and has found that the results obtained are not proportionate to the efforts entailed. But one great factor present in disabled men is lacking in these children—necessity. At Bordeaux, men with an amputation of the right hand or lower part of the right forearm are taught to write with the right hand; the clip for the pen is fastened at the level of the lower extremity of the radius on the outer (anatomically) side.

Passing to more general considerations one of the first tasks of the authorities at an Ecole professionelle is to select the trades to be taught. Generally all the ordinary useful trades are taught as these comprise occupations essential to the community.[1]

Petits métiers such as the making of mats, &c., are avoided; care is taken as far as possible to train

[1] Dr. Bourrillon finds that boot-making is the trade most sought after because it can be carried on in the man's own home: 43 out of the 125 pupils who have taken this course at St. Maurice were previously agricultural workers and have gone or propose to go back to their native places. Tailoring, although apparently a suitable occupation for men injured in the lower limbs, he finds attracts very few men; the work is too close and a long apprenticeship is necessary before good wages can be earned. Most of the men trained and placed out as tailors have subsequently abandoned this work. Similarly harness-making is not popular and difficulty occurs in finding places for those trained.

men to produce articles which command a higher price when hand made.

The competition of women after the War is taken into account and as heavy work as possible compatible with the man's physical capacities is selected.

It is on this ground that a certain amount of criticism has been directed towards the extent to which clerical work is taught in the Ecoles Professionnelles. The teaching of this work is relatively easy ; a large number of men can be taught in a comparatively short time ; one teacher suffices for many pupils.

There is no difficulty in finding candidates for the course ; the men are only too desirous of taking up light sedentary work, if possible under Government.

But unfortunately many women who have lost their husbands and are obliged to take up some work are already crowding into an employment which is only moderately paid.

Certain districts are noted for particular industries. Oyonnax in the department of Ain, is the centre of the comb-making industry and affords employment for over 5,000 workmen in the arrondissements of Nantua and St. Claude, 20,000 artisans earn their living by wood turning and the making of fancy articles in wood. The special section of the Ecole pratique de Commerce et d'Industrie d'Oyonnax, therefore, provides instruction in these occupations ;

fifty places are available for men who intend to remain in the district.

In certain localities, some special article is in general use and its manufacture is taught at the Ecole. Round about Lyons "galochiers," shoes very much like our Lancashire clogs, and at Bordeaux "espadrilles" are worn; in fruit and wine-growing districts basket-making is a profitable occupation.

Institutions which specialize in the teaching of one industry have formed special sections for disabled men. L'Ecole nationale d'Osiericulture et de Vannerie de Fayl-Billot (Haute-Marne) affords instruction to eighty men in basket-making of all kinds and osier growing.

L'Ecole nationale d'Horlogerie de Cluses has formed a special section for seventy men in watchmaker's works and the making of small parts of scientific instruments, &c.

Schools which provide higher education in technical subjects can at times be utilized for the tuition of disabled men in the more elementary branches of the work. Special sections have been formed at the Ecoles nationales d'Arts et Métiers at Angers and Cluny, each providing thirty places for instruction in draughtsmanship[1]; hitherto the schools

[1] It would seem that mechanical and building design are especially suitable subjects to teach disabled men. The class

have been utilized solely for the advanced technical education of engineers and heads of engineering workshops.

An example of the action of particular trades in France in supplying training for their trade is found at Elbœuf (Seine Inférieure) a centre of the textile industry, not far from Rouen, at the Elbœuf Ecole Pratique d'Industrie training is offered to men who have for all practical purposes the complete use of their arms and hands.

The instruction provided includes the actual making of the various materials, designing and the necessary technical training for shop assistants and clerks engaged in the trade. Work will be found for them by a Committee formed chiefly of the manufacturers of the district.

Similarly the special section of the Ecole Pratique de Commerce et d'Industries at Thiers provides tuition for thirty men in the different parts of cutlery work.

To prevent the flocking of the men into town trades are taught at the ordinary Ecole Professionnelle which can be followed in small villages: boot

in industrial design at St. Maurice began with three sections—ornamental, mechanical and building design; but after eight months trial it was found that ornamental design was an unsuitable subject as it demands an artistic sense rare among the pupils. The other two subjects have proved useful and additional teachers have been appointed.

making, tailoring and tinsmithing are chosen on these grounds. Agricultural schools have been formed chiefly with the object of keeping agriculturists on the land, at these schools agricultural and allied subjects such as farm work, vineyard and nursery gardening, horticulture, blacksmith's work, carpentry cooperage and basket work are taught.[1]

The methods adopted in agriculture will probably be much altered after the War. In France as in England a diminution in the number of agricultural labourers was taking place for some years—not only this but the part of the community which has to stand the shock of the War has been for the most part the agricultural; 65 to 70 per cent. of the wounded are agriculturists.

[1] It should be added that training as agricultural mechanics is taught at urban centres. At St. Maurice the course has proved useful: 27 men trained in the management and repair of agricultural motors have been placed up to December, 1916, and 15 others were about to be placed.

The National Office for the Disabled considers agricultural work of much importance, and has urged upon the Ministry of Agriculture that every agricultural school in the country should be required to provide training for the disabled.

An intensive propaganda is proposed to impress upon disabled men the importance of returning to the land, to explain the possibilities which have, of course, of late been largely increased by the introduction of labour-saving devices and machinery. Proposals have been favourably received by Parliament allowing disabled soldiers to commute part of their pension to purchase an agricultural holding.

The gradual replacement of hand labour by machinery has been going on for some years: this movement should be accelerated by the fact that the Army has collected for its use a large number of motors and tractors which after the War can be utilized not only for working in the fields but for transport of agricultural produce. Hence the importance laid in France upon the training of disabled men in the management and especially the repair of agricultural motor machinery.

The diminution of employment on the land in the winter is foreseen; to remedy this it is suggested that the disabled man should take up another trade such as the cutting of precious stones, making of toys, basket work, &c., which can be carried out in his own home.

There is much to be said in favour of the contention that special schools should be provided for men with severe injuries to the upper extremity. Dr. Gourdon of Bordeaux after some fifteen months experience of the work states: "The re-education of the men with injuries to the upper extremity for industrial life, stands as the most difficult problem to be solved. Although much progress has been made we are far from having fully worked out the solution. These men are very apt to become discouraged at the beginning of their tuition: special centres with workshops should be formed for one-

armed men so that they cannot compare as they do at present their output with that of men with two sound hands.

The grouping of men with injuries to the upper extremity in the same workshop would permit of an exact estimate of their output, a classification so as to enable the most effective use to be made of their services, their adaptation to the special parts of work of a remunerative character which should be reserved for them in the workshops of commerce.

The length of the instruction necessary varies according to circumstances. For men capable of resuming their former occupation but requiring some persuasion, all that is necessary is a few days in the workshops when they see their comrades at work, although affected with the same injuries as themselves, or they find trying to work themselves that they are able to take up their former trades. In some cases these men will require a somewhat longer time to learn the use of their artificial appliance. But apart from the special needs of these men the length of the courses, even for the same occupation, varies considerably in the different Institutions. Dr. Bourrillon considers that at the end of six months the vast majority of men who have undergone instruction in a trade are enabled to earn their living although not complete masters of the craft. Arrangements should, he thinks, be

made that the employer should undertake to arrange for the man obtaining practical experience of the whole of the work undertaken in his workshop.

As an experience of the results obtained during training 700 men, he has found the following length of courses adequate :—

Clerical work	3 months
Draughtsmen (architectural and mechanical)	10—12 months
Leather worker	8 months
Boot-maker	6 months for repair work
Mechanic (to drive and repair agricultural motor-tractors)	6 months
Tailor	8 months
Tinsmith	4 months for an ordinary workshop ; 8 months to work without supervision on his own account

Most of the Ecoles Professionnelles arrange for longer courses of training. At Montpellier the length of the courses are :—

Boot-makers	12—15 months
Tailors	12—15 „
Carpenters	15—18 „
Wood-turners	8—12 „
Mechanics	15—18 „
Harness work and saddlery... ...	11—15 „
Orthopædic work	15—11 „
Draughtsmen	8—12 „
Clerical work	8 months

At the Ecole Professionnelle of St. Etienne (Loire) the length of the apprenticeship for various trades is

about twelve months, varying from ten months for instruction in business methods to eighteen months for tailoring.

At Bordeaux, where long courses are provided for other occupations, it is considered that four to six months is sufficient to learn basket-making, and three to four months to learn the making of "espadrilles" (shoes with a cotton upper and a string sole).

At l'Ecole Nationale d'Osiericulture et de Vannerie at Fayl Billot the length of the course in three months at the end of which a daily wage of 3·5 francs can be earned. Six months' tuition enables a man to acquire a sufficient knowledge of the trade to act as foreman or to set up on his own.

At l'Ecole Nationale d'Horlogerie de Cluses three courses of different length have been instituted:—

(1) An elementary course lasting six months in the use of a drill, watchmaker's hammer, &c., enabling a man to earn a small wage, 3-5 francs a day.

(2) An abridged course of twelve months in special parts of the work when the wage to be earned varies from 5-10 francs a day.

(3) A complete course of fifteen months in repairing, tool making, engraving, &c., when the wage earned varies from 8-15 francs a day.

At Oyonnax where the comb industry is taught

the length of the courses is from 3-6 months enabling a man to earn a wage of from 3-7 francs a day.

At the Agricultural Schools the length of the courses is usually three months for milk-testing, basket making and fish-rearing; six months for bee-keeping, cowkeeping and harness work; twelve months for an agricultural machinist, vine grower, horticulturist, and cheesemaker.

With regard to the choice of instructors the most interesting point is whether full use should be made of the services of suitable persons with physical defects similar to those of the pupils. The advantages of employing crippled teachers cannot be expressed in better words than those of Dr. André Tournade, who states: "Experience has shown that there is every advantage in entrusting the education of the wounded to instructors who are themselves crippled and who know better than anyone else, because they have had to face and overcome them—all the difficulties in the way of the readaptation to work; they overlook the awkwardness of the pupils, know in advance their weak points, are prepared for the men's discouragements, and can offer the advantages of their own experience. The mere fact of their presence alone strengthens and stimulates the disabled learner; they serve as a perpetual example of the results to be obtained by re-education. This

principle has long been carried out at the Institution of the Frères Saint-Jean de Dieu."

An important suggestion deserving of consideration is that a short course of training should be held for the teachers, not so much to afford instruction in the subjects they will teach but in the necessary modification of the practice of teaching required in the peculiar circumstances, chief of which are the essentially practical character of the instruction, the need for individual teaching and the especial care which must be taken to avoid pressing or worrying a man who has recently recovered from a severe illness. The limitations of the capacities of the disabled man would thus be impressed upon the teacher. The school at Bordeaux makes a feature of the training of instructors for disabled men.

The average daily cost of instruction, board and lodging of a man at an Ecole is about 5 francs, which includes a small daily payment to the man (50 centimes to 1 franc, 25 centimes), the lesser amount being given when the money resulting from the sale of the articles is divided among the men.

Although the funds are in some measure obtained from private sources, the chief standby is an allowance usually 3 francs 50 centimes per day per man, provided by the State.

No charge is made to the men for the training; it is obviously futile to expect a man in the position

of a discharged soldier to take up training when he could be earning some sort of a wage unless it is made worth his while. Dr. Carle has found that his greatest difficulty hitherto has been to dispel from the minds of the men that the acceptance of training at an Ecole Professionelle will in some way result in a deduction from their pension or allowance.

At most of the Ecoles Professionnelles the men are boarded and lodged at the Institution, except when they are inhabitants of the town in which the school is situated.

It has been thought that a soldier when once discharged from the Army would object to return to what he might think was life in barracks over again. But experience shows that the men soon find out the atmosphere of the Ecole is far different from that of the barracks; their suspicions are soon dispelled by a visit to the school. Again and again it has been found that the men work better when their daily life apart from work is under some measure of control. Such, for instance, is the experience of La Fédération Nationale des Mutilés de la Guerre, which provides special worshops to which men either come from their own homes and are paid a fixed daily wage (4 francs and dinner) or are boarded and lodged in hotels, and receive a proportion of the earnings of the workshops. The latter

plan has been found to produce better results, the men work better and their conduct is more satisfactory.

A considerable difference of opinion exists in France as to whether the men should be taught in the Ecole professionelle or in the ordinary workshops.

The advantages of the Ecole Professionnelle are set forth by Dr. Jeanbrau as follows: "In the course of his apprenticeship in a residential institution for wounded soldiers, helped by patient and zealous instructors, the wounded man does not experience discouragement and failure like the apprenticeship in a private workshop. In the normal atmosphere of work that prevails in these schools the wounded man learns in an easy manner the habit of regular work. Rivalry incites them to do their best, and the character of the work keeps them from intemperance and unsatisfactory conduct. Not only is the disabled man made into a competent artisan, but he is also given a training superior to that of many workmen. He is taught to write a business letter, draw up a bill, keep accounts and calculate the net cost of material and profit on the sale price, &c.

The advocates of the private workshop hold that the training given at the school is too academic. While this objection may in some instances be real,

in these days when the curriculum has been modified and reduced especially for the needs of these men it cannot be generally true.

Unless the workshop is small the disabled men must be left to the tender mercies of the foremen ; however well disposed the principal may be, he must leave the actual instruction in most cases to his subordinates.

The aim of a business has hitherto been the maximum of production, not the formation of a complete craftsman.

The lack of labour in many skilled trades at present, however, has created a demand for the services of even unskilled men, and has perhaps made the foremen more willing to take trouble over their training. In the early days of the War, when it was a question of rapidly making arrangements for a large number of disabled men the placing of workshops afforded a ready solution of the difficulty, and had the additional advantage of requiring no preliminary outlay.

Other advantages of the workshop are the possibility they offer of taking up a very large number of trades and of providing tuition in certain trades which require a plant too expensive to be provided in a school ; and also the difficulty of placing men when trained is lessened, as they are often taken in as workmen in the shops where they have undergone their training.

At Orleans with the exception of a bootmaking class formed at a convalescent depot the local society arranged for all the men to be taught in the workshops of private firms.

Some centres utilize the workshops as well as the Ecole Professionelle. The St. Maurice Centre not only provides an Ecole Professionnelle at St. Maurice, but also an Hotel-Annexe at 4, Rue Rondelet at Paris, for over 100 men who are being trained in the workshops of private firms (in cabinet-making, bookbinding, furriery, photographic work, &c.), until they are able to pay their own way they are allowed to board at the Hotel-Annexe.

The private workshop, however, is of prime importance. In some industries the total number of workmen employed is so small that only in the largest centres of the industry is it possible to arrange classes; elsewhere the work must be taught in the workshop.

An example of the utilization of all available resources is that of Agen.

The centre for re-education at Agen founded with the support of the manufacturers of the district, consists of :—

(1) A section attached to the Ecole pratique d'Agen with eighty places.

(2) Workshops for apprenticeship with employers with about 400 places.

(3) Workshops for disabled men not requiring training with at least 100 places.

The section at the school is for the training of book-keepers, draughtsmen and clerks; the workshops for training are open at Passage d'Agen, for the manufacture of brooms, basketwork, caning and repair of chair seats, at Mézin for work in cork, at Marmande for knitting, at Agen for the manufacture of *sabots* and *galoches*, at Casteljaloux for the making of the tinsel-coverings and straw covers of wine bottles, at Miramont for making of artificial flowers and leaves from mother-of-pearl; the workshops for men not requiring training afford work in the manufacture of boots, sandals, saddles and boxes for preserved fruit at Villeneuve-sur-Lot, of summer shoes and wheat sorting at Tonneins, of paper and candle at Casteljaloux, of boots at Miramont, of whips at Agen and of butcher's implements at Sainte Lidrade. Employment is guaranteed at a wage from 2 francs 50 centimes to 5 francs a day, the length of the apprenticeship is not more than six months.

The Ministry of Artillery and Munitions has provided work for disabled men. While still under the care of the Army Medical Service they have been employed in metal works controlled by the Ministry at Lyons, Toulouse, Marseilles and Bordeaux. The officer in command of the Military Hospital certifies

as to the man's general condition and fitness for work: the men work only half the day and are paid at piece-work rates. The Military Governor of Paris has recently approved of a similar scheme whereby men under hospital care may be employed on any work provided the arrangements have received the sanction of the Army Medical Service. Short courses of instruction in the use of machine tools have been arranged in conjunction with the Ministry of Commerce at Toulouse, Nîmes, and Marseilles.

The general experience is that the men do not avail themselves to the extent that they should of the opportunities placed at their disposal for learning skilled trades. Of 2,000 men interviewed by Dr. Bourrillon only 350 were willing to be trained, 500 out of 3,000 men interviewed by the authorities of the Federation Nationale.

Dr. Kresser, the Director of the "Maison Blanche" at Neuilly-sur-Marne, finds that only one-third of the men avail themselves of the training provided in the workshops in spite of all the efforts to make the school attractive.

This disinclination to accept training is due to several causes the most important being the man's fear that he will not be strong enough for the work; this lack of confidence is often increased by the untactful expressions of sympathy of nurses, visitors

to hospital and the public generally. Even when he has started a course of training, periods of discouragement occur and measures are necessary to prevent the man giving up. The fear of reduction or loss of pension is another potent factor especially if the fear is shared by the man's friends or relations.

Some consider that having been wounded they have a right to permanent assistance by the State and that there should be no need to fit themselves for a trade. They look forward to a post under Government employment, which they expect their Member of Parliament to obtain for them. This attitude of mind has unfortunately received some support from various Parliamentary decrees, one of which throws open to ex-soldiers of all ranks posts which were formerly reserved for non-commissioned officers of long service. Another decree calls upon the heads of munitions works to utilize as much as possible disabled men in any possible capacity, including of course, unskilled occupations such as porters, messengers, watchmen, &c. Some do not wish to be cured for fear they should be sent back to the Army.

In exceptional cases the men are incorrigibly lazy and are determined to live in idleness on the charity of the public for the rest of their lives.

The earlier the attempt to induce the men to take up training the better. While still in hospital

opportunities for collective and individual persuasion are readily available; the longer the man waits once he is fit for work the less inclined he becomes to take it up.

All difficulties in the way of his commencing work as soon as possible should be removed; a certain time must elapse before he can be fitted with his final appliance, in the meantime, however, a temporary appliance enables him to begin his training.

Whenever possible the disabled men undergoing training should be used to convert others: they will more readily accept the advice of men in the same position as themselves.

To prevent men who refuse training from setting a bad example to others it is suggested that all such men should be segregated in a separate set of hospitals under firm discipline. Such a course is preferable to getting rid of the refractory soldiers as soon as possible; even the best disciplined men would refuse training if by their refusal it meant earlier discharge from hospital and earlier award of pension. Any priority especially in supply of surgical appliances should be given to men accepting training. A measure which has not yet been adopted, is to establish the schools as far as possible from urban centres, away from distraction, the most innocent of which keeps the man away from work.

But authoritative opinion is strongly in favour of making professional re-education compulsory, at least to men during the stage of medical treatment; some go so far as to advise retention in the Army until a course of training is completed.

After returning to their homes a proportion of the men find that they cannot get work, and then realize the need of training. These men are evidently applying for admission to schools; at St. Maurice men are turning up daily and asking to be taken on. They are welcomed partly because they serve as a warning to the men in the hospital stage of their disability. Captain Billault the head of the War Office Employment Bureau, in Paris, had to advise 241 men to enter a school for re-education, as he could do nothing for them in their present condition; some 183 acted upon his advice.

The Scientific Organization of Work as advocated by Frederick Winslow Taylor has attracted a considerable amount of attention in France.[1] He aims at increasing the output of a factory by careful

[1] F. W. Taylor has already obtained a considerable body of adherents in the United Kingdom; his methods have been adopted to a considerable extent in munition factories. Rate-setters' cards are met with in many factories, but motion study has not been adequately taken up yet. Disabled men at home could be employed as assistant rate-setters if they had already obtained some slight technical knowledge; promotion would of course depend upon the ability they displayed.

training of the workmen in economy of labour. The methods of the best workmen are studied and taught to the other men ; economy of action is aimed at, any unnecessary actions during performance of work are eliminated, the most satisfactory form of tool, its most effective size and weight, the best position for the workmen to assume are worked out.

M. de Fréminville, of St. Nazaire, who has for some years taken a special interest in the system of F. W. Taylor and his successors is employing at his shipyard at Penhoët as educational supervisors (not foremen), men who have sustained serious injuries to the upper limb; before the War they were skilled workmen, fitters, mechanics, ironsmiths, &c., but as the result of their injuries do not possess sufficient strength to enable them to resume their former occupation.

In a paper read at the recent Conference held at Paris on the "Training and Employment of Disabled Soldiers," M. de Fréminville said :—

"Numerous instances prove that by utilizing the services of men trained in the study and preparation of work the output of the workshops is very considerably increased, in some cases double or treble, or even increased to a larger extent. I am able to quote a recent example where rivetting was being carried out at the rate of 500 rivets a day

of ten hours under the usual conditions. The work was not especially laborious; the men being paid by piecework had every inducement to do their best. A thorough investigation of the way in which the work was carried out showed that there was no co-ordination of the different operations of piercing, heating, and rivetting and that this lack of co-ordination, which hindered the work, did not tend to right itself. The investigation showed what was wrong; in a few days the arrangement was so improved that the workmen without being overworked were doing 3,000 rivets instead of 500. This is no unique experience. So many instances of this kind have now been cited that no doubt can exist as to the value of these methods. Many manufacturers wish to profit by them. But how to pass from the old arrangements to the new? Where can the necessary staff to carry out the study and preparation of work be found? The manufacturer does not care to utilize his best workmen for the purpose and run a risk of diminishing his output. Again, the good workman is always apprehensive of changing the work he has followed all his life and in which he has become skilled. He does not see clearly the outcome of the new work he is asked to take up. Some change of conditions must occur to induce him to take up this new work. I have seen a number of workmen in whose case this change of

conditions necessary has been a loss of limb. With rare exceptions only younger men will change their occupation, the fact that the disabled men are still young is in favour of their employment in this direction.

"Not all disabled men are suitable for re-education on these lines; the most suitable man for the purpose is an intelligent workman who had acquired a knowledge of his trade and before his injury already been noted as keen and deserving of promotion. These men will act as supernumerary foremen; the old duties of the foremen must be split up and shared with these new functionaries. The foreman's work will be more especially connected with the staff, with the men themselves rather than the work. The supernumerary foreman will be concerned with the preparation of detailed instructions to the workmen, the methodical preparatory measures for dealing with the material to be used, the study of the improvements desirable in the plant or its upkeep, the preparation of the tools necessary for the execution of the various orders, &c., each of these operations should be entrusted to a special person.

"The analysis of work is the key of the new methods. The splitting up of work as completely as possible into distinct elements is the only means of establishing a sound basis for determining the

wage of the workman. When this method is employed a just bargain can be made by which the workman earns a good wage and has every incentive to put forth his best effort.

"Not only can the methods of organization of work be applied in the factory but they have their place in the office. M. de Fréminville has seen a disabled man who, taking as a model the analysis of work he had seen carried out in the factory, applied the methods to the work of an accountant's office to the benefit of the work. Another form of manual work in which the scientific organization of work would prove of the utmost benefit is agriculture. Taylor advocated its adoption with a view not only to increasing the output of the workman under existing conditions but to improving these conditions in every possible way."

A considerable body of scientific work has been done in France, notably by Dr. Jules Amar, Dr. Gourdon and Dr. Charles Vallée on the measurement and graphic recording of work. Dr. Amar after years of study of physiological problems presented by the worker and workshop, was in 1912 appointed Professor of the Physiology of Work at the Paris Conservatoire des Arts et Métiers; on the outbreak of War he adapted his methods for the use of disabled soldiers.

He has paid special attention to the subject of

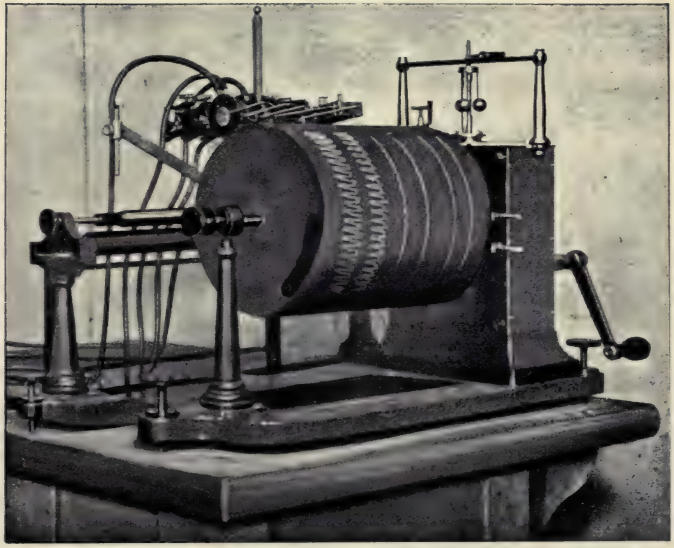


FIG. 1.—Cylinder and Drums for registering movements during use of file.

Face p. 54.

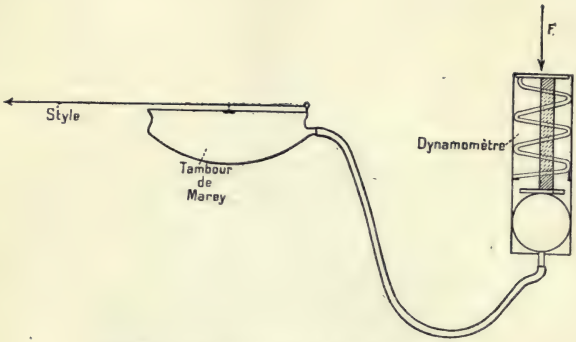


FIG. 2.—Diagram of a Dynamograph.

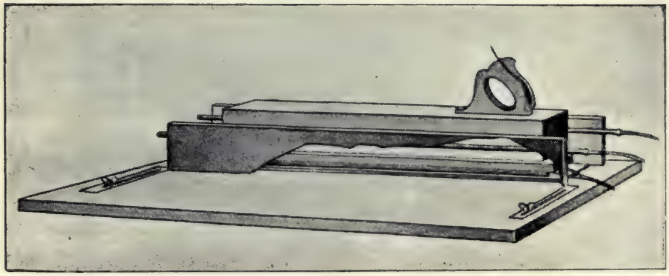


FIG. 3.—Plane adapted for registering movements.

"fatigue" and its prevention. For his investigation he has modified and invented the special forms of apparatus used in his laboratory.

The phenomena of the contraction of muscles are recorded by a dynamograph; the muscular force is conducted by a spring which presses on an indiarubber ball connected by tubing with a Marey's tambour provided with a writing style which registers on a revolving cylinder the amplitude of the movements of the muscles. Dynamographs are fitted to various tools, including the file, plane, and shovel; the force, rate and precision of the movements involved in their use can thus be registered.

The energy expended is determined from the consumption of oxygen during respiration; to measure this he uses a eudiometric apparatus attached to a respirator fitting over the workman's mouth.

Deductions are made from cardiagrams and pneumograms, curves are made of the variations of pressure of the expired air; the ratio of the duration of expiration and inspiration affords useful data.[1]

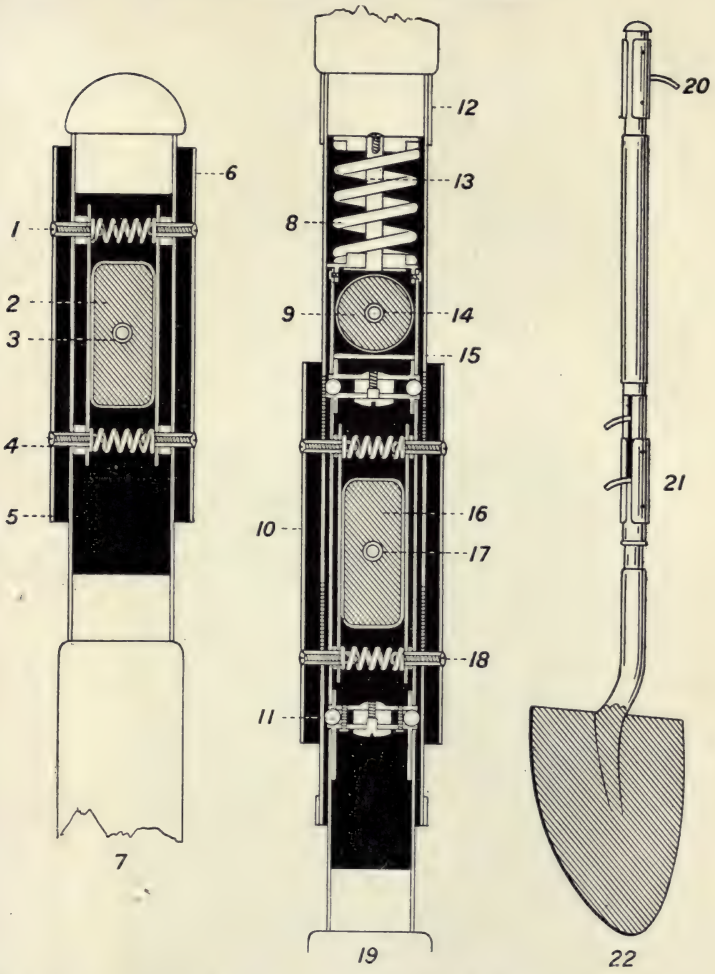
The ergometric (bi) cycle serves to measure the fatigue of the legs and arms; Dr. Amar's modification of the Mosso chirograph is used to investigate

[1] Dr. Gourdon does not find examinations of the respiratory phenomena satisfactory; he places more reliance on the results obtained by examination of the circulatory organs and especially by the measurement of the arterial tension.

the fatigue of the muscles moving the finger or wrist; the *poire dynamographique* (a hollow india-rubber ball fitted with air the pressure of which can be varied) measures the grasping powers of the hand; the arthodynamometer measures the amplitude of movement of joints and the force of the muscles producing the movement.

The applicability of these instruments for the redevelopment of the power of muscles of stumps and mobility of joints is apparent; the ergometric cycle can be easily modified for the functional re-education of stumps of legs and arms. With the registering tools the muscles can be gradually trained in speed and effort. A complication is introduced when a man loses the arm on which he chiefly relies. The ordinary (right-handed) man using a tool does most of the work with his right hand, the left hand plays a subsidiary part. If a man loses his right arm, the left must be taught to take its place. The left arm is educated by using the registering plane; another instrument—the dynamographic hammer—is also useful for this purpose. Exercises in cutting out ovals and squares from sheets of copper are also used. After five or six weeks tuition most of the men are able to use the left arm reasonably well; a certain amount of clumsiness still remains, and is only gradually overcome.

FIG. 4.—Spade fitted with Dynamographs.



1. Push button serving for a guide.
2. Indiarubber pad.
3. Tube passing to registering drum.
4. Spiral spring — with pressure of 1-10 kilogrammes.
5. Outer casing.
6. Outer casing.
7. End of handle.
8. Spiral spring — with pressure of 1-20 kilogrammes.
9. Indiarubber ball.
10. Outer casing.
11. Ball bearings.
12. Steel ring.
13. Shaft with plate pressing on indiarubber ball.
14. Tube passing to registering drum.
15. Ball race.
16. Indiarubber pad.
17. Tube passing to registering drum.
18. Push button serving for a guide.
19. Lower handle.
20. End of handle.
21. Lower handle.
22. Dynamographic spade.

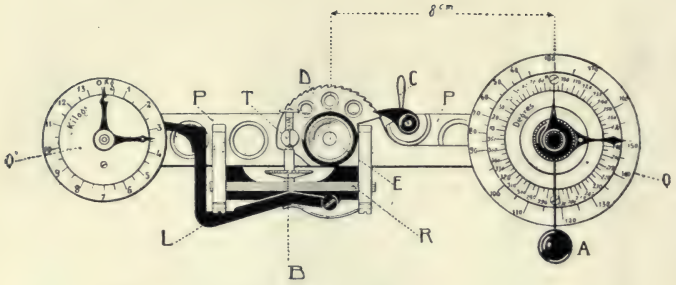


FIG. 5.—Diagram of an Arthrodynamometer.

FIG. 6.—Arthrodynamometer fixed for measuring amount of movement of Elbow joint.

Face p. 57.

The method allows of an accurate estimate of the man's progress; any over-exertion is almost automatically prevented. Incidentally the graphic records permit of the ready detection of malingering. An important part of the training is the re-education of the man's stump in sensitiveness, so that he may be able to exert the varying degree of pressure used in the performance of any complex action. A man with his two arms amputated has been so trained that he can do basket work with his two stumps alone and without the aid of an artificial appliance. The average time required for complete re-education is about six months.

Dr. Amar has worked out the average power of stumps of different lengths. Taking the power of the normal limb as 100, he finds the following :—

	Length of stump	Power
Arm... ...	32—13 cms.	100
	12—7 ,, ...	64
	6—5 ,, ...	44
	4 ,, ...	9
Fore-arm ...	24—12 ,, ...	100
	11—7 ,, ...	68
	6—4 ,, ...	40
	less	*nil*
Thigh ...	48—18 ,, ...	100
	17—10 ,, ...	62
	9—6 ,, ...	38
	5 ,, ...	24
	4 ,, ...	*nil*
Leg	32—17 ,, ...	100
	16—7 ,, ...	73
	6 ,, ...	*nil*

The element of fatigue, however, enters into the matter; when the length of the stump of an arm is less than 13 cm., unless the limb has been gradually re-educated, no regular and continuous work lasting any time can be undertaken. When the length of the thigh is less than 15 cm., a man cannot follow an occupation which necessitates much walking.

The hand is used chiefly as a grip. A reduction in the number of fingers interferes with the solidarity necessary for precision and for the distribution of power to the instrument or tool. If the strength of the grasping power of the thumb and index finger is taken as 7 kilo., the strength will be 10 kilo. if the middle finger is used as well, and 12 kilo. when the ring finger is added, the little finger adds but little to the strength, but assists in the direction of effort.

Of men who have undergone an amputation, Dr. Amar estimates that the output of 80 per cent. will repay for re-education. These men are capable of earning a satisfactory wage, and should resume their position in society. But 15 per cent. of these men to effect this result will require special installation of the workshops. He suggests that a relief workshop should be provided by the State to afford occupation for the very seriously disabled men who are unfitted for work in an ordinary work-

FIG. 7.—Education of movements by the Dynamographic Hammer.

Face p. 58.

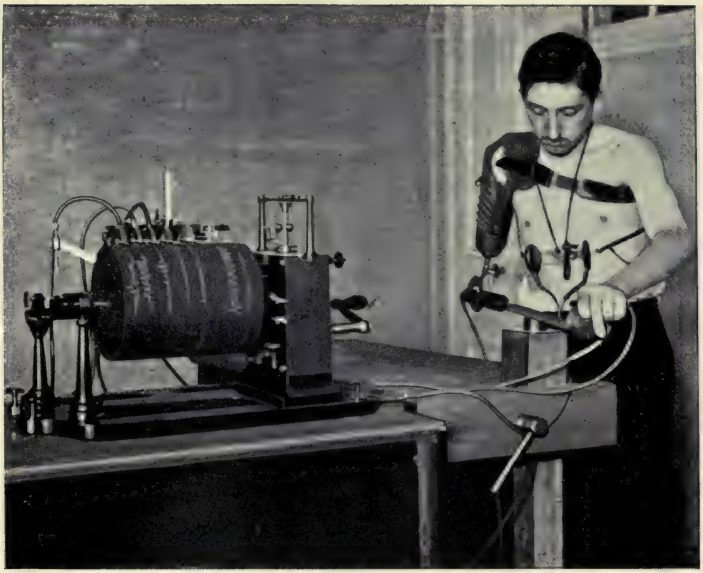


FIG 8.—Analysis of the work and fatigue of a man with Amputation of lower part of Arm.

Face p. 59.

shop where they could execute orders for easily manufactured articles with a regular demand and remunerative sale, such as stamped tin articles, light basket work, working with alfa, cardboard box making, the making of toys and the bodies of dolls.

In view of the large proportion of men repaying by actual output for the effort of training, it would seem that all but the obviously unfitted should be afforded an opportunity of playing their part in the work of economic production.

By now forty-one departments of France possess an Ecole Professionnelle; as long ago as April, 1916, some sixty-two schools were in existence for training in skilled trades, and ten agricultural schools containing in all about 3,800 places. By October, 1916, seventy-eight trade schools had been formed: thirty-five under the control of the Ministry of the Interior, thirteen under the Ministry of Commerce, thirty under the auspices of private associations. In addition, twenty-six agricultural schools under the Ministry of Agriculture, and another provided by private enterprise are forthcoming.

As regards central organization in the Government, the control of the future of disabled soldiers is still divided between several ministries, a state of affairs which can only lead to confusion. The

proposal has been made to form an "Office National des Mutilés et Reformés de la Guerre," by a combination of the Ministries to deal with every possible provision to be made for the discharged soldier.

The Office comprises an Administrative Committee, a Commission of Re-education, and a Council for the Study of Improvements.

The programme of the National Office is to :—

(1) Keep a register of all soldiers who by reason of wounds or illness resulting from the War have suffered any marked and permanent diminution of working capacity, their civil status, military rank, the nature of their lesion, previous occupation, and any occupation adopted on account of defect.

(2) Keep a list of work and employment available to disabled soldiers, distinguishing the kinds of employment suitable for each type of defect.

(3) Collect information received from institutions dealing with disabled soldiers, and keep a statistical record of situations filled by them.

(4) Collect information as to the treatment of disabled soldiers in France and abroad.

(5) Co-ordinate the work of the various ministries and local organizations for the welfare of disabled soldiers.

As the various Ministries concerned still control the funds voted to them, this progress has not yet been realized.

Employment.

Work is usually found for discharged soldiers by local societies formed in the early days of the War to help these men and their families in any way possible. Some fifty societies for this purpose were formed in Paris alone. As the schools are largely the result of their activities the societies remain in close touch with the men undergoing instruction and at the termination of their courses work is readily found for them.

The Office National mentioned above undertakes the placing of discharged soldiers.

An official Employment Bureau under the Ministry of War has been in operation in Paris for over a year and is now extending its sphere to the provinces, a branch bureau having been opened in each of the twenty-one military districts in France.

These branch bureaux it is hoped will prevent an influx of disabled men into Paris in search of work. An important function is to study the best methods of utilizing the labour of disabled ex-service men in the interests of the economic life of the country.

In seven months (up to October 1, 1916) the bureau placed about 2,200 men, a large proportion of whom were difficult cases to deal with. The experience is that some 25 per cent. of discharged men obtain employment without any training;

they either return to their old occupations or take positions as concierge, gamekeepers, watchmen, lift attendants, &c.

But the leaders of public opinion in France are not satisfied with the mere finding of a situation for the disabled man. Their aim is more than this—they want to make the disabled man into a complete workman, a man who can make every part of an essential article, and to enable the peasant to return to the country and more especially to the rural community under conditions which will permit him to become his own master.

It is suggested that many of the disabled men who have gone through a course of training in an Ecole Professionelle will experience considerable difficulty when they wish to open in their own village a small shop for tailoring, bootmaking, basket-work, precious stone cutting, &c. The bonus they have earned at the school although useful will not be sufficient to enable them to make a start. The Government has subsidized *l'Association pour l'Assistance aux mutilés pauvres* who have organized a system of loans with security. These loans are made to men who have completed a course of training at an Ecole Professionnelle and are for the purpose of enabling them to set up in business, preferably in country districts.

Proposals have been made that the State should allow the ex-soldier to capitalize a portion of his pension and that an equal sum should be advanced on interest on the security of the pension, this capital to be used to enable the disabled man to set up on his own account.

GERMANY.

Germany was fortunate in being able to utilize the organization already in existence for some ten years for dealing with cripples. In 1914, fifty-four institutions had already been established for cripples providing 221 workshops for training in all trades of every description, some fifty-one trades being taught. Full use is being made of these institutions; after treatment at hospital schools, the disabled man is transferred to the Orthopædic Institution nearest his home for continuation of his medical treatment and vocational training. The men are kept under military discipline, the institution being placed under the command of an officer detailed as military director.

Special institutions have been created for the one-armed at Berlin and Hindelberg. Employment is obtained through the local labour bureau for the province; in some bureaux special departments have been formed to deal with disabled men.

The State will find work for its own disabled

employees; in Germany the State is relatively a larger employer than in England, many enterprises such as railways which are with us under private control are under the State in Germany. A proposal widely advocated is that the State when placing orders with private companies or firms shall impose the condition that a proportion of the labour employed should consist of disabled men.

Many municipalities have inserted a clause to this effect in the regulations relating to municipal contracts.

No effort is spared to impress upon the wounded soldier and the public the fact that even severely disabled men can be taught to work and earn their living. The measures utilized include continuous propaganda by the Press, both lay and medical, lectures illustrated by lantern slides, visits to institutions for cripples, the distribution of pamphlets to soldiers and the visiting of the wounded men in hospital to advise and persuade them to take up training where necessary.

The mass of expert opinion is opposed to the establishment of large colonies of disabled men, although in some instances colonies of forty to fifty families provided with workshops have been formed near towns. Wherever possible, it is considered that the man should return to his own home and resume his former work and employ-

ment and become an ordinary member of the community.

Stress is laid on the need for providing the disabled with skilled advice as to future employment. The general tenour of the advice given is that disabled men should when possible return to their pre-war occupations. When this is impossible they should take up some other work at which they can be employed with safety to themselves and others.

When possible the men are to be employed on piece work; if unable to undertake such work singly the suggestion is that the groups of men having approximately the same physical and earning capacity should be formed. These groups would work collectively on piece work in the same way as gangs of sound workmen.

But advisers everywhere in Germany find that the disabled men, as a rule, want the State or some Public Authority to find them a light post, usually in the railway or postal service.

At Saarbrücken the committee despair of inducing the men to take up other work; they let them try to obtain such posts for themselves, and when they fail are prepared to offer them more available employment. No efforts are spared to educate the men into a more reasonable frame of mind. The German Society for the Protection of Industry have warned disabled men that the number of posts available

under the State is small in view of the fact that the Railway and Postal Authorities have promised to reinstate their former employees. The Society advises men to take up industrial work, and has issued a pamphlet entitled "Possibilities for the Employment of Disabled Men in Industry."

Public opinion advocates that only men of previous experience in clerical work should be given instruction at training centres in this work, as there is a danger of overcrowding of this occupation after the War.

In Prussia, local authorities are required to exercise caution in granting licences as pedlars to disabled men.

Details relating to individual institutions are not readily obtained. At Mannheim, a Military Orthopædic Hospital (for non-amputation cases) was opened in April, 1915, with a school attached to provide instruction, both practical and theoretical, of an elementary nature during medical treatment. Stress is laid on the value of theoretical training to increase the patient's knowledge of his former occupation.

The subjects taught are :—

THEORETICAL.—Writing and arithmetic, shorthand and typing, English and French. Special lectures are given on building trades, metal work including electrical work, commercial subjects.

(2) PRACTICAL.—Carpentering, bootmaking, locksmith's work, metal work including electrical work, wheelwright's work, bookbinding.

During the first seven months over 700 patients attended the various courses, about 300 at any one time receiving instruction.

The municipal technical schools and machinery construction school at *Frankfort* have arranged courses of technical instruction in various branches. The teaching is given at the hospitals when enough students are available ; if not the course is held in a building lent for the purpose by a school.

Charlottenburg offers disabled men the facilities available at its continuation, technical and art schools ; the instruction is given either at the hospital or a convenient place near by.

Munich has arranged for training in almost every branch of manual work. The men taught are still under medical care, the institutions being both a convalescent home and school.

At *Saarbrücken* instruction in elementary school subjects, writing for the one-armed, book-keeping and drawing are provided in the hospitals. A surgical appliance maker instructs disabled men in the manufacture of artificial limbs and tools on his own premises. Also a large workshop fitted with all kinds of machinery and apparatus for working in metal has been set apart for disabled soldiers at a foundry.

The larger towns of *Würtemberg* (Stuttgart, Ulm, Reutlingen, Heilbron, and Gmund) have provided training for both the wounded and the disabled at schools for building and machinery construction, technical and trade schools, &c. The largest hospital school is at Stuttgart, where 5,000 soldiers attend for instruction.

As an instance of the work German firms are doing for disabled soldiers, the Electric Accumulator Works, at Oberschönweide, near Berlin, have trained and employed ex-soldiers with various lesions, some minus a leg or arm, or both legs, others with maimed hands. By the end of the first seven months of the working of the scheme as many as 160 had been trained.

The men were not segregated in a special workshop, but put to work alongside able-bodied artisans; they were set to exactly the same work, but care was taken to prevent over-exertion. At first the men were given a minimum wage of 5d. per hour, when sufficiently skilled they were put on piece work; many were soon earning 7d., 8d. or even 1s. an hour.

A large number of men are being employed in the Iron and Steel Industry. The Employers' Association for the north-western district of the Union of German Iron and Steel Manufacturers are employing in factories belonging to the group several thousand of disabled men.

Since the autumn of 1915, disabled men have been employed in the Army Clothing Workshops at Coblenz. The experiment has proved successful; about fifty men, all of whom possess the full use of both hands, are employed. When paid by the day the men earn from 3 marks 50 pfennigs to 4 marks 75 pfennigs; on piece work they earn more. Men not natives of Coblenz are boarded and lodged under careful supervision.

The importance of training disabled men for agricultural pursuits has not been forgotten. Various enterprises have been started. In the autumn of 1915 an agricultural training school was inaugurated at Landsberg-am-Lech in Bavaria. Since then about 250 men at a time have been under instruction. Many of the men have taken up bee-keeping; meat inspection has been taught to the men of superior education. A school for disabled men has been set up on similar lines in Würtemberg in connection with the Hohenheim Agricultural Academy.

In Prussia a number of Care Committees have established courses of training in agricultural work. Similar courses have been established at Flensburg and Segeberg in Schleswig-Holstein by the Provincial Committee in connection with agricultural colleges. At Bad Lauchstedt disabled ex-soldiers receive instruction in the cultivation of land, breeding of animals, veterinary knowledge, use of manures,

farm book-keeping and the use of agricultural machinery and tools.

Agricultural work has been taught at a large State Colonization estate at Grosstarpen near Graudenz in East Prussia, to ex-soldier agriculturists under treatment at the Military Hospital in Graudenz. The course started on June 1, 1916, with sixteen men. In December, 1916, 110 men had received instruction. The injuries from which they were suffering were as follows :—

6 had lost one leg.
8 had lost the right arm.
2 had lost the left arm.
2 had lost a hand.
4 had fractures of the thigh.
3 had fractures of the legs.
11 had stiff knees.
48 had sustained injuries to arm causing stiffness or paralysis in shoulder, arm, or hand.
22 had hand and finger injuries.
4 invalided on account of illness.

Practical work was undertaken from 7 to 11 a.m. and 2 to 6 p.m. In addition, four hours theoretical instruction were given weekly, and lectures in the evening in the summer. The first work undertaken was the planting of potatoes ; after this, the hoeing of sugar beets, sunflowers and turnips. Men with leg injuries were at first employed in the yards or barns in mixing fodder, turning manure, repairing the yard and road and acting as teamsters. Later they were taught to winnow the rye. It was, how-

ever, found that men injured in the leg could use rakes and mowing machines. At the hay harvest the disabled men with the help of their special appliances were able to carry out the binding, stacking and loading. At the corn harvest they were able to mow rye and oats, but were only able to carry out the binding slowly. The stacking was carried on with ease. Two one-armed men after practice made excellent stackers. It was arranged that the men should as far as possible have a daily change of work so as to get them to make different movements of the muscles of their stumps. Threshing presented no difficulty. At the sugar beet harvest, groups of four to six men were employed at lifting, hoeing, throwing the beet into heaps and covering them with sheets. Theoretical instruction was given in the more elementary branches of the work, such as measurement of the land and estimating requirements, study of soils and manures, cultivation of the land, growing of plants, diseases of animals and plants, book-keeping, &c.

Settlement of the disabled on the land has been advocated by practically all Committees and Societies for assisting disabled soldiers. The passing of the "Provision of Capital" law in July, 1916, enables men with a claim to a pension to commute a portion of it, provided they are willing to take up an agricultural holding through a recognized society.

In order to secure that invalided officers should be provided with suitable training for public appointments, a course of two to three years has been arranged, including instruction in every branch of knowledge necessary for officials holding State, municipal or other appointments. A new institution, the "Prince Leopold Academy," at Detmold in Lippe, has been inaugurated for the purpose. This course has been adopted to prevent the unfortunate results which occurred after the War of 1870-71, when large numbers of ex-officers were appointed to public positions regardless of qualifications. Very considerable difficulties occurred, and it was not until these officers had been gradually superseded by a fresh generation of better-trained officials that any considerable improvement in public administration occurred. But several societies interested in disabled officers point out the relative scarcity of public appointments, and advise in preference professional, commercial and industrial callings. The German League for the Assistance of Disabled Officers undertakes to advise disabled officers with regard to the necessary training for commercial or business careers, and has carried out special courses of instruction. Also the Municipal Polytechnic at Friedberg in Bavaria has arranged a course of training lasting one year for disabled officers who wish to take up professional or com-

mercial careers such as civil engineering, business managers, &c.

Canada.

The Canadian Military Hospitals Commission has established schools at the Convalescent Hospitals. Training of a sedentary kind is provided, including instruction in general subjects such as, arithmetic, language, penmanship ; commercial work such as book-keeping, shorthand and typewriting ; arts and crafts such as wood working, light metal working, mechanical drawing, clay modelling and other forms of hard work.

At several centres short courses in automobile and internal combustion engine work are being held. Tailoring and shoe repairing is being taken up in some centres, notably at Halifax, Nova Scotia, by disabled Jamaican soldiers.

Active work outdoors is provided in the forms of gardening, poultry-keeping, bee-keeping, vegetable and flower growing, and similar pursuits in the grounds surrounding the hospitals at Quebec, Winnipeg and Calgary.

In Canada with her vast water-powers, electricity can be produced at so small a cost that there would seem to be a large field for the making of electrical appliances for the home workshop and farm. Not only could disabled men be employed in the work-

shops, but positions as canvassers and demonstrators would be available.

There are now two establishments in Toronto, where returned soldiers possessing some degree of mechanical ability have been taught by expert instructors to make artificial limbs and eyes.

An order in Council was passed in October, 1916, to the effect that in making appointments to the Federal and Provincial Civil Services preference should be given to men who have served overseas, and especially to those unable to follow their previous occupations owing to disability caused by active military service.

Many invalided soldiers have already passed the Civil Services examinations after taking courses of instruction at Convalescent Hospitals. Only men unfit for outdoor work are encouraged to take these courses.

To indicate the extent to which the ground is covered the statistics relating to the Province of Ontario are given. In this province special classes have been started at Toronto, Hamilton, London, Ottawa and Kingston. There are now in the different institutions 554 pupils taking various classes of whom 166 are taking the elementary course in general instruction, 24 the commercial course, 38 civil service course, 34 telegraphy, 24 wood-carving, 40 carpentry and joinery, 57 mechanical engineering, 56 machine shop work, 10 shoe-repairing.

Twenty-six technical schools in various parts of the Province have placed their equipment at the disposal of the Authorities.

The Soldiers' Aid Commission which deals with discharged soldiers has eighty-six branches in Ontario. Some 5,400 disabled soldiers have returned to the Province since the commencement of the War. So far approximately 50 per cent. of the men have secured employment and many have returned to their old positions.

The Commission holds that for the success of this most difficult work it is necessary that the public should thoroughly understand and co-operate in the work being done for those men. To this end a *Bulletin* is published quarterly; articles are published in the daily Press, cinematograph films illustrating the treatment and re-education of wounded soldiers in England, France and Canada and showing their progress up to the stage of final recovery, have been prepared and are being widely shown.

AUSTRALIA.

Arrangements are being made for the training of disabled Australians at work-shops provided at the Southall Military Hospital for limbless men. When the men are in a more advanced stage of convalescence their training is completed at certain polytechnics which specialize in the subject the

man is taking up. The funds are provided by a Committee of Australians in London who have the advantage of the services of Major Isaacson of the Australian Imperial Forces. Arrangements have been made for tuition in Australia in the works of several firms including those of Messrs. John Brinsmead, the piano manufacturers.

New Zealand.

In New Zealand the interest of discharged soldiers are looked after by a separate department of the State. The predominant idea in New Zealand is to place the men on the land. The State it is held can do much for the man who has a predilection for country life. The New Zealand Government is prepared to find land, to give the reasonable man financial assistance, to give him instruction, and to exercise any necessary supervision of his work until he is well launched on his new venture. To meet the needs of soldiers who have had no previous experience of farming, arrangements have been made with the Department of Agriculture to undertake the training of a certain number of men at the various State farms, in general farming, dairying, fruit farming, poultry keeping, bee culture, &c.

To provide training for men in other directions the Government has arranged that free tuition shall be given at technical schools to all men certified by

the Discharged Soldiers Information Department as being unfitted to re-enter their former occupations and likely to benefit by the proposed instruction. The Government have been compelled to warn discharged men that work cannot be found for all returned men in the public services. A considerable amount of employment has been afforded in this sphere; of the first 400 men placed by the Department, 161 were given Government employment, 53 municipal employment, while 186 were placed with private employers. The Society of Accountants of New Zealand are doing useful work for these men: they have arranged for free training in office work and book-keeping. Personal instruction will be given to men residing in the four chief cities, others will be taught by correspondence. After a course of elementary instruction in office routine and the keeping of accounts, a more advanced course is given which covers all the subjects included in the examination of the Society for Book-keepers.

CHAPTER III.

TRAINING OF THE DISABLED IN THE UNITED KINGDOM.

United Kingdom.

Although the work for crippled soldiers and sailors has not hitherto been organized so thoroughly in the United Kingdom as in France yet taken altogether a considerable bulk of work has already been done.

In several military hospitals, arts and crafts are being carried on by bed patients. At Colchester and Thorpe (Norwich) members of the local branches of the well known Brabazon Society are visiting the men in the hospitals and teaching the minor occupations : at the Southmead Hospital, Bristol, this work is undertaken by an association which not only teaches men confined to the wards, etching, painting, repoussé metal work, chip carving, basket work, leather work, Smyrna rug making, embroidery and knitttng, but has also provided a carpentry workshop and an instructor for men more advanced in convalescence. At the Hammersmith

Military Orthopædic Hospital, the bed patients are taught embroidery, painting and plaque decoration. Besides relieving the monotony of their existence such pursuits prevent the men becoming absolutely idle and pave the way for more serious occupations.

At Queen Mary's "Star and Garter" Home for Paraplegics, efforts are made to interest the patients in such light work as basket-making, knitting, and the making of salmon flies.

Useful work on somewhat different lines has since February, 1916, been carried on at California House, Lancaster Gate, by a committee of Californians in London for disabled Belgian Soldiers. Miss Heyneman, a Californian lady working at Aldwych among the Belgian refugees in the early days of the War realized the desirability of a club where wounded men could not only find recreation but also various forms of useful occupation.

Applied design, drawing, shorthand, typewriting and various languages have been taught. The results of the teaching of drawing, &c., have been very successful; within ten weeks of the commencement of tuition men who have never drawn at all were able to make useful designs for wall papers, calicoes and friezes.

When the work commenced, the alternative of sending the teachers to the men at the hospitals or bringing the men to the teachers at California House

were considered. But the men much preferred the change and freedom of being away from hospital.

A club on the same lines has now been opened by Miss Heyneman for British and Colonial troops at 8, Cambridge Gate, a house lent by Mr. John Galsworthy.

Until recently, at the Training Centre of the Duchess of Connaught Canadian Red Cross Hospital, Cliveden, Bucks, instruction was afforded during convalescence in land industries as well as workshop crafts. The instructors in land industries were the departmental heads of the Cliveden Estate, belonging to Major Astor, M.P., the subjects taught included gardening, horticulture, fence-making, horse- and pig-keeping. At the workshops the men were engaged in (1) wood craft industries with and without machinery, including carpentering and toy-making; (2) cigarette making by machinery; this work was taken up so as to offer a home industry to the men who, with a machine costing from £23 to £25 can make 5,000 cigarettes a week, yielding a net profit, allowing for depreciation, of 25s. to 30s. a week. This work has now been discontinued as convalescent men are returned as soon as possible to Canada.

At the Canadian Military Hospital at Ramsgate many of the patients are suffering from disabilities of long duration, which have resisted treatment in

other hospitals. Arrangements have, therefore, been made for providing suitable manual work; when a patient is placed on light duty he has an opportunity of taking up work in the machine shop—carpentry and cabinet work, wood carving, cigarette making, printing, tailoring, cobblery, saddlery, market or landscape gardening, &c. The needs of the hospital are to a considerable extent supplied by the men under instruction; they make the splints, surgical appliances, a large part of the gymnastic apparatus, and carry out the necessary carpentry and cabinet work, and electrical and motor repairs.

Advantage has been taken of the unique facilities available at the Heritage Craft Schools, Chailey, the well-known residential institution founded by Mrs. C. W. Kimmins for the teaching of arts and crafts to crippled boys. Part of the institution was taken over by the War Office to serve as a relief hospital for convalescent soldiers, many of whom were suffering from the loss of a limb. To each of the crippled soldiers were assigned as orderlies two crippled boys suffering from the same loss of limb; the men during their physical re-education were enabled to profit by the boys' experience. The soldiers were encouraged to enter the workshops and take advantage of the instruction afforded; they took part eventually in the wood-work, including turning and toymaking, beaten copper work, bookbinding, basket and rug making.

In military orthopædic hospitals the curative manual treatment afforded, although it may prove in some sense educational, has for its main object the provision of suitable and interesting physical exercises for specific injuries. But occupational work does even more than this for the man ; without such exercise the wounded limb is often left motionless for fear of pain. Colonel Sir Robert Jones, C.B., F.R.C.S.E., Inspector of Military Orthopædic Hospitals, writes : "*As soon as the patient is fit to get about he should have some occupation both for his mental, moral, and physical welfare. Here the curative workshop is an invaluable aid to gymnastic treatment.*

For example, a man with stiff fingers barely able to grasp even fairly large objects, is soon utterly wearied if set to grasp spring dumb-bells or any other such apparatus, but will cheerfully spend the morning grasping a big duster and cleaning windows. His mind is set on the dirt he has got to remove, not on the fact that his maimed hand is repeatedly taking hold of and letting go the duster. Similarly, using the paint-brush occupies the mind as well as the hand and fingers. Later, if he is a carpenter or other skilled tradesman, he is promoted to the use of tools he understands, and so the disabled hand is re-educated, partly by set gymnastic exercises, and largely by work. Men with defective elbows

and shoulders find exercise in the carpenter's and blacksmith's shops.

Driving a plane in the carpenter's work can be employed for exercising muscles and joints in both arms and legs. Men with stiff ankles soon tire of working a pedal machine or stationary bicycle in the massage department; therefore as soon as the limb is fit for it, he is offered some sort of work, such as fret-work, where his foot drives the fret-saw, but his hands are busy guiding the work; his brain is interested in what his hands are doing and not wearied by the curative action which the treadle movement brings about. Similarly, bootmakers' shops, splint shops, tailors' shops, all provide their share, not only in restoring the men to health, but in helping the surgical work of the hospital by making ingenious splints and devices for the treatment of their wounded comrades.

The effect on the mental outlook of the wounded man is equally important. A soldier is either fit for duty, or he is in hospital. After lying in bed weeks or months while septic wounds have been slowly healing, he has often lost much of his spirit and initiative. If he is in a hospital where there is nothing definite for him to do, he is apt during his convalescence to learn the habit of getting through the day without doing anything more energetic than smoking, playing cards, and listening

to a concert, or, if out, going to a kinematograph show. *When, however, the patient is in an atmosphere of work, he soon recovers some hold on himself and wishes to do something, especially when the satisfactory performance of his work earns some small extra privileges. As his power to work increases, he ceases to think so much of himself as a maimed man, but begins to think of what he will be able to do in the future.*"

At the Hammersmith Military Orthopædic Hospital a certain amount of instruction is incidentally afforded to the men who are undergoing treatment mostly for injuries to bones, joints, nerves, and muscles, very few have lost a limb.

The aim of the officer in charge, Major Jenkins and the Registrar, Captain Hill, is to employ as many of the patients as possible in the work of the hospital; 480 of the 800 patients help in some way. Men follow their former trade as much as possible; the work includes gardening, electrical work (including the supply of electricity to the Hospital) plumbing, painting, tailoring, bootmaking, especially surgical boot making, leather work, carpentering, and the making of splints and surgical appliances, and blacksmiths' work. About 140 men are employed in the workshops under the supervision of a voluntary worker, Mr. Poate.

A proportion of the men were formerly unskilled

labourers or followed other occupations such as shop assistants.

The only instructor from outside has charge of the orthopædic workshop.

The workshops have been fitted up to a large extent by the patients themselves; those in the engineering workshops have put up their own machinery, the carpenter's benches were made by the men. Two men who had each lost one hand made three benches between them.

Fretwork, although a hobby more than an occupation, is useful for men suffering from foot-drop or stiffness of the knee-joint. Patients will work the pedal of a fret-work machine for three to four hours at a stretch, but get bored after ten minutes' ride on the modified bicycle of the physico-therapeutical department.

Cigarette making by hand is carried on by eight men; it is inexpensive to instal, the cost of the materials for teaching them being less than £1.

The object of providing workshop occupation at the Alder Hey Hospital, Knotty Ash, Liverpool, is primarily curative. The idea of training the man to the degree of being able to take up a skilled trade when discharged from hospital is subordinated to the curative aspect. But occupations are selected as will provide work of practical character which will lay the foundation for more advanced training at a technical school or other centre.

The classes are at present held in the Old Swan Technical Institute, a branch technical school lent by the Liverpool Education Committee and at a workshop connected with the Knotty Ash Village Hall, near the hospital. Gardening, painting, typewriting, and cinematograph operating are taught at the hospital. Shortly all the work will be carried out in workshops erected in the hospital grounds.

The branches of instruction now being carried on outside the hospital are engineering (filing, drilling, turning, drawing), carpentry (wood turning, bench work, drawing), embossed leather work, bent iron work, fret work; while arrangements are nearly complete for boot repairs and surgical boot making.

At the Canadian (Granville) Military Hospital at Ramsgate which receives many patients suffering from disabilities of long duration, which have resisted treatment in other hospitals, when a patient is placed on light duty he has an opportunity of taking up work in the machine shop, carpentry, cabinet work, wood-carving, cigarette-making, printing, tailoring, cobblery, saddlery, market or landscape gardening, &c. The needs of the hospital are to a considerable extent supplied by the men under instruction; they make the splints, surgical appliances, and a large part of the gymnastic

apparatus, and carry out the necessary carpentry and cabinet work, electrical and motor repairs.[1]

At the Roehampton and Brighton Pavilion Hospitals for limbless sailors and soldiers (Queen Mary's Convalescent Auxiliary Hospitals) instruction is provided for patients during convalescence in : (1) Electrical work, fitting, &c., in connexion with electric lighting, motors, telephones, and bells ; (2) motor driving and repairs, making of spare parts, &c. ; (3) carpentering, including wood work and turning.

At Brighton recently a class in boot and shoe mending work has been started. At Roehampton, light basket making is regularly taught : for those interested in poultry culture, weekly lectures are given by Captain Peirson Webber, the blind poultry specialist and a poultry farm has been established.

The employment bureau of the Roehampton Hospital, places these men as chauffeurs, garage attendants, &c., assistant electricians, or lift men in business houses, hotels and private mansions, or in positions where a certain amount of practical knowledge of carpentering is required. Many offers

[1] Workshops for "curative manual treatment" will shortly be provided at the Military Orthopædic Hospitals at Cardiff, Bristol, Leeds and Liverpool ; in Ireland at Dublin and Belfast, and in Scotland at Bangour near Edinburgh, at the Scottish National Red Cross Hospital at Bellahouston near Glasgow, and the Old Mill Hospital, near Aberdeen.

of employment come from owners of private estates ; men who are able to make or repair five-barred gates, doors of barns, woodwork of wells, &c., can be usefully employed on a private estate. If they are also able to run a motor to supply electricity and execute any small repairs required either to the motor or electrical fittings generally, their value is correspondingly greater.

At these hospitals commercial classes are also held by Clark's college in book-keeping, typewriting, shorthand, &c. The men join these classes to improve their knowledge in various directions and to assist them in the work of store-keepers, time-keepers, or similar occupations. The number who join with a view of taking up work as clerks is more limited, but is gradually increasing. If for any reason the men have not taken up a situation, they are allowed to attend free of charge classes at any of the London or provincial branches of Clarke's College until placed. The wages obtained by the men vary from 25s. to 40s. a week.

Although this work is valuable, yet Major Robert Mitchell, the Director of Education of the Regent Street Polytechnic, who is in charge of the training at Roehampton and Brighton, is in agreement with the principle that some of the men who have commenced training in these classes should continue their instruction after leaving the hospital, at tech-

nical colleges or institutes, polytechnics, &c., in the towns where they live.

He has made arrangements for further training at the Regent Street Polytechnic of a number of men who have passed through the workshops at Roehampton. Some fifty men have passed on for a further period of instruction extending over four to six weeks—these men are now in satisfactory and more or less permanent situations, and earn from 30s. to 40s. a week.

A few men are learning to be electricians, fitters, coppersmiths, &c., other subjects including telegraphy, draughtsmanship, tailoring; a conference was held in October, 1916, between the Masters and Journeymen Tailors, at which a scheme was adopted, whereby arrangements were made for disabled men to take a twelve months' course at the Polytechnic School of Tailoring, at the end of which they would be guaranteed employment at one of the West End shops. A similar course is being arranged at the Merchant Venturers' College at Bristol. The Trades Advisory Committee suggests that further courses in retail bespoke tailoring should be established at Glasgow, Leeds and Manchester, and if further demand arise, at Birmingham, Cardiff, Edinburgh, Liverpool and Plymouth.

Making up is a suitable branch of tailoring for partially disabled men with full use of both hands

and satisfactory eyesight. Before the War there was a lack of good British journeymen tailors, the work being executed largely by foreigners. The work can be carried out in the workshops of firms, in co-operative workshops of workers or at home. Each man must be able to make a garment throughout; as a rule men specialized in either coat or trouser making, leaving the making of vests to women. The average earnings vary from 30s. to 55s. a week. A few men would rise to the position of cutter or foreman tailor, who may be paid from 70s. to £10 a week according to ability.

Another Polytechnic to provide training for disabled men is at Battersea.

In the autumn of 1915, the Governing Body of the Battersea Polytechnic considered the possibility of providing courses of training for disabled soldiers and sailors to enable them to earn a livelihood under the altered conditions which their physical disabilities have imposed upon them.

They drew up a scheme for the instruction of men invalided out of the Army or Navy, offering them facilities for training in any of the branches of work undertaken in the Polytechnic, and suggested the following courses as being suitable :—

Chemical trades and Industries.

Course of six weeks to three months to qualify as laboratory assistants. A longer course lasting about a year to qualify as tester in chemical works.

Mechanical Engineering.

Training in fitting and turning; training in pattern making.[1] The length of this course is approximately three months but depends to a considerable extent on the attainments and capacity of the men and a much longer period is often required. As a rule only men are accepted for pattern making who have already had some experience of the work or who show some distinct aptitude for it.

Training in motor car work and agricultural motor work, to qualify as garage attendants, chauffeurs, and motor mechanics, about a month in duration.

Electrical engineering.

Courses (1) to qualify as switchboard attendants; (2) to qualify as engineer in charge of small electrical plants; (3) in electric testing[2] lasting from six weeks to two months; (4) in wiring for suitable students.

Special courses of training: (1) As sanitary inspectors; (2) in music for men showing special aptitude, comprising theoretical and instrumental instruction to qualify men to play in orchestras and for posts as organists; (3) in art for men showing

[1] A pattern is an accurate model made in wood of a metal part of machinery to be made by a fitter.

[2] Electric testing consists of the testing of instruments especially supply meters and installations for lighting.

special aptitude, the course including craft work, metal work, jewellery, enamelling, painting and decorating, and plastering. Training is also offered to qualify as chefs in large establishments.

Circulars were sent to the various branches of the Soldiers' and Sailors' Help Society in and around London, as this body was at that time dealing with all soldiers and sailors invalided out of the Services. These circulars drew the attention of the branches to the Governor's proposals for the training of the men and invited their co-operation. At present similar arrangements are made with the Local War Pensions Committees and voluntary bodies.

Arrangements were made for each man recommended by any of the agencies to be interviewed at the Polytechnic, and advised as to the most suitable course of training. But it soon became apparent that the general demand was for training in motor car work, mainly with a view to employment as chauffeurs. A few men wanted training in other work, but they formed only a small proportion.

Up to the present sixty-three men have been accepted for training in the following branches of work :—

Garage work, including motor mechanics and driving	58
Chemistry	1
Pattern making	1
Electric testing	3
	63

The majority of the men live in the district, but, where their homes are situated in other parts of the country they make their own arrangements for lodging near the Polytechnic. Some of the men lived in other parts of London, and have had to travel to the Polytechnic by tram, tube or 'bus.

The placing of the men at present is done entirely by the Polytechnic who are in touch with a large number of employers of labour and so far have had no difficulty in finding posts for their trained men.

In addition to the placing of men in posts as private and commercial chauffeurs, the Governors felt that the knowledge and experience of the men trained in motor work could be utilized in connection with agricultural work, *i.e.*, the working of motor tractors, ploughs, threshing machines, &c. They, therefore, issued a notice in the "Farmer and Stockbreeder" making known the work they were doing and inviting applications from farmers and others requiring men with a knowledge of motor work. A large response was forthcoming, and at present all the demands for men cannot be fully met.

The wages obtained for motor work vary from 35s. to 40s. a week, sometimes with cottage or lodging accommodation provided. The Northampton Polytechnic Institute, Clerkenwell, E.C., was the first institution to afford training as electric sub-station attendants, and in the summer of 1916,

the Council of the Institution of Electrical Engineers in co-operation with the Education Committee of the London County Council appointed a Joint Committee to make arrangements for classes at the Northampton Polytechnic Institute, Clerkenwell, E.C., for giving training to disabled sailors and soldiers as sub-station attendants. A sub-committee was appointed to deal with the selection of the candidates and the placing of the satisfactory pupils after training. The engineer of one of the largest London Electric Supply Companies takes part in the selection.

The period of training arranged at first was four weeks, but subsequently was reduced to three weeks.[1] Care has been taken to make instruction practical, the apparatus (ammeters, voltmeters, &c.), used throughout being commercial patterns, and not merely instruments used in laboratories. Demonstrations are given in the power house; this is considered a very important part of the work, and any institution which has not a modern power station equipment or cannot obtain adequate access to a

[1] This period of three weeks "must be regarded as a probationary period. After a few further weeks in a sub-station a man would be expected to be fairly useful as an assistant in the same or a similar sub-station. He could then continue to fit himself for more skilled work." [Report proposed by J. S. G. Heath, for Ministry of Labour from which all quotations on this subject have been derived.]

station would be very handicapped in affording similar tuition. The largest number of disabled men that can be taught satisfactorily in a class is twenty. The objection has been made that in some electric power works especially main-power stations in addition to operating the switches the men employed have to perform heavier duties such as cleaning, overhauling and adjusting plant. It is considered, however, that in stations where large units are installed more than one man should be employed on the shift when the heavy cleaning work is undertaken, men with dissimilar injuries being selected to supply one another's deficiences. The work of overhauling and adjustment should be carried out by workmen with sound limbs. The requirements of most works are met if the disabled man can get about his work reasonably well and if he is intelligent enough to act promptly in emergencies. "The work does not require much handicraft skill, and could be taught to a man who had formerly been accustomed to unskilled work so long as he was generally intelligent and adaptable. A man must be able to keep records, add up figures and use the telephone. While it is desirable that the men should be under 35, men of 40 or even over can, in some cases, learn the work successfully."

No difficulty has been found by the Northampton Institute in placing the men when trained; the

applications received from employers are not confined to sub-station work, but are also for attendants on the switchboards of generating stations and for taking charge of private isolated plants; although the whole of this ground is strictly speaking covered by the course it has been found possible to recommend some of the men for such vacancies. The reports received from employers in answer to inquiries from the Committee have been uniformly favourable. Over 100 men have been trained and placed; on the present basis the institute could train 160 men a year.

"A small number of men are also being trained as electricity sub-station attendants at the Regent Street Polytechnic. The men are first of all trained in general electrical work and are then passed on to the London United Tramways for completion of their generating and sub-station practice. The whole course takes from two to three months. A course has also been started by the Newcastle-on-Tyne Electric Supply Company, Limited, at the Company's School at Caxville Power Station, Wallsend-on-Tyne. The preliminary theoretical and practical training is given by the Company itself in a course which lasts for six months. Thirty-six men started the first course, of these twenty-six finished the course and were placed at work within the Company's own sub-stations.

Three gave up the course, while the remaining seven were found unfit for the particular work, and were placed elsewhere with the Company. A course of training has also been started at the Manchester School of Technology in connection with the Manchester Local War Pensions Committee, and a similar course is being arranged at Edinburgh by the Edinburgh Local War Pensions Committee."

Men taking up this work will usually have to live away from their homes during the training and to take up work in a different part of the country to their former home.

"In War time the maximum commencing wage after a period of training would be not less than 33s. a week for a sub-station attendant, and the average would be higher, though in country towns it would probably not reach this figure. It must be remembered that a competent man when fully qualified will earn a considerably higher rate."

The outlet for employment would appear to be fairly considerable; it is estimated that work of this nature could be provided for about 3,000 disabled men. The work is too responsible for young persons; although in a few places women have been employed there is a considerable disinclination generally to make use of their services. An increase in the number of sub-stations after the War seems probable "especially if the generation

of electricity, as seems likely, is carried out on a larger scale and becomes more centralized."

This occupation should be largely reserved for crippled ex-service men; the labour of men of sound limbs and good health should be utilized in occupations requiring a man's full strength.

Mr. W. H. Bond, the Headmaster of the Brighton Municipal School of Art, who is training five men under treatment at the Pavilion Hospital, has kindly written for me his views on the possibilities of training for disabled men in Art and Craft Schools. He writes :—

"The man well suited to take up a course of training in an Art School is he whose previous occupation has needed a good eye for form, say, a sign-writer and decorator, a joiner or cabinet-maker; shop assistants also will frequently be found good material for training, their business experiences having taught them the need of order, accuracy, neatness, and delicacy of touch, all qualities essential to the successful art craftsman; a good colour sense is also very valuable.

"To many a man with constructive ability, either natural or acquired in his previous occupation, the Art School offers one of the best means to this end, for although he can no longer climb a ladder, use a scaffold, lift weights, or stand long hours behind a counter, he can take his seat at the carver's or

engraver's bench, the sign-writer's or lithographer's easel, the draughtsman's and tracer's drawing board, or engage in similar occupations needing mental effort and inventive qualities of mind.

"The wisest course for such a man to pursue is to consult the headmaster of one of the Art and Craft Schools approved as training centres, and discuss with him the points of his particular case, always bearing in mind the important and essential point that for eventual and financial success the training must not be hurried or superficial, and in most cases should not be less than a full-time course of twelve months.

"If a certain procedure be followed in placing out men after training, I believe one of the most hopeful occupations to take up is letter-cutting in its various branches, allied work in gilding and colour, and ability to execute high-class lettering with some knowledge of correct principles in design and heraldry.

"The procedure to be followed is this, that whatever number of men may be trained in any one school, not more than one man shall be placed out in any one town or district.

"I have good reason for believing that there will be an increasing demand — more particularly in smaller towns and residential districts — for such work as I have indicated, and I believe that a dis-

abled man capable of executing the best type of lettering would find his services much in demand.

"As compared with standardized industries, the demand for this type of work is limited, and the danger of duplicating the placing out of men could be avoided by a little co-ordination between the Pension Committees and Art Schools."

Training Provided by City Livery Companies.

A course of training in woodwork, &c., entirely free is afforded at the Carpenters' Company's Technical Schools, during which the Incorporated Soldiers' and Sailors' Help Society agreed to find the necessary maintenance money, if required for selected candidates during the course of instruction.

The Cordwainers' Company are training men in leather work. A class of twelve crippled ex-service men are being taught hand-sewn boot making and boot repairing at the Cordwainers' Technical College, Bethnal Green Road, London, E. The course lasts forty-six weeks. The Trades Advisory Committee of the Committee, before the class was started, went thoroughly into the prospects of employment and formed the conclusion that in normal times a good workman could be sure of earning good wages at hand-sewn work.

The Society made up the incomes of single men including pension and National Health Insurance

benefit if any, to £1 a week, and of married men to 25s. a week with 2s. a week for each child, during the course of their training.

A word of caution is necessary with regard to short courses of three months only for boot repairing, &c. While in France the village cobbler still flourishes, in England he is practically extinct. Country people now-a-days buy ready made boots; the money to be made by repairing boots is quite inadequate for a living. For instance, in one of the largest villages in Sussex boot-mending is done by a man whose chief occupation is that of cow-keeper; he acts as a cobbler in the evening.

The Incorporated Soldiers' and Sailors' Help Society has been doing good work since the South African War (1900-1901). In addition to assisting over 280,000 men in various other ways, the Society has established workshops at Fulham (London), Brookwood (Surrey), Brighton, Colchester, Birmingham, Liverpool, Bradford, Edinburgh and Belfast in which skilled trades are taught to men who have been permanently disabled on active service. The trades taught include designing, carpentering, cabinet-making, polishing, carving and gilding, framing, toymaking, basket-making, metal work, decorating, brush-making, printing and box-making.

The Society has admitted over 550 disabled men

from the War to the workshops. For every £100 received in subscriptions, they are able to teach a disabled man a trade, pay him an average wage of £1 a week for the first year and 25s. a week afterwards.

The weekly wages at present paid to disabled men in the workshops on various classes of work are :—

Cabinet making	55s.
Machine hands	30s.—38s.
Basket makers	29s. 2d.
Doll factory	30s.—35s.

Some of the older hands are now foremen of benches or of their respective shops, and earn a slightly higher wage.

The men are quite unskilled when they enter the workshops, yet soon become competent workmen. The workshops have won the highest distinction at many international exhibitions including the Franco-British, the Japan-British, the Festival of Empire, the Coronation and the Imperial International.

The experience of the Society is that for a workshop to pay its way, at least 100 men should be employed. This enables the work to be standardized and to be turned out in fairly large quantities.

Private Firms.

An example is set by a firm (Messrs. Webb Lamp Company), who are employing crippled men in metal work; among other articles they make the parts of chemical fire extinguishers. The firm will employ young men and are prepared to indenture for a period of three years without premium at good wages, and teach them metal work in all its branches.

At the end of that period they will be guaranteed regular employment as skilled mechanics at standard wages.

During the first six months the men earn £1 weekly; after this period they are paid according to their ability. Up to the present twenty-three men have passed through their works; but unfortunately they are content to learn one branch of metal working, e.g., filing, drilling, soldering, riveting, &c., and then leave to obtain the temporary high wages obtainable elsewhere, instead of learning the trade in all its branches and becoming thoroughly competent workmen.

To overcome the difficulties which the firm has already encountered they have now fitted up a hostel in Birmingham for ten disabled men under 20 years of age and a non-commissioned officer who will act as orderly and cook. The men are boarded and rationed at the hostel. They are on a three years'

engagement to learn skilled trades in metal working and tool making. The firm anticipate that the arrangement will remove the difficulty caused by the men getting into unsatisfactory environment in their lodgings and evening associations.

A manufacturer of fancy leather goods (ladies leather belts and bags, purses, note and letter cases, &c.), attends twice a week at the Roehampton Hospital, with some of his staff to demonstrate the manufacture of ladies hand-bags and interest the men in the trade. On discharge they are trained at the workshops of members of the National Leather Goods Association, a weekly wage of £1 being paid to commence with.

The work allows of the men sitting; about three months is required to learn each section of the trade.

As the fancy leather goods trade was essentially a German industry before the War, about £4,000,000 worth of goods being imported annually, the trade affords abundant scope for crippled men: the Association hopes to place 500 men.

The Cinematograph Industry affords openings for all classes of disabled men.

The Cinematograph Trade Employment Bureau, in conjunction with Major Robert Mitchell, have put into operation a scheme whereby disabled men, after preliminary training in the electrical workshops at

Roehampton, are transferred to the training centre of the Bureau in Wardour Street. Here they are instructed in small classes of six or eight in the use of the machine, and the handling, repair and joining up of films. The men attend at the Regent Street Polytechnic, for technical and theoretical instruction in the electrical side of the work. The length of the training is about twelve weeks.

Recently in addition to the Roehampton patients, men have been sent by Local War Pensions Committees. Most of these men have lost a leg; one is the subject of amputation through the lower end, another through the middle of the thigh. Full use of both arms and hands is necessary. The work is unsuitable for men suffering from functional nervous trouble; good eyesight is essential, but impairment of hearing is no bar. The operating work in the small and stuffy boxes of the older type of cinema theatres is not suitable for men with pulmonary trouble.

Five men are undergoing training, thirteen have already been placed as assistant operators with a view to becoming chief operators; the usual wages commence at £2 a week, but one man is earning £2 10s. and another £2 15s.; chief operators earn £3 to £3 10s. a week. The Honorary Organizing Secretary, Mr. Paul Kimberly (now Technical Advisor to the Trade Advisory Committee), inter-

views each prospective employer and asks for a report on the man's work at the end of the month; if satisfactory, a certificate of proficiency is issued by the Association; at the end of three months an increase of salary is expected from the employer if satisfied with the man. After a long period of inactivity and the "spoiling" they receive in hospital, the men do not in all cases take to the discipline of everyday life; hence the advisability of an inducement to make them keep their situations.

The arrangements at Liverpool are slightly different, a cinematograph firm (Messrs. Weiske, Bros.), have put up a cinematograph installation in a large room at the Alder Hey Hospital, and this is used for the instruction of the men one morning a week under the charge of an expert operator. When the men have acquired some experience they accompany the operator to the operating boxes of a Cinema theatre during the performance to gain more direct practical experience.

At the same time these men attend an electrical class where in addition to lectures on the theory and general principles of electricity, they are given practical instruction in wiring, connecting up instruments, tracing faults, &c.

Arrangements are being made to establish other training centres in Newcastle and Glasgow; the Trades Advisory Committee recommended that

centres should also be established at Birmingham, Cardiff, Leeds and Manchester. The Cinematograph Associations are in touch with several firms of good standing, who are willing to train disabled men in the photographic branch of the industry, including developing, printing and perforating.

The Cinematograph Trade Employment Bureau finds employment for unskilled ex-service men who are not capable of learning a trade, or owing to the loss of an arm cannot be trained for the industry. Situations as doorkeepers, attendants, &c., are available; the wages paid are from 25s. to 35s. a week. But suitable employment for men of better education is also available; a boy who has lost his left forearm is being trained as a commercial traveller; a firm are employing in their accountancy department another disabled ex-soldier. The whole of the work is being carried out on a voluntary basis. At a rough estimate 300 to 400 disabled men can be employed in this trade.

The "Action Department" of piano manufacturers where the small parts, hammers, ivory plates, &c., are cut out, provides suitable work for crippled men.

Messrs. John Brinsmead and Sons have started at their factory a school for partially disabled soldiers, where they are taught piano action regulating, polishing and other light trades. Learners are paid 30s.

a week until they become efficient when they receive the usual rates of pay of the branch of the trade they have learned.

Messrs. C. A. Vandervell and Co. have employed some fifty disabled men for the last ten months in the manufacture of magnetos for motor-cycles and cars, the particular part of the work in which most of the men are engaged is the putting together of the various parts of the magnetos (electric assembling).

Some of the men make grenades. Practically all are suffering from an injury to the leg; one man with an amputation of the right hand and fitted with an artificial appliance is employed in the assembling of the parts of dynamos for lighting motor-cars; he has learnt to make full use of his left hand, the right playing a subsidiary part.

The wages paid are 7d. an hour, with a weekly war bonus of 8s. The experiment has been on the whole successful. Of the fifty about fifteen men have proved unsuitable for the work or factory life and have left the service of the firm. One man, however, a well-trained all-round mechanic before the War, suffering with lung trouble, has been appointed a Government Inspector for Gun-work.

Training centres in munition work have been established by the Ministry of Munitions; the course lasts four to six weeks. Only such discharged men

are accepted as are physically capable of working under ordinary factory conditions and taking their place among the ordinary workmen. When a man shows sufficient promise he is admitted to be of the advanced courses either in toolmaking, tool setting, skilled operating, gauge making and other highly skilled processes.

A voluntary society which had assisted in providing training for disabled men is the Disabled Soldiers' Aid Committee of 40 to 42, Ebury Street, Victoria, S.W. Although they do not advise men taking up motor driving as an occupation any man coming to the Committee with the express desire of learning to drive is sent to the garage of a private firm who have undertaken to teach the men ; some thirty men have now passed through a course of training. Mr. G. R. Buckley, one of the Honorary Employment Secretaries, is a member of the Selection Committee for the training classes for substation attendants at the Northampton Institute, and has been largely instrumental in finding suitable men for training. During training the Committee have assisted the men by their fares, dinners, money, &c., in instances where the man's income was inadequate they have provided the necessary amount for his maintenance during the time.

Their experience is that want of knowledge of the existence of the various training schools and of the

means of entering that stands in the way of the men coming forward for training. When the possibility of training is put before them they are eager and willing to avail themselves of the opportunity.

AGRICULTURE.

The Departmental Committee on Land Settlement for Ex-service Men presided over by Sir Harry Verney, stated that they had no doubt that the openings for disabled men in agriculture were considerable.

Although the health of men who have been brought up in towns may benefit by a rural life, the first aim should be to prevent crippled men who have earned their living by agriculture migrating to the towns. By restoring to the men as far as possible the use of their disabled limbs, and teaching them the modern principles and practice of subsidiary rural industries much may be done to enable them to earn a good livelihood.

Experience has shown that disabled men can carry on poultry, pig and calf rearing, shepherding, fruit cultivation, market gardening, bee-keeping, home industries, small dairy farming, including cheese and butter-making.

It would appear desirable that an agricultural training school for disabled men should be established in a district of small holdings where the co-

operative use of expensive motor cultivating and harvesting implements could be taught and shown to the men in actual practice.

A number of disabled men are receiving training in horticulture, the care of live stock and other work at the Holmes Chapel College of Agriculture, Cheshire, in accordance with the arrangements made by the Board of Agriculture. The men are instructed, boarded, and lodged, free of charge, no deduction of any sort is made from their pension.

A three months' course enables men who have had considerable agricultural experience before joining the Service to obtain satisfactory employment on farms; such men take the course of training to obtain knowledge of a special branch of the work such as cheese-making. The short course also serves to indicate those men whose work and character are sufficiently satisfactory to warrant expenditure on a further nine months' course of training.

Unfortunately, at such institutions, remote from large centres of population, the provision of physico-therapeutical treatment constitutes a difficulty. In the remotest districts the services of a doctor are available, but he cannot be expected to undertake the treatment of such injuries as contractures without adequate facilities, including the services of a masseur or masseuse.

At the French agricultural schools for disabled men, large numbers of men are collected and adequate arrangements are made for their concurrent medical treatment.

The training provided in England up to the present has been for disabled soldiers with an elementary education; but disabled men of superior education also require provision.

The Goldsmiths' College Delegacy have suggested the award of training scholarships to disabled soldiers of sufficient general education who may desire to take up teaching as a profession.

The Board of Education are prepared to consider on their merits proposals in individual cases for the admission to training colleges for elementary school teachers of men discharged from the Army, on the ground of disablement, who are considered by the College authorities to be qualified by their general education to follow a two years' course of the ordinary standard, although they have not passed any of the qualifying examinations prescribed in the Board's regulations, provided that the disablement is not such as to be likely materially to affect their efficiency as teachers.

The Surrey County Council Education Committee have approved this suggestion, and have communicated with the local War Pensions Committees of the County with a view to securing

applications for training from men discharged from the Services.

The Committee of Lord Kitchener Memorial Fund are providing commercial scholarships for suitable ex-officers and men to enable the holders to study commercial methods, especially in the Allied countries; it is to be hoped that some of these scholarships will be reserved for the disabled.

The engineering and chemical industries in England are not only in need of men who have had technical training such as is afforded at a University or at the Manchester School of Technology, but they recognize the need, and are ready to pay them an adequate salary. Scholarships could with advantage be founded to enable suitable ex-service men to take up such training.

CHAPTER IV.

OCCUPATION AND PHYSICAL DEFECT.

It is impossible to lay down any hard and fast rules as to the occupations available for men with certain defects: the ingenuity and perseverance of some of the disabled men is such that they manage to work at trades most people would consider them unfitted for. I have, for instance, seen men with the stump of an arm working at electric fitting, and a man with his right arm amputated near the shoulder, carrying out all the repairing required to the agricultural machines of a large farm.

On a Sussex farm of 2,000 acres, on 500 of which corn is grown, Harry——, who has lost his right arm near the shoulder joint, has been employed for the last thirty years. He lost his arm twenty-six years ago; a skilled mechanic before the accident, he has been able to go on with practically the same work since. His work includes driving a traction engine and a threshing machine, executing any necessary repairs to these and to twelve self-binding reapers and twelve mowing machines. He has kept

one threshing machine going for thirty years, executing all repairs except those in connection with the fire-box.

The knees and feet are used to replace the lost arm; a steel vice often serves as a hand. When placing articles in this vice, instead of turning the handle with his left arm as an ordinary sound man would, he placed his knee over it, pulled it down, and tightened it up by placing his feet against the stand and pushing the handle with the inner side of his foot. When sharpening the blades of a mower, instead of using his right hand to get a prise on the blade, to press it against the grindstone he used his right knee. Much of his work is done on the ground where other men would use a table; when he uses a chisel to knock out a defective rivet in the elevating canvas of a self-binding reaper, the canvas is placed on the ground, the top end of the chisel placed against a small cube of wood, the sharp end kept in position by the foot leaving the left hand free to deliver the blow.

In his spare time Harry —— cultivates a small plot of ground; his vegetable and fruit will bear comparison with those of any garden.

The man who has suffered an injury to the upper extremity is for the purposes of following a trade more handicapped than the man whose injury is situated in the lower extremity.

The loss of a single finger does not cause much trouble; the loss of the thumb provided the first metacarpal element is intact is not so serious as might be suspected.

Dr. Amar finds a man who has lost all his *fingers* if provided with satisfactory artificial substitutes, suffers a loss of working capacity of 5 to 15 per cent. according to the trade followed. A carpenter, for instance, will be able to resume his work again, and experience but little inconvenience; in time he will gradually lose any clumsiness due to his loss.

The loss of a hand rarely necessitates change of occupation; the same holds true in the case of the forearm if the stump measures more than 4 cm. from the bend of the elbow. Stone-carvers, marble-masons, fitters, bookbinders, tailors, printers, in Dr. Amar's experience have been able to take up their work again after a short course of re-education. But only certain men retain sufficient strength in the injured limb to carry out the processes of their trade. Amputation of the arm presents greater difficulty; with the best artificial appliances a loss of output is 15 to 30 per cent. Agriculturists who have lost an arm can resume their work provided the length of the stump is more than 12 cm. Men with a shorter arm stump, or with a disarticulation at the shoulder joint, are, with very few exceptions,

unfitted for skilled trades; when suitable, they should be trained for clerical work.

At the Lyons Ecole, the occupations found most suitable for one-armed men are toymaking and various parts of the bookbinding trade. At Montpellier the following occupations are being taught to men who are minus or unable to use an upper limb.

Occupation	Nature of patient's lesion
Wood-turner ...	Amputation of left forearm.
	Amputation of right forearm.
	Injury to right hand, two fingers amputated other digits ankylosed.
	Ankylosis of right shoulder.
	Ankylosis of left elbow.
	Second paralysis of radial nerve (2 patients).
Tailor	Ankylosis of left elbow.
	Paralysis of right arm.
	Ankylosis of right elbow.
	Ankylosis of right elbow and wrist.
	Paralysis of right radial nerve.
Boot-maker ...	Ankylosis of right shoulder.
Mechanic ...	Amputation of right arm and left thigh.
	Amputation of right arm and thigh.

At Bordeaux, of forty-nine pupils learning manual occupations, twenty-eight had sustained an injury to the arm, of these ten were learning basket work.

At the school at Bourges where drawing is taught to men whose arms have been amputated, men who have followed other occupations and have not previously been taught drawing except at an elementary school have been taught to make plans,

&c., sufficiently well to justify their employment in departments comparable to our Board of Works and Borough Surveyor's Department. Needless to say, their aim is not to make artists but capable draughtsmen. The school authorities point out the opening for men who can learn to draw, designers of lace, engravers, lithographers, ticket-writers, sign writers, &c. Photographic retouching is also taught here to men who have lost an arm. Wig-making has been found suitable for men with injured arms and hands, at the Grand Palais School[1] at Paris, at Montpellier, Bourges and the "Maison Blanche." French polishing has been found a useful trade for men with only one arm. Men who have been trained at the "Maison Blanche" are earning 8 to 10 francs a day.

Suitable adaptations of the implements used have been made to enable men with certain injuries to the arms to take up the work of cutting precious stones.

The different processes of the comb industry carried on at Oyonnax, the carving out, the fluting, the rubbing with pumice-stone, the engraving by hand, can be performed by men with certain amputations of the arm.

At St. Etienne the men learning horticulture,

[1] Hairdressing is taught to men with other injuries here and at Bourges.

kitchen gardening and agriculture are for the most part suffering from ankylosis of an arm; two have lost an arm.

In the United Kingdom, telegraphy and telephony may offer possibilities for one-armed men. A course for teaching the ordinary telegraphic work and signalling would extend over several months; the work could be taught at the ordinary technical school. But in the past apparently an adequate source of supply of telegraphists for the Post Office has been provided by the Royal Engineers, which comprises men who had been thoroughly experienced in the work in the course of their Army duties.[1]

The working of a telephonic exchange can easily be mastered in two months. Suitable applicants for posts as telephonists are being placed in the London postal service by the National Association

[1] Ex-soldier telegraphists who have no acquaintance with the Post Office system of telegraphy but who are able to send and receive more than twenty words a minute (five letters to a word) on the Morse Sounder Instrument, may have their names registered by the Post Office for admission for training and subsequent employment as season assistants at a wage of not less than 25s. a week. Persons so employed will have a prospect of permanent employment. Application should be made to the Secretary, General Post Office, London, except in the case of ex-Royal Engineers for whom there are special regulations and who should apply to the officer commanding "K" Company, Telegraph Battalion, Royal Engineers, Dublin.

for the employment of ex-soldiers. In addition to the Post Office many large firms, &c., possess private exchanges which might be served by one-armed men.

Although manual pursuits are preferable, clerical work will be the occupation most suitable for a large number of men with loss or an injury to the arm. The handling of heavy ledgers of course cannot be undertaken by one-armed men but this difficulty has always been overcome by the employers of men from Roehampton Hospital. At this Institution men who have lost their right arm are being taught long-hand and shorthand writing with the left hand. Typewriting can be done with one hand; if the patient can use his stump or an appliance to move the carriage at the end of each line so as to shift the paper on which he is writing he will be able to typewrite with practice at a satisfactory speed.

In general, injuries to the lower extremities prevent much less difficulty. Although the injuries of some of the men who have been wounded in the lower extremity will only permit them to work at a trade when seated, in most trades some part of the work can be carried out in this position. Sedentary work is necessary for men who have lost both limbs,[1]

[1] All sedentary occupations are of course not suitable for men who have lost both legs. For bootmaking the man

those with a disarticulation or an amputation of the thigh, leaving a stump of less than 15 cm. When fitted with a satisfactory artificial limb a man with a longer thigh stump can take up an occupation such as that of bookbinding, which requires a certain amount of standing; agricultural work is also suitable for such men. Men with an amputation of one leg leaving a stump of more than 12 cm. and a sound knee can resume work on the land or in the workshop on almost equal terms with the sound man.

The experience of the Soldiers' and Sailors' Help Society on the effect of the loss of a leg, is of course, valuable. They consider that the loss of one leg does not debar a man from being quite as useful as he would be with two legs, provided a little care is taken with him in the early stages. Of two men with equal disabilities, the one having all his limbs and the other minus a leg, the prospects of success are greater in the case of the man minus a leg, because he realizes that he is not quite so useful as the other man and therefore lays himself out to be as useful as possible. They can arrange suitable work for men who have lost both legs, it is only a matter of getting the man on to his bench or into his chair each morning.

should possess one knee and should have not lost more than one or two fingers on each hand. For tailoring certain digits are necessary, the thumb, index, and second finger.

In the finishing of cotton in a bleach works, if the man has already some practical experience as a finisher he would be able to resume his work provided the injury was limited to a leg. As regards the woollen industry, a man with a similar industry could be employed in making woollen slivers and to some extent in spinning woollen yarns. Wool winding and weaving can also be undertaken and a part of the work of warping.

The loss of a leg and arm is more difficult, but for such men they can find plenty of work.

Every effort should be made to utilize the services of disabled ex-soldiers in the ordinary commercial industries of the country.

A large sphere of semi-skilled labour exists in factories where machines are employed to carry out one particular operation.

Even a one-armed man is able to use such various machines as circular-saws, hand-saws, drills, &c.; the man with injuries confined to the legs will experience very little difficulty in working light machines. The necessary training for such work can often be best obtained in the factories of the employers and fortunately many employers have expressed their opinion to the War Pensions Statutory Committee that their foremen will be willing and, in fact anxious, to teach disabled men the use of these machines.

Some industries with processes which selected handicapped men can perform in competition with the normal wage-earner include the boot and shoe industry in which stitching, vamping, button-hole operating, eyeletting, tip-repairing, lasting by hand, turning women's shoes, staining shoes, trimming, &c., are processes which can be carried out by men with full use of both hands but minus a leg.

In the knitting factory men who have lost a leg can carry on satisfactorily work in connection with the sewing machine, fixer and cutting.

The textile industries can also find work for disabled men.

In the silk industry one of the leading manufacturers, who has been employing disabled ex-soldiers, states that from his own experience there are very few textile mills where a certain number of disabled soldiers could not be usefully employed. Sedentary work in the silk industry is afforded in the two operations of twisting,[1] sleying and entering, and picking and winding; all other processes involve much moving from place to place and often the lifting and transfer of goods. Practically, every

[1] Twisting consists in twisting threads together prior to drawing them through the eyes of the harness. Entering and sleying is the processes of drawing the threads through by means of a hook. Picking and winding consists in looking over and picking bits off the woven cloth and in mending holes.

process necessitates the use of two hands. In Canada it is found that suitable occupations in the textile industries are those of straw-tender, wool-sorter and designer.

In the leaflet issued by the Ministry of Labour on the training and employment of disabled soldiers as electric sub-station attendants, Mr. Heath states: "Sub-stations are very varied in character, and there are some in which it would be dangerous to employ any disabled men at all. But there are others, especially the smaller ones, which offer suitable openings for the employment of such men. The following points must, however, be borne in mind: In no case should a man work there who is suffering from a nervous breakdown or who has a weak heart. The work could be done by men who have lost a leg, so long as they could stand for at least two hours at a stretch. It could also be done by men who have lost the sight of one eye as long as the other eye is normal. Good hearing is essential, and a sense of smell is also needed in case of burning. There are also a few sub-stations where there is no running machinery, where the work could be done by men who have lost either their right or their left arm so long as they have the full use of their other arm, hand, and fingers."

Watch making is especially suited to men who have lost their legs; the man must have his right

hand and, at least, two fingers on the left, one eye at least must have perfect sight.

Other occupations possible for such men include machine stitching in all trades, and printing, including monotyping, linotyping, and process work (illustrations). It would seem, however, that printing is one of the trades for which it is inadvisable to train men in the United Kingdom; machinery has recently been introduced into the trade which, for the present at least, has increased the productiveness of the man's work to such an extent as to render an increase of the personnel inadvisable.

Dr. Fortescue Fox holds that sedentary occupations for men with lesions of the lower limb may result in *permanent immobility and ankylosis. Many wounded in the lower limb* have done well in occupations requiring prolonged standing and even active locomotion, such as printers' composition, sabot making, locomotion and the care of automobiles. Such men have also been found competent as telephone attendants, hall porters, &c.

Certain difficulties, more apparent than real, have been urged as standing in the way of industrial employment. The Trades Unions fear the exploitation of pensioned disabled soldiers, the employers the increased liability for compensation for injuries. To settle any dispute which might arise as to the amount of wages to be paid to disabled men the

Ministry of Labour have established several Advisory Wages Committees comprising representatives of employers and employed in the trades concerned, who would, if necessary, fix the amount of wages to be paid for the work.

No difficulty should be caused by the operation of Workmen's Compensation Act, 1906. So far as the insurance companies included in the Accident Offices Association are concerned, the uniform premium ordinarily charged by the companies covers all classes of employees whether able-bodied or partially disabled; save in very exceptional cases and in philanthropic establishments employing disabled men only, no additional premium is charged on account of physical disability.

But of real importance is the lack of willingness shown by some of the men to fall in with the rules and regulations of factories. Every casual labourer whom an employer is willing to train as an artizan has not inherited or can acquire the traditions of the artizan; and willing as employers may be to overlook minor breaches of factory discipline at first, in the interests of their other workmen any flagrant breaking of the rules interfering seriously with the output or the safety of others cannot be overlooked.

The Committee appointed by the Home Secretary to consider the matter of occupations held to be unsuitable for men with certain injuries have

pronounced the driving of motor cabs, motor omnibuses and tramway cars unsuitable for men who have suffered the loss of an arm, hand, leg or foot. They point out that the best of artificial limbs are liable to fracture : such an event happening during an emergency might produce serious results. The loss of an eye is also considered to debar the man from such employment. In the case of injury to one eye, provided the eye is sound and the injured eye retains fair vision, they consider a licence might be granted, each case being of course decided on its merits.

As regards other minor disabilities, such as loss of one or more fingers, or other damage to the hands, limitation of movements of joints of the upper or lower extremities, or shortening of the lower extremities, and the results of injuries to nerves of limbs, they recommend that the existing practice continue to be followed, and that each case be dealt with on its merits at the discretion of the Commissioner of Police with, in doubtful cases, a power of reference to a special medical referee.

Nothing prevents the employments as garage attendants of men debarred as above from becoming drivers of public motor vehicles, but often such attendants are called upon from time to time to act as drivers. No difficulty would arise with regard to standing engagements providing the consent of the

hirer were obtained to the employment of such a man as driver, but casual hirings where the condition of the man were not known to the hirer would probably not be permitted by the Police Authorities.

Not only does motor driving present difficulties from the side of the physical aptitude of the disabled man for the work, but this occupation is being invaded by women.[1]

Neither of these objections exist in the occupation of agricultural motor mechanic: when driving an agricultural tractor round a field, a disabled man is not liable to be a source of danger to the public. The increased importance of agricultural work after the War would seem to point to an increase in the openings in this direction.

The designing of artificial appliances especially for the upper extremity will enable many men to take up occupations otherwise closed to them. Although the idea of a single appliance to be used for any trade is attractive, experience has shown that it is not practicable. The artificial hand used must be especially adapted for the movement it is

[1] M. Bourrillon, of Saint Maurice, will not have men trained as chauffeurs. He considers that far too many men are seeking this employment, and that the employment of men with disabled limbs will inevitably result in serious accidents. The War Pensions Statutory Pensions Committees now refuse to sanction schemes for the training of numbers of men as chauffeurs.

desired to carry out. In one trade the essential feature required in this artificial hand is suppleness, in another strength, in another the hand must be adapted to hold a special tool. In all cases the artificial hand will take the place of the left hand; to design a useful appliance a preliminary study of the positions and movements of the left hand in each trade is requisite: from these observations can be deduced the most appropriate form the artificial hand should take. This problem has been studied for some years in Norway; in France, Dr. Bourreau, of the Orthopædic Centre of Tours, has evolved different types of artificial hands for navvies, vine-yard workers, postmen, chair caners, leather cutters, solderers, plumbers, mechanics, packers, carpenters and jewellers.

He studies in workshops, factories, &c., the part played by the left hand of workmen carrying out different operations, and then designs an appliance capable of acting as a substitute for the left hand. The apparatus is lent to the disabled, and the men are required to report themselves from time to time when if necessary the appliance is changed for a more suitable one.

At Montpellier, considerable attention is being paid to the designing of artificial appliances to assist men suffering from loss or injury to the arm.

The appliances serve to hold various tools in the

desired manner; they are made by disabled men and are tested and used by men working in other sections of the school.

A grip has been designed to hold a tool in any position; a modification serves to hold the instruments used in drawing and engraving. A simpler modification enables a mechanic to hold his tools in the three positions in which the screw driver, hammer and file respectively are used. To enable wood turners to drill a hole, &c., the school has devised a socket fitted with springs so as to grasp the head of the tool firmly.

M. Bessat has designed a gauntlet for men suffering with musculo-spiral paralysis; this gauntlet has enabled a carpenter to resume his former trade, and two pupils who are learning designing to use their instruments as efficiently as their fellow pupils with the use of two hands.

For agricultural work an efficient appliance has been made for a man who has lost part of his arm. For digging a long socket and stirrup have been combined; the socket fits over the upper part of the shaft of the spade of which the ordinary handle is omitted; raising and lowering the spade is permitted by a joint at each side of the socket where the bar of the stirrup passes through it in the median plane above the top of the shaft of the spade. The stirrup is so fastened that it can turn on an axle

FIG. 9.—A man who has lost his right fore-arm using the Articulated Spade. (After M. ED. DRONSART, Montpellier.)

Face p. 130.

FIG. 10.—An agricultural pupil at the Vocational School for Cripples (Montpellier) using a Prothesis with spade attached.

Face p. 131.

screwed on to the bucket or artificial arm. The axle allows the stirrup to rotate and provides for the movement of pronation and suprination of the fore-arm. The combination of the two movements rotation and oscillation allows of a wide range of movement of the socket. A clamping screw fixes the socket firmly to the handle of the implement if necessary. To use the appliance the man, after having fastened it to the bucket or artificial arm, fits the end of the handle of the tool into the socket; with his other hand he holds the handle in any desired position.

Fitted with this appliance the work of a man who has lost his fore-arm, the school claim, is equal to that of a man with sound limb; a man who has lost his arm can do 80 per cent. of the work of a normal man.

The provision of special appliances of Montpellier has reached such a stage that a man who has lost both of his hands, could, four days after his arrival, feed himself without any help by means of a fork and spoon fitted to two arms made in the workshops. Within six days after his arrival he could do all the ordinary agricultural work with the help of the appliance shown in fig. 11.

Daily life is made a fuller thing for him by other small additional appliances; he has a hook to lift a glass, a spring for typewriting, a ring to help him

play at bowls, all of which he uses with the greatest ease.

At the Lyons Ecole, the one-armed men engaged in the stitching of books and the putting on of the covers are enabled to use their stump to hold the leaves or the cover by means of an artificial appliance to which is fitted at the end of a rod a small wooden block surmounted by a clip; between the clip and the block is placed the article it is desired to hold. In another apparatus the movements of the chest wall are utilized to open and close a grip without the intervention of the sound hand. They are also endeavouring to modify the classical hook and ring fitted to artificial arms so as to enable the man to hold more firmly the handles of their tools.

But Dr. Carle frankly owns that he has paid unexpected visits to the workshops and found that a workman provided with a carefully-devised artificial implement has placed it on the table and is working with his sound hand and stump. Dr. Bourrillon says: "Je n'ai pas encore jusqu'ici recontré d'appareil prothétique qui puisse rendre de réels services dans apprentissage quelconque," and "Je ne crois guère à l'utilisation, au point de vue professionnel, des appareils de prothèse des membres supérieurs. Ce ne peut être, a mon avis, que dans des cas très restreints que ces appareils

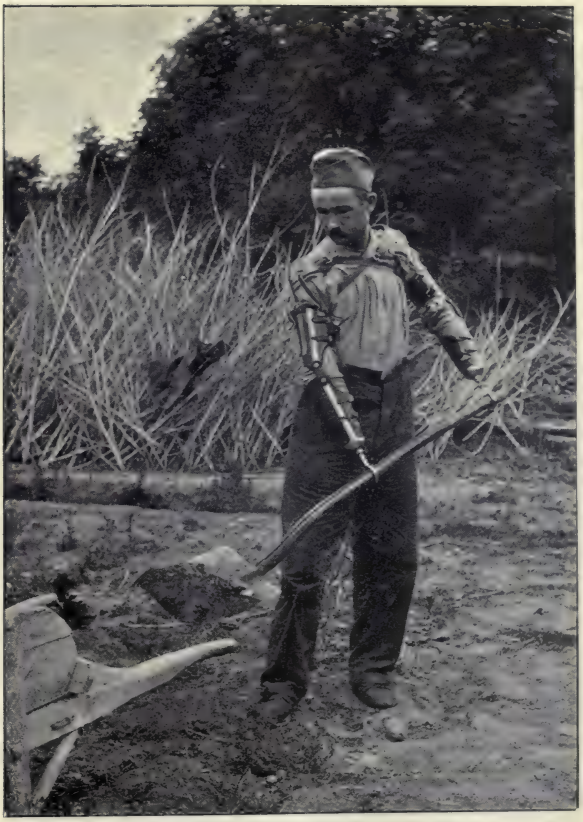


FIG. 11.—A man who has lost both arms using a shovel with the aid of two Prostheses and shoulder straps.
(After M. ED. DRONSART, Montpellier.)

Face p. 132.

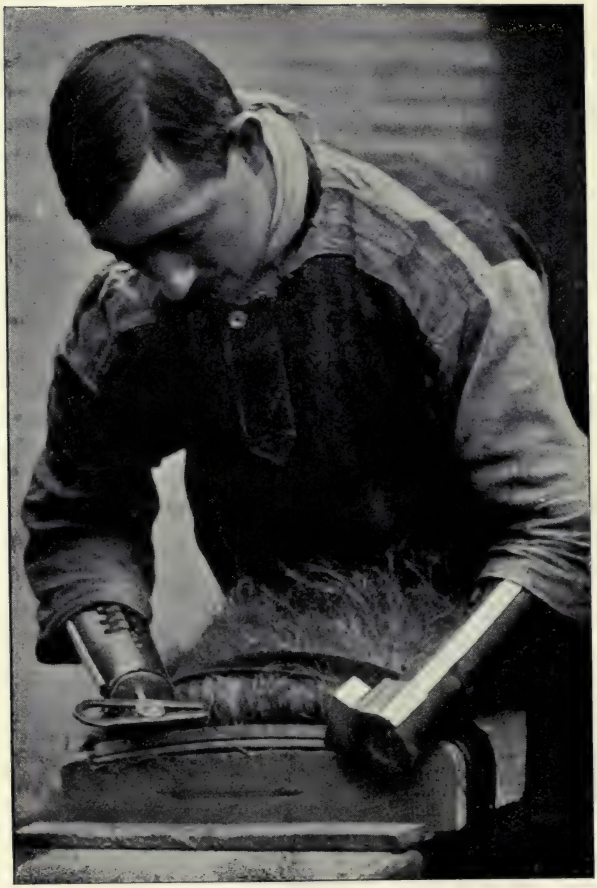


FIG. 12.—An apprentice at the Cripple School of Charleroi (Belgium), making brushes with a Prosthesis to each arm.

Face p. 133.

peuvent avoir une sérieuse portée pratique. Nous n'employons donc dans nos ateliers que des moyens simples que les amputés trouvent eux-mêmes la plupart du temps, pour les aider dans l'exercice de leur profession, et il n'existe aucun dessin de ces dispositifs qui varient beaucoup suivant chaque individu."

In my experience simple appliances are of undoubted service, especially in the working and minding of machines.

A one-armed man working a drill at a workshop of the Soldiers' and Sailors' Help Society, made himself an arrangement of wire, which he attached to the stump of his arm to enable him to use it for pulling the lever into position for the drill to take effect. An artificial appliance is of considerable help in clerical work, it enables a man to hold a ruler, to steady a page, to depress the space bar of a typewriter, &c.

Various modifications of apparatus will be doubtless forthcoming and prove useful[1] (e.g., fig. 12).

[1] *La Societé d'encouragement pour l'industrie national* of Paris, has set aside a certain sum for the encouragement of investigations and inventions in connection with the training and employment of disabled ex-soldiers. Prizes will be given for :—

Modifications and improvements of industrial and agricultural machinery and tools to permit of their use by disabled soldiers.

The devising of new and more complete methods to promote

The substitution of a pedal for a handle will enable a man to work a machine with his foot instead of his hand; slight changes in the form of tools or in the arrangement of machines will enable them to be used by left-handed men. The London School of Weaving has brought out a loom for the use of cripples who are unable to use the treadles of an ordinary hand-loom; this loom can be worked by a person with one arm. The stitching pad can be used by the man doing bootwork when he has not a sound knee to press against. The leather workers who owing to the loss of a leg cannot hold the usual wooden vice between their knees, can be provided with a prolonged vice with a support on one side on which to rest their stump.

A simple modification of the punch used by tram and bus-conductors permits of its use by one-armed men. One of the chief railways in France has adopted this punch and is employing one-armed men as ticket-collectors.

the safety of workshops in which disabled men are employed, and to reduce the risks to which they are especially exposed.

Inventions to facilitate the employment of disabled soldiers and their education in trades.

The devising of methods of employing the greatest number possible of disabled men, the work to be of a productive nature and not charitable relief.

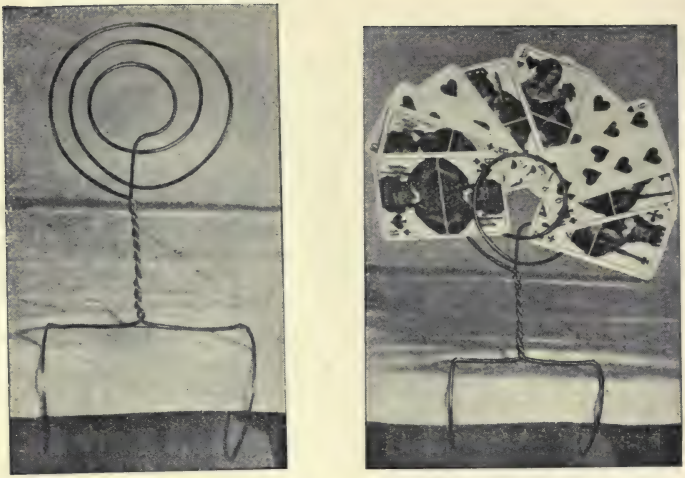


FIG. 13.—A simple Holder for playing cards (designed by a German architect, Wolff) made of piano wire bent into a spiral, with a stand which grips the edge of the table.

FIG. 14.—A High Chair, designed for persons with a stiff hip. The patient half sits as he would do on the edge of a table and stands on the stiff leg. Reproduced from "Care of War Cripples."

An appliance,[1] used in many drawing offices, the "Unico," is a valuable help to one-armed draughtsmen.

For the comfort of one-armed men several house hold articles have been modified.

Dr. A. E. Shipley has designed a special soup plate with a depression in the centre from which the last few spoonfuls of soup can be easily removed. For solid food he has devised a plate with vertical sides and an overhanging rim; against the sides pieces of meat or pudding can be pushed without any risk of their toppling over the edge of the plate.[2]

An egg-cup has been designed by Mr. Magnus Volk, of Brighton; it consists of a hollowed out wooden disc, 5 in. in diameter, with rubber feet projecting one-sixteenth of an inch. The cup sets firmly on the tablecloth and does not require to be held; the depth of the hollow prevents the egg from tilting.

A German has designed a wire frame for holding playing cards (see fig. 13); of more value is a chair for the use of men with a stiff hip-joint (see fig. 14).

[1] Made by the Universal Drafting Machine Co., Cleveland, U.S.A.

[2] These plates can be obtained from Messrs. Thomas Goode and Co., 19, South Audley Street, London.

CHAPTER V.

EMPLOYMENT OF THE DISABLED IN THE UNITED KINGDOM.

Employment.

Before the War civil employment for soldiers was obtained chiefly through the National Association for the Employment of Ex-soldiers, with its head office at 119, Victoria Street, London, S.W., and branches in most of the large towns. The Association has found employment for a certain number of men discharged during the present War. A Guide to Civil Employment for Ex-soldiers is issued by the War Office; in it is included a summary of the Government Employment, wholly or partially reserved for ex-soldiers; disabled men should be able to undertake certain branches of the employment, such as park-keepers, clerical work, messengers, porters, caretakers, storemen, and work in the Post Office as telegraphists, sorters, sorting clerks, postmen, porters, and

cleaners. The Navy Employment League of 25, Victoria Street, S.W., finds employment for discharged sailors.

The Corps of Commissionaires, with its London head-quarters and branches in most of the largest cities of the United Kingdom, is another large organization which deals with the discharged ex-service man who does not desire to take up a skilled trade. All men who have served in any branch of His Majesty's Regular Forces are eligible provided they come up to the requisite standard of health, physique, education, and can produce a regimental discharge satisfactory as regards character. Men from the Auxiliary Forces are admitted on the same terms as other soldiers if discharged on account of wounds received in action.

Fortunately large numbers of men who have enlisted for the present War are being provided for by their late employers, who are affording employment in their former work when the men are capable of performing the same. In other cases they are usually transferred to another branch of the business more suitable to their disabilities. As an instance of this kind, Mr. Murray Smith, Chairman of the Midland Railway Company, has announced that on their discharge from the Army the Company has promised to re-instate in their

service all members of their staff who have joined the forces in positions or grades similar to those they have left. Suitable employment will be found for disabled men who are not fit for their former work, but are able to undertake other duties. It is generally understood that the other railway companies are doing the same.

An analysis of the work of the Employment Bureau at Roehampton Hospital shows that 42 per cent. of men return to their former occupations. The actual figures up to October, 1916, are :—

1.	Number of men passed through the Hospital ...	3,630
2.	Number of men returned to their former occupations	1,309
3.	Number of men living in the provinces passed on to local committees to provide employment	1,016
4.	Number of men placed by the Employment Bureau	818
5.	Number of men trained in the workshops ...	882
6.	Others unfit for work or not desiring assistance	487

As a rule, the married men with honours who pass through Roehampton Hospital are not willing to take up work which involves the breaking up of their homes and removal to another district. The men placed by the Bureau are chiefly young married men, or men without any settled homes, who are prepared to work anywhere ; unless employment is found for this type of ex-soldier before leaving hospital, he is liable to drift.

As has already been mentioned, the schools at which the men are trained are finding places for them.

The Disabled Soldiers' Aid Committee has placed a considerable number of men. Upwards of 500 men have been found employment, many being difficult cases owing to the nature of their disablements. Places as chauffeurs, porters, messengers, commissionaires, gardeners, handy men, butlers, footmen, grooms, housekeepers, caretakers, nightwatchmen, packers, warehousemen, &c., have been provided. The men living in the provinces requiring advice or employment are put into touch with their local War Pensions Committee; when necessary employers are written to on their behalf.

The Committee undertakes to visit at the hospital soldiers on the day of their discharge, &c., and advise them as to their future employment. As they find that men on leaving hospital are not always fit to undertake work at once, they send them to convalescent homes, &c., to recuperate.

The London men are invited to attend the office when they are put in touch with a prospective employer, or arrangements made for training in a skilled occupation. Every effort is made to instil confidence in a man's mind; if there is no immediate vacancy available for him with the employer to whom he has been sent, he is asked to return

to the office to be put in communication with another employer.

The members of the Committee are in touch with a considerable number of employers. Upwards of 6,050 men have registered their names on the books of the Society, and have been helped in some way.

The value of hospital visitors had been so clearly shown that the Ministry of Pensions has arranged for their appointment to all military hospitals throughout the country. The procedure is as follows: After a patient no longer suitable for services in the Forces has been declared fit for discharge from hospital, three weeks elapses before he is actually discharged. The local War Pensions Committee in the district in which the men are being treated send representatives to the hospital to make all necessary arrangements for the subsequent training and medical treatment of the men who are discharged.

These hospital visitors will mainly work for the Committees of the places at which the men intend to reside.

After discharge from hospital, the War Office has accepted responsibility for the man's further treatment as an out-patient in his own district; in-patient treatment will be afforded as far as accommodation allows. Failure to accept medical treatment will subject the man to the risk of losing half his

pension. It is not proposed to exercise this power to make men undergo surgical operations. Men certified as requiring training to enable them to earn a livelihood, will in the event of refusal to undertake such training be similarly penalized.

During training, full pension, allowances and weekly bonus will be given; no charge will be made for tuition.

When a man is discharged his name and address is sent to the Local Employment Exchange of the district to which he returns; he is invited to register his name for employment.[1]

If within fourteen days the Employment Exchange fail to find work for him, a report to this effect is made to the Local War Pensions Committee, when

[1] Mr. Dudley B. Myers, of Roehampton, proposes that in addition "There should be a National Register of all disabled men, showing how they have been dealt with from the industrial standpoint, while a Central Employment Agency and General Information Bureau should be established for the use, more especially, of the drifters. It must be remembered that many men are provided with work which they never take up or which they throw up after a very short time. These men drift about the country and gravitate to a large extent to London, coming under no special Local Committee, owing to their constant change of domicile, and not knowing where to look for assistance. There should be the one Central Agency to which every ex-sailor and soldier knows he can turn when he gets out of touch with the existing local machinery. Needless to say, the drifters will rarely be found among the men who have consented to learn a trade."

the man is invited to attend at their offices. If he fails to attend arrangements are usually made to visit him at his home. If necessary, the case is gone into and suitable recommendations made by the War Pensions Care Sub-Committee charged with the care of the men. A man requiring treatment by a specialist can now attend as an out-patient at the nearest Military Hospital; if necessary provided accommodation is available he can be admitted as an in-patient; if circumstances warrant the Committee are enabled to pay for treatment by a private specialist.[1] They can arrange for his training in a skilled occupation at a local or central teehnical institution, or branch of Lord Roberts' Memorial Workshops, or Agricultural College, or pay the premium for teaching agricultural work

[1] In an interview with members of a deputation from the British Medical Association in May, 1917, the Minister of Pensions (Mr. G. N. Barnes, M.P.) stated that the Local War Pensions Committees would also be responsible for the men when, on the conclusion of the War, many military hospitals were disbanded, For treatment after the War three alternatives would be present: First, continuance of treatment at the Military Hospital, where this continued to exist; secondly, at a civilian hospital, if one was available; thirdly, failing both of these, treatment by the ordinary practitioner or the specialist according to the requirement of the individual case. Mr. Barnes added that he was committed to the provision of special treatment for the disabled man, whether within or

under a farmer, or as an apprentice under a suitable employer. Supplementary pensions and allowances to dependants are paid during the course of medical treatment or training; an allowance may be made to set a man up with the necessary tools of his trade. The finding of employment is a duty of this Committee.

War Pensions Committees are empowered to appoint medical referees to examine and report when necessary on disabled men under the care of the Committee; fees may be paid for this purpose.

The War Pensions Committees are large bodies consisting of representatives of the Council, Labour, Employers, and Women, and are constituted in each County and County Borough. The War Pensions Care Sub-Committees are composed of members of

without a hospital, and to the expense of such treatment, quite apart from any domiciliary treatment to which the man was entitled as an insured person. The small number of non-insured discharged men would, he said, be dealt with also by the Insurance Commissioners, retaining the same choice of doctor as insured persons possess. In regard to the additional cost of domiciliary treatment, Mr. Barnes said that it had been decided to watch events and to compare the results with the experience of pre-war years. Approved Societies had assumed, he said, that there would be an additional sickness and consequent increased financial risk. On the other side it had been urged that the open-air life and physical training of the Service would result in a diminished sickness incidence.—(*Lancet*, May 26, 1917, p. 807).

the War Pensions Committee and others co-opted for their special knowledge; these latter include officials of the local Education Committees and especially the principal of the local technical school and medical men.

The work of this Committee has hitherto been carried out on a voluntary basis; the voluntary helpers being assisted by the clerical staff of the Town Clerk's Department. But now by the Naval and Military War Pensions (Administration Expenses) Act, 1917, the Government will pay two-thirds of the Administration expenses, the remaining third being defrayed by the Local Authority. Local Committees are empowered to pay Medical Referees' fees for examinations and reports; Inquiry Officers will be employed to ascertain pre-war earnings for the assessment of alternative pensions.

As inquiries have shown that in many cases in the area of each individual War Pensions Committee, the facilities in the shape of suitable hospitals and technical schools are often inadequate for the treatment and training of the disabled men of the area a grouping of areas into larger divisions has been made; for example, the counties and county boroughs of Surrey, Kent and Sussex have been formed into one division, and a Joint Advisory Committee constituted from representatives of each of the Local War Pensions Committees. To these

are to be added co-opted members representing labour, the Technical Institutions and the Medical Profession. By this means the facilities offered by each of the local War Pensions Committees will be pooled. The Joint Advisory Committees will have the assistance of a paid secretary, who will form the link between these Committees and the Ministry of Pensions.

Disabled men are primarily under the care of the War Pensions, &c., Statutory Committee,[1] who have

[1] This arrangement will shortly be altered and the functions of the Committee transferred to the Ministry of Pensions.

In a letter communicated by the War Pensions Statutory Committee to the Press on May 31, 1917, they say: "The members of the Committee have done their best to carry out their functions and to further the interests of those for whose benefit the Act was passed. Under schemes sanctioned by them more than 300 Local Committees have been established for the purposes of the Act; they have, with the approval of the Treasury, framed regulations under which supplementary separation allowances are paid by the Local Committees; further regulations have been made by them which have formed the basis of the new Royal Warrant and Order in Council relating to pensions and grants, and they have done much work with regard to arrangements for the treatment, training, and employment of disabled men."

The *Daily News* reports (June 30, 1917), "that the new Pensions Bill has received a second reading. Mr. Barnes explained that it dissolves the Statutory Committee, which in his opinion has done good work. He said that the Vice-President (Mr. Cyril Jackson), so far from clinging to his appointment—as alleged in unfriendly questions—had asked leave to resign six months ago, but was dissuaded in the

appointed a special health section of their disablement sub-committee to consider the problems involved in the care of the health of these men.

The Statutory Committee is subordinate to the Ministry of Pensions who have recently constituted a special Committee to provide residential institutions especially for "totally disabled men."

The four members of this Committee, Sir A. Griffith-Boscawen, the Hon. Arthur Stanley, Sir Walter Lawrence, Mr. Cyril Jackson, representing the Pensions Ministry, the Red Cross, the War

public interest. At the same time, Mr. Barnes had to confess that his department had found it impossible to work with the Committee over the question of the treatment and training of disabled men. When the department assumed control of this matter the Statutory Committee asked leave to resign, and this Bill regularizes the position. By means of 300 Local Committees, disabled men are to be trained as 'productive units,' which, says Mr. Barnes, is much better than 'a more or less effortless existence' on a pension.

"The Department will also take over the supplementary separation allowances and advances in respect of pensions, while the rest of the Statutory Committee's work—that is, charitable and educational grants—will be performed by the Patriotic Fund Corporation, to which body four new members will be appointed, of whom one will be a woman, and two representatives of labour.

"Parliament granted £1,000,000 to the Statutory Committee. Of this sum, £750,000 will be returned to the Treasury. The balance, £250,000, will go to the Patriotic Fund, which will report to Parliament.

P. W. W."

Office and the Statutory Committee respectively, are provided with the assistance of four specialists: Sir John Collie for neurasthenia, Dr. Fox-Symons for paraplegia, Dr. Bond for epilepsy, and Dr. Horton Smith Hartley for consumption.

Trades Advisory Committees have been set up by the Ministry of Labour acting in conjunction with the Statutory Committee in certain national trades and industries. Cane and willow and basket industry, electricity, sub-station attendants, boot and shoe, clothing, wholesale and retail, and the cinema industries. They consist of an equal number of employers and workers nominated by the recognized associations. Their chief functions are to advise as to the arrangements for training either in factories or technical institutes: and on general questions as to rate of wages they should also serve to prevent an undue proportion of disabled men being trained for any particular trade.

The question of wages of individuals is dealt with by separate Advisory Wages Boards which the Ministry of Labour is setting up in the principal towns to enable any workman or employer in the district to obtain advice as to the rate of wages to be paid for certain specified work.

A circular letter has been sent by the President of the Local Government Board to the Board of Guardians, stating that in view of the adequate

provision made for him no discharged disabled man should in future be under the necessity of seeking Poor Law relief in a workhouse or infirmary in any case where the incapacity from which he is suffering is due to his disablement. The guardians are asked to communicate with the local War Pensions Committee of their area in regard to any such cases at present in institutions under their control. Future applications from discharged men should be referred at once to the local War Pensions Committee.

Although, human nature being what it is, we shall not be able to prevent every old soldier crippled in the War from obtaining his living by semi-begging, or even begging or gravitating towards the workhouse, yet a supreme effort has been started to diminish these unfortunate results of War. Much remains to be done for these handicapped men; above all need for sustained effort will exist when the country has emerged from its immediate peril. We must take heed lest we forget.

APPENDIX I.[1]

FACILITIES FOR SPECIAL TREATMENT.

The following is a list of special hospitals established by the War Office primarily to give in-patient treatment to soldiers. But arrangements are being made to afford out-patient treatment to suitable discharged men.

(1) Blind cases are sent in the first instance to the 2nd London Territorial (T.F.) General Hospital, Chelsea, S.W. Thence they pass to St. Dunstan's or to Newington House Hostel, Edinburgh (*vide* pp. 30-36, and 119-122 of this issue).

(2) Cases of amputation :—

(*a*) When approaching readiness for an artificial limb to be fitted, patients are sent to Pavilion Military Hospital, Brighton; Alder Hey Auxiliary Hospital, Liverpool; Scottish National Red Cross Hospital, Bellahouston, Glasgow; Edinburgh War Hospital, Bangour; Welsh Metropolitan War Hospital, Whitchurch, near Cardiff.

(*b*) When ready to be fitted with an artificial limb, patients are sent to Princess Louise Scottish Hospital for Limbless Sailors and Soldiers, Erskine House, Glasgow; Edenhall

[1] For the information given in Appendices I and IV, I am indebted to the Editors of "Recalled to Life."

Hostel, Kelso; Queen Mary's Convalescent Auxiliary Hospital, Roehampton; Prince of Wales Hospital, Cardiff: Ulster Volunteer Force Hospital, Belfast; Princess Patricia's Red Cross Hospital, Bray, Co. Wicklow.

(3) Orthopædic cases. Special treatment is given at the following centres:—

Military Orthopædic Hospital, Ducane Road, Shepherd's Bush, London, W.
Alder Hey Auxiliary Hospital, Liverpool.
Welsh Metropolitan War Hospital, Whitchurch, near Cardiff.
Second Northern General Hospital, Becketts Park, Leeds.
Beaufort War Hospital, Fishponds, Bristol.
Edinburgh War Hospital, Bangour.
Old Mill Hospital, Aberdeen.
Bellahouston Hospital, Glasgow.
Ulster Volunteer Force Hospital, Belfast.
Military Orthopædic Hospital, Blackrock, Dublin.

Orthopædic cases include:—

(i) Disabilities of hands and feet.
(ii) Bony or fibrous ankylosis of joints requiring operative or manipulative treatment in order to restore functions or flail-joints requiring operative or mechanical fixation.
(iii) Malunited and ununited fractures of any type of functional disability following fracture.
(iv) Stiff or useless limbs the result of injuries to nerves, especially cases where nerve suturing having failed under transplantation is indicated.

(v) Various contractions of the extremities due to scar tissue.

(vi) Derangements of the knee due to injury of the semilunars or following upon operations for this condition.

(4) Neurological cases (including neurasthenics, epileptics and paraplegics). Arrangements are also in train for dealing with severe neurological cases. The most serious cases of this group are disposed of by the Pensions Ministry, but the condition of discharged soldiers may deteriorate as time goes on. The following particulars show how it is proposed to deal with such cases:—

(*a*) Paraplegics: The Local Committee should first ascertain whether adequate facilities for treatment exist at the nearest civil hospital, and if not should communicate with the Pensions Ministry, which will either find a bed for the case near the man's home, or, by the help of the British Red Cross Society, will accommodate him in one of the special institutions, such as the Star and Garter Home for Paraplegics, which the Society has provided.

(*b*) Neurasthenics: No case can be given special treatment without the authority of the Special Medical Board which sits in London and pays periodic visits to Liverpool, Manchester, Cardiff, Cambridge, Brighton, Birmingham, Bristol, Oxford, Plymouth, Southsea, Newcastle, Leeds, Sheffield, Leicester, Lincoln, Edinburgh, Belfast and

Dublin. Local Committees should bring cases which they think in need of special examination to the notice of the Pensions Ministry for reference to the Special Medical Board. Suitable cases will be treated in Homes of Recovery, of which the first has been opened at Golders Green. It must be understood that these homes are not for ordinary convalescents, and that as a rule men not too ill to earn good wages will be found unsuitable.

(*c*) Epileptics: Severe cases should be brought to the notice of the Pensions Ministry, which will arrange for an appropriate course of treatment.

(5) Cases of rheumatism and kindred complaints:—
Devonshire Hospital, Buxton; Royal Bath Hospital, Harrogate; Royal Mineral Water Hospital, Bath; War Hospital, Bath; Llandrindod Wells Auxiliary Hospital.

(6) Injuries to Face and Jaw:—

(*a*) Cases requiring plastic operation: Cambridge Hospital, Aldershot. A new hospital will shortly be opened at Frognal, London, N.W.

(*b*) Other cases: Croydon War Hospital, Croydon; Queen Alexandra Military Hospital, London, S.W.1; 1st London (T.F.) General Hospital, Camberwell, London, S.E.; 2nd London (T.F.) General Hospital, Chelsea, London, S.W.; 3rd London (T.F.) General Hospital, Wandsworth, London, S.W.; 4th London (T.F.)

General Hospital, Denmark Hill, London, S.E.; 5th London (T.F.) General Hospital, Lambeth, London, S.E.; King George Hospital, Stamford Street, London, S.E.1; 2nd Northern (T.F.) General Hospital, Leeds; 1st Southern (T.F.) General Hospital, Birmingham; 1st Western (T.F.) General Hospital, Liverpool; 2nd Western (T.F.) General Hospital, Manchester; 3rd Western (T.F.) General Hospital, Cardiff; 1st Scottish General Hospital, Aberdeen; 2nd Scottish General Hospital, Edinburgh; Royal Victoria Hospital Edinburgh; King George V. Hospital, Dublin.

(*c*) Artificial Eyes: Horton (County of London) War Hospital, Epsom.

(7) Heart cases:—

Hampstead Military Hospital, Holly Hill, Hampstead, London, N.W.3.

APPENDIX II.

The following lists give the occupations which have been found suitable for persons with various physical defects. The separation into those suitable for males and females has been retained; those for females will often prove suitable for the less robust among disabled men.

OCCUPATIONS SUITABLE FOR DEFECTIVES.

Blind.

Men.	*Women.*
Basket making.	Book folding.
Mat making.	Ironing factory.
Knitting.	Typewriting.
Sewing.	Artificial flower making.
Chair caning.	Knitting.
Pianoforte tuning.	Sewing.

Boot and shoe making and repairing.
Massage.
Typewriting.
French polishing.
Gardening.

Partially Blind.

Men.	*Women.*
Porter.	Domestic service.
Farm labouring.	
Peddling.	

Deaf.

Men.	*Women.*
Tailor.	Corset maker.
Bootmaker.	Dress maker.
Cabinet maker.	Blouse maker.
Brushmaker.	Collar finishing.
French polishing.	Box making.
Baker.	
Pianoforte maker.	
Ivory turning.	
Confectioner.	
Builder and shop fitter.	
Wire worker.	
Revolving shutter maker.	
Glass worker.	
Wood carver.	
Glass letter writing.	
Cooper.	
Labourer.	
Agricultural worker.	
Painter.	
Decorators and glazier.	
Textile fabric worker.	
Domestic service.	
Willow and cane basket maker.	
Baker.	
Photography.	
Mechanical dentistry.	

For the One-Armed.

Men.	*Women.*
Messenger.	Errand girl (in rare cases).
Assurance agent.	Clerk.
Traveller.	Canvasser for machines, &c.

Men.	*Women.*
Corn sampler.	Embroidery.
Clerical work.	Simple machine feeding.
Gateman.	
Labour master in workhouse.	
Liftman.	
Lodge keeper.	
Messenger.	
Porter.	
Railway work (sundry duties).	
Scholastic.	
Time keeper.	
Ward master.	
Watchman.	
Weighman.	
Bookbinding (certain parts of).	
Woodwork (certain parts of).	
Toymaking.	
Door keeper—theatre (including cinema).	
Mechanical engineering (exceptional men).	
Industrial design.	
French polishing.	
Rural industries.	
Telegraphy.	
Telephony.	
Electric sub-station attendant.	

CRIPPLES (WITH INJURIES TO THE LEG).

Men.	*Women.*
Boot making.	Fine needlework.
Tailoring.	Embroidery.
Ticket and show card writing.	Lace mending and making.
	Dress making.

Men.

Sign and glass writer.
Printer.
Litho designing.
Map drawing.
Brush drawing.
Relief stamping.
Engraving and metal engraving.
Metal chasing.
Photographic engraving.
Machine stitching.
Bookbinding.
Silversmith.
Watchmaking and repairing.
Jewel case making.
Chasing.
Stamping.
Photographer.
Leather bag maker.
Leather work and fancy leather work.
Whip making.

Saddlery and harness making.
Football sewing.
Wood carver.
Carpentry (making small parts for pianos, &c.)
Tapestry weaving.

Women.

Blouse making and mantle finishing.
Ladies' tailoring.
Smocking.
Buttonholing.
Millinery.
Baby millinery.
Ostrich and fancy feather making.
Feather curling.
Artificial flower making and mounting.
Book hand folding.
Folding at stationers.
Bookbinding.
Clothes sorter.
Packer in laundry.
Colour printer.
Toy making.
Machine-made boot tacking and fitting.
Machining with power machines.
Metal piercing and burnishing.
Jewellery polishing.
Silk hat crown sewing and trimming.
Envelope hand folding and cementing.
Corset making.
Box making (cardboard).

Men.	*Women.*
Brush preparing and panning.	Cork sorting.
French polishing.	Lampshade making.
Basket making.	Skirt making.
Chair caning.	Straw hat making.
Stick mounting.	Tie and scarf making.
Stick making.	Typewriting.
Cricket-ball making.	Wig making.
Pipe making.	
Toy making.	
Nursery gardening.	
Poultry farming.	
Clerical work.	
Typewriting, &c.	
Caretaker.	
Chauffeur.	
Domestic service.	
Electrical work.	
Engineering.	
Gateman.	
Groom.	
Hall porter.	
Hospital orderly.	
Industrial work (sundry forms).	
Liftman.	
Night duties at pit-head (for miners).	
Lodge keeper.	
Munition work.	
Milker.	
Packer.	
Painter.	
Postal.	

Men	*Women.*
Railway work (varied).	
Road work.	
Telephone attendant.	
Telegraphy.	
Timekeeper.	
Vanman.	
Weighman.	
Textile industries (certain parts of).	
Machine knitting.	

PULMONARY TUBERCULOSIS.

Men.	*Women.*
Commissionaire.	Dress-making.
Vanman.	Needlework and embroidery.
Messengers.	Millinery.
Golf caddies.	Waistcoat-making.
News-seller.	Buttonhole-making.
Light porters.	Lace-making.
Insurance and commission agent.	Ironing, folding and mending (in laundry).
Gamekeeper.	Basket-making.
Exhibition attendant.	Net-making and repairing.
Fisherman (line fishing only).	Umbrella-making.
Chauffeurs (motor buses, taxis, private).	Leather work.
Motor cleaning.	Jewel case making.
'Bus and tram conductor.	Cork-sorting.
Ticket collector.	Pea-picking.
Painter and decorator.	Hop-picking.
Basket-making.	Flower, market or French gardening.
	Flower selling.

Men.	*Women.*
Station bookstall attendant.	Poultry farming.
Farm labourer.	Farm work (not in dairy).
General labourer (not very dusty jobs).	Shop assistant and cashier (if in hygienic surroundings).
Market and flower gardener.	
Carpenter and joiner.	
Wood carver.	
Wood road layer.	
Window cleaning.	

It would seem that railway clerks are particularly liable to pulmonary tuberculosis; it would be advisable that men showing a predisposition to this disease should not take up this occupation.

Epileptics.

These should not be employed in factories or workshops in the vicinity of machinery, near fires or molten material, or in any occupation, such as bricklayer's labourer, involving climbing of ladders.

Heart Disease.

Men with chronic valvular disease of heart of such a degree that failure of compensation (as shown by breathlessness on walking on level ground or exceptional distress when climbing hills) is imminent, require light occupations of a comparatively sedentary nature, if they be fit for any work at all. Speaking generally, men with chronic valvular disease of the heart should not take up manual employment, especially those occupations involving the lifting of heavy weights.

APPENDIX III.

Number of Males employed in Certain Occupations in England and Wales.

[Census 1911.]

Total Number of Males employed, 11,453,665.

Metals, Machines, Implements and Conveyances...	1,477,097
Pattern-makers	14,025
Erectors, fitters, turners	154,167
Coppersmiths	5,108
Electric lamp manufacture	1,425
Other electrical apparatus makers :—	
Electrical fitters	50,558
Electricians (undefined)	27,905
Conveyance of Men, Goods and Messages	1,399,394
On railways	397,990
On roads :—	
Motor garage proprietors, workers, &c.	3,776
Motor car drivers (not domestic), motor cab drivers	15,487
Motor van, &c., drivers	4,456
In docks, harbours, and lighthouses :—	
Dock labourers, wharf labourers	102,639
Messengers, porters, watchmen (not railway or Government)...	223,008
Telegraph, telephone service (not Government) ...	8,858
Agriculture	1,140,515
Shepherds	20,838
Agricultural labourers, farm servants :—	
(*a*) Distinguished as in charge of cattle	69,094
(*b*) Distinguished as in charge of horses	128,122
(*c*) Others	425,063

AGRICULTURE—*continued.*	
Market gardeners (including labourers)	35,818
Other gardeners (not domestic)	75,549
Agricultural machine (proprietors, attendants) ...	7,286
COMMERCIAL OCCUPATIONS	663,316
Commercial or business clerks	360,478
OTHER GENERAL AND UNDEFINED WORKERS, &c. ...	600,285
General labourers...	295,343
TEXTILE FABRICS	571,411
Cotton	233,380
Wool and worsted	95,531
Silk	9,087
Flax, hemp and other fibrous materials	13,642
Mixed or unspecified materials	47,582
Bleaching, printing, dyeing, &c.	69,616
DRESS	439,115
Boot-, shoe-makers	160,087
Slipper-makers	3,279
Patten-, clog-makers	5,805
Boot-, shoe-, patten-, clog-dealers	22,114
DOMESTIC OFFICES OR SERVICES	387,677
Park-, lodge-, gate-, &c., keepers (not Government)	1,897
Caretakers, office-keepers (not Government)	21,671
Domestic motor car drivers, motor car attendants ...	23,151
Domestic gardeners	118,739
Gamekeepers	17,148
PROFESSIONAL OCCUPATIONS AND THEIR SUBORDINATE SERVICES	367,578
Schoolmasters, teachers, professors, lecturers ...	68,670
Others connected with education	7,758
Photographers	11,899
Musicians, music masters, singers	22,844
Art-, music-, theatre-service, &c.	13,922

WOOD, FURNITURE, FITTINGS AND DECORATIONS ...	253,802
Cabinet-makers	50,010
French polishers	17,351
Sawyers, wood-cutting, machinists	40,194
Lath-, wooden fence-, hurdle-makers	1,811
Wood turners	7,725
GENERAL OR LOCAL GOVERNMENT OF THE COUNTRY	248,624
Post-office telegraphists, telephone operators ...	4,245
Other post-office officers and clerks	29,873
Postmen	46,333
Post-office messengers, &c.	16,861
Other civil service officers and clerks	31,340
Other civil service messengers, &c.	12,162
PAPER, PRINTS, BOOKS AND STATIONERY	219,651
Bookbinders	12,960
PRECIOUS METALS, JEWELS, WATCHES, INSTRUMENTS AND GAMES	99,931
Watchmakers, clockmakers	15,732
Piano-, organ-makers	14,115
Fishing tackle, toy, game apparatus makers	6,639
SKINS, LEATHER, HAIR AND FEATHERS	83,472
Leather goods, portmanteau, bag strap, &c., makers...	10,629
Saddlers, harness, whip makers	20,911
Brush-, broom-makers, hair, bristle workers	9,813

APPENDIX IV.

TRAINING CLASSES FOR THE DISABLED.

(A) Actually being held in Institutes in the London Area.

At the Regent Street Polytechnic at the present time disabled men are taking instruction in :—

(1) Electric wiring and general electrical maintenance, such as is required for electricians in hotels, warehouses, private establishments, &c.

(2) Lift attendants and supervisors, who receive full instruction in repairs, the cleaning of motors, and general maintenance, &c. These men will be certified as efficient by Messrs. Waygood, lift manufacturers, before being passed out.

(3) Cinematograph operating. This includes the general electrical knowledge required for the same, and is working in connexion with the Cinematograph Association. It includes practical instruction at the various centres.

(4) Fitting and turning.

(5) Pure photography.

(6) Architectural drawing. For this, men are taken who have been carpenters, bricklayers, &c., who are unable to follow their trades, and they are given instruction in quantity estimating and the knowledge necessary for general assistance in a clerk of works' office.

(7) Tailoring: (*a*) sewing; (*b*) tailors' cutting. For the latter only those who have been tailors are eligible.

(8) Coppersmiths. Coppersmith's work and brazing. These men are being trained for all coppersmith's work required in connexion with internal combustion engines —such as induction pipes, &c.

NORTHAMPTON INSTITUTE, CLERKENWELL.

Special courses of instruction in sub-station and switchboard operators.

CORDWAINERS' INSTITUTE, HACKNEY.

Boot and shoe making.
Boot repairing.
Fancy and ordinary leather work.

BATTERSEA POLYTECHNIC.

Motor tractor driving.
Motor car engineering.

(B) Other Facilities.

The following is a fuller, but by no means complete, list of existing and proposed technical and industrial classes in polytechnics and technical institutes, where disabled sailors and soldiers can obtain training.

LONDON:

Aldenham Institute: Printing.

Battersea Polytechnic: Art metal work, chemistry, electric wiring and sub-station attendance, engineers' tools, food inspection, motor construction, motor driving, music, painting and decorating, sanitation, telegraphy.

Borough Polytechnic: Bookbinding, boot and shoe making, bread making and confectionery, electric wiring and fitting, engineering, drawing and tracing, petrol motors, chauffeur's course, printing, tailoring.

Brixton Polytechnic Institute: Printing (compositor's work), bread making and confectionery, boot and shoe making, tailoring, bookbinding, electric wiring, petrol motor (chauffeur's course), engineering, tracing and drawing office work, painters' oils, colours and varnishes.

Brixton School of Building: Munitions only.

Chelsea, South Western Polytechnic: Draughtsmanship, trade designing, bookkeeping, shorthand, typewriting, electrical engineering, electric wiring, &c., gauge making, metal work, chemical work, Natural History Museum attendants, laboratory attendants.

Cordwainers' Company Technical College: Boot and shoe making, boot and shoe repairing.

Sir John Cass Technical Institute: Tailoring.

East London College: Munitions only.

Electrical Engineers' Institute: Electric wiring and sub-station attendance.

Goldsmiths' College: Munitions only (gauge making only).

King's College: Munitions only.

Leather Sellers' Technical College: Skin preparation, leather polishing, &c.

L.C.C. School of Photo-engraving and Lithography: Photo process and photography.

L.C.C. School of Engineering and Navigation, Poplar: Carpentry and joinery, electric wiring and fitting, electric wiring and sub-station attendance, engineers' tools, woodwork.

Northampton Polytechnic: Boot and shoe manufacture, boot and shoe repairing.

Northern Polytechnic: Oxy-acetylene welding.

Regent Street Polytechnic: Carpentry and joinery, civil engineering, drawing and office work, electric wiring and sub-station attendance, engineers' tools, kinematograph work, photo process and photography, tailoring, upholstering.

Shoreditch Technical Institute: Munitions only.

South Kensington School of Art and Wood Carving: Toy making.

PROVINCES:

Aberystwith, University College, Cardigan, Wales: Art metal work, bookbinding, cabinet making, commercial subjects, wood carving, toy making.

Aston (Birmingham), Technical College: Munitions, tool-turners, electric wiring, mechanical engineering, woodwork.

Bath, Technical School: Munitions training only.

Bilston (Staffordshire), School of Art, Staffordshire Education Committee: Wood carving, wrought iron work, drilling, turning, stencil work.

Birmingham, Municipal Technical School (Munitions Training Centre): Electric wiring and sub-station attendance.

Blackburn, Municipal Technical School: Art, chemistry, commercial subjects, biology, textile.

Bootle, Municipal Technical School: Marine engineering, sheet metal work, light brass work, dyeing and cleaning, tanneries, match works, tin works, large gas works, tar and rubber works, metal work, woodwork, chemistry, English and commercial subjects.

Bradford, School of Art: Basket making, bookbinding, boot and shoe-making, brush making, cabinet making, commercial subjects, painting and decorating, printing, tailoring, upholstering, toy making.

Bradford, Technical College: Art metal work, carpentry and joinery, sub-station attendance, engineers' tools, leather manufacturing (stitching), switchboard attendants, automatic machine attendants, lathe workers, yarn reeling and twisting.

Brighton, School of Art: Printing.

Brighton, Technical College: Carpentry and joinery, commercial subjects, dispensing, electric wiring and sub-station attendance, engineers' tools, motor construction, plumbing, sanitation, tailoring, telegraphy, woodwork.

Bristol, Merchant Venturers' College: Bookbinding, boot and shoe making, carpentry and joinery, electric wiring and sub-station attendance, engineers' tools, mechanical engineering, motor construction, painting and decorating, plumbing, printing, tailoring.

Burnley, Municipal Technical College: Electric wiring and sub-station attendance, motor construction, motor driving, woodwork.

Bury, Municipal Technical College: Chemistry, painting and decorating, plumbing, woodwork.

Cardiff, Technical College, Glamorgan, Wales: Bookbinding, boot repairing, cabinet making, commercial subjects, electric wiring and fitting, glass blowing,

oxy-acetylene welding, painting and decorating, saddlery, tailoring.

Chasetown, County Mining Institute (Staffordshire Education Committee): Electrical installation, electrical motor work, electrical transformer, power station attendance.

Coventry, Technical School: Mechanical engineering, painting and decorating, woodwork.

Darlington, Technical School: Munitions only.

Derby, Technical College: Engineers' tools, mechanical engineering.

Doncaster, Technical College: Laundry work, mechanics and physics, tailoring, woodwork.

East Ham, Technical College: Arts and crafts, building, trades, chemistry and chemical industry, electrical engineering, mechanical engineering.

Erith, Technical Institute: Engineers' tools, gas and oil engine and attendance (oil only).

Exeter, University College: Art metal work, cabinet making, carpentry and joinery, engineers' tools, leather manufacturing, pottery, wood carving.

Gillingham, Technical Institute: Munitions only.

Handsworth, Technical School: Chemistry, electric wiring and fitting, engineers' tools, metallurgy.

Harlesden, Fiveness Road School: Commercial subjects, bookkeeping, French.

Huddersfield, Technical College: Art metal work, cabinet making, carpentry and joinery, commercial subjects, electric wiring and sub-station attendance, engineers' tools, motor engineering, stone carving, weaving, wood carving.

Ipswich, Municipal Technical School: Graining and gilding, painting, sign writing, glass embossing, plaster work, stencil cutting and stained glass, ornamental lead glazing, wood carving, lithography, leather, etching.

Kent, Education Committee, Maidstone: Art metal work, cabinet making, wood carving.

Lancaster, Education Committee: Electrical installation, electrical machinery suitable for attendant in electrical stations and turning for local industries.

Leeds, Technical School: Bookbinding, boot and shoe making, cabinet-making, carpentry and joinery, commercial subjects, lead burning, metal plate work, oxy-acetylene welding, painting and decorating, plumbing, printing, sanitation, tailoring, wood carving.

Leeds, University: Leather manufacturing, weaving.

Leek, Staffordshire, Nicholson Institute (Staffordshire Education Committee): Silk weaving, woodwork.

Leicester, Municipal Technical: Architecture, building, plumbing trades, painters' and decorators' trades, engineering, electricity and physics course (including draughtsmanship), textile industries course, boot and shoe trades, lithographic work, commercial, bookbinding, typography, jewellers', goldsmiths', silversmiths' and other metal workers' course, embroiderers' and lace makers' course, costume and dress design, modellers (stone and wood), carvers, plasterers, letter cutters, plumbers' ornamental work, cabinet making, draughtsmanship, designer's salesman and other courses, painting from the figure, landscape and still life.

Liverpool, Education Committee: Carpentry and joinery, engineers' tools.

Loughborough, Technical Institute: Basket making, electric wiring and fitting, engineers' tools, mechanical engineering, printing, munitions.

Manchester, School of Technology: Are now considering a scheme with Local Committee.

Newcastle-on-Tyne, Cowan Training School: Are co-operating with Armstrong College.

Newcastle-on-Tyne, Rutherford College: Electric wiring and sub-station attendance, engineers' tools, motor construction, motor driving.

Newport (Monmouthshire), Technical Institute: Carpentry and joinery.

Norwich, Technical Institute: Art metal work, boot and shoe making, carpentry and joinery, electric wiring and fitting, painting and decorating.

Nottingham, University College: Carpentry and joinery, engineers' tools, mechanical engineering,

Oldham, Municipal Technical School: Joinery, painting, plumbing.

Plymouth, Technical School: Designing and drawing, electric wiring, leather work, metal repoussé work, metal work, painting and decorating, plastering and modelling, wood carving and woodwork.

Portsmouth, Municipal Technical College: Aero, electrical, mechanical and gas engineering; electric wiring and fitting, acetylene welding, boot making, carpentry and joinery, cookery and laundry, dispensing, motor engineering (fitting and turning), plumbing, telegraphy, tinsmiths, banking and accountancy (clerks), book-keeping, shorthand and typewriting.

Preston, Harris Institute: Carpentry and joinery, electric wiring and fitting, switchboard attendance, woodwork.

Reading, Municipal Technical School: Agriculture, art metal work, cabinet making, wood carving.

Reading, University College: Munitions only.

Rochdale, Municipal Technical School: Textile workers, electrical engineering, laboratory, electric wiring, switchboard work.

Salford, Technical Institute: Munitions only.

Sheffield, Technical School of Art: Painting, drawing, designing, geometry, architecture, etching, modelling, painters and decorators, typography, lithography, mounting, bookbinding, metal casting, wrought iron work, enamelling, wood carving, leather tooling and embossing, silversmith's class, engraving, die sinking.

Smethwick, Technical School: Munitions only.

Southampton, University College: Carpentry and joinery, chemistry, commercial subjects, drawing office work, electric wiring and sub-station attendance, engineers' tools, motor construction, motor engineering, photo process and photography, plumbing, sanitation, telegraphy and woodwork.

Stafford, County Technical School (Staffordshire Education Committee): Boot and shoe manufacture, designing, enamelling, leather work, making of moulds, metal work (copper, brass repoussé and jewellery), painting and decorating, wood carving.

Stoke-on-Trent, School of Science and Technology (Staffordshire Education Committee): Pottery, mining, engineering.

Sunderland, Technical College: Electric wiring and fitting, gas and oil engine and attendants, plumbing, switchboard attendance.

Sutton Coldfield, Technical College: Drawing office work, enamelled iron advertisements.

Swindon and North Wilts, Secondary School and Technical Institute: Engineering, turning and fitting, drawing and tracing, light electrical work, wiring, &c., metal plate work, light joinery, cabinet making (including designing), chemical work, analysis and general laboratory work, commercial work of all kinds, jewellery and enamelling, wood carving, stained glass work, pottery, writing and illuminating, some forms of painter's and decorator's work.

Tonbridge, Technical Institute: Bookbinding, art metal work, wood work, electric wiring, typewriting and other commercial subjects, engineering subjects.

Tottenham, Tottenham Polytechnic: Chemistry and physics, electric work, brickwork, plumbing, woodwork.

Tunbridge Wells, Technical Institute: Art metal work, cabinet making, commercial subjects, electric wiring and sub-station attendance, motor engineering, wood carving.

Walsall, Municipal Institute (Walsall Local Education Association): Electrical engineering, no teacher at present.

Wednesbury, Metallurgical Institute: Electric wiring and fitting, motor engineering, woodwork.

West Bromwich, School of Art: Architecture, drawing and office work.

Wellingborough, Technical Institute: Munitions only.

West Ham, Municipal Technical Institute: Will establish classes, subjects not yet decided.

Widnes, Municipal Technical School: The Borough of Widnes so far are not forming any special classes for disabled men. In the case of men not seriously disabled, the ordinary time table would be at their disposal.

Wigan, Mining Technical College: Colliery clerks, fitters, turners, tracers, time-keepers, store-keepers, machine men and tracers.

Willenhall, Technical School: Metal plate work.

Willesden, Polytechnic School: Chemistry, geometry, building trades, carpentry and joinery, practical mathematics, plumbing, electric engineering and wiring, painting and decorating, commercial subjects, typewriting, book-keeping, French, German, Russian, Spanish, voice production, cookery, dressmaking.

Wimbledon, Technical Institute: Munitions only.

Wolverhampton, School of Art: Chemistry, commercial subjects, dispensing, drawing and office work.

Wordsley, Art and Technical Institute (Staffordshire Education Committee): Glass designing (table ware), woodwork.

York, School of Arts and Crafts: Art metal work, cabinet making, carpentry and joinery, mechanical engineering, painting and decorating, plumbing, stone carving, wood carving.

York Technical School: Munitions only.

SCOTLAND:

Aberdeen, Robert Gordon's Technical College: Cabinet making, carpentry and joinery, engineers' tools, pottery, wood carving.

Dundee, Municipal Technical College: Drawing, office work, electrical work (wiring, &c.), mill and factory work (jute), meter mechanism.

Dundee University: Are co-operating with Dundee Technical College.

Edinburgh, Heriot-Watt College: Book-binding, carpentry and joinery, electric wirings and sub-station attendance, engineers' tools, photo-process and photography, plumbing, printing, smith's work, telegraphy.

Fifeshire, Fife Mining School, Cowdenbeath: Technical engineering, drawing and plan reading, electrical welding, metal cutting plans.

Glasgow, Royal Technical College: Munitions only.

Paisley, Technical College and School of Art: Carpentry and joinery, metal work, wood carving, wood inlay.

APPENDIX V.

Degree of Incapacity caused by various Injuries, &c., and Corresponding Pensions.

Specific injury	Degree of incapacity	Disability pension of private soldier
1. Loss of two or more limbs Loss of an arm and an eye Loss of a leg and an eye Loss of both hands or of all fingers and thumbs Total loss of sight Total paralysis Lunacy Wounds, injuries, or disease resulting in disabled man being permanently bedridden Wounds of, or injuries to, internal, thoracic or abdominal organs, involving total permanent disabling effects Wounds of, or injuries to, head or brain involving total permanent disabling effects or Jacksonian epilepsy Very severe facial disfigurement Advanced cases of incurable disease	100 per cent.	27s. 6d.
2. Loss of both feet Amputation of leg at hip or right arm at shoulder joint Severe facial disfigurement Total loss of speech	80 ,,	22s.
3. Short thigh amputation of leg with pelvic band, or of left arm at shoulder-joint, or of right arm above or through elbow Total deafness	70 ,,	19s. 3d.
4. Amputation of leg above knee (other than 3), and through knee or of left arm above or through elbow, or of right arm below elbow	60 ,,	16s. 6d.
5. Amputation of leg below knee (including Symes' and Chopart's amputation), or of left arm below elbow Loss of vision of one eye	50 ,,	13s. 9d.
6. Loss of thumb or of four fingers of right hand	40 ,,	11s.
7. Loss of thumb or of four fingers of left hand, or of three fingers of right hand	30 ,,	8s. 3d.
8. Loss of two fingers of either hand ...	20 ,,	5s. 6d.

Alternative Pensions for Disabled Men.

The alternative pension for a disabled man is designed, speaking generally, to place the man in the same position financially, within reasonable limits, as he enjoyed before the War, after making allowance for his remaining capacity for earning a living. The pension will not depend on the existence of circumstances of exceptional hardship nor will it be liable to be adjusted in amount according to the needs of the applicant. The alternative pension will moreover, as a rule, be made permanent when the minimum pension has been permanently fixed.

The alternative pension is a combination of the "flat-rate" or minimum pension and a supplement similar to that previously awarded by the Statutory Committee, but its amount will be determined by two factors only:—

(*a*) The man's pre-war earnings, and
(*b*) His earning capacity.

To be eligible for an alternative pension a man must be in receipt of a minimum pension awarded under Article 1 of the Royal Warrant and Order in Council (*see* Appendix A[1]). A man who has been awarded a gratuity in the form of a temporary allowance will not be eligible.

[1] Instructions for the assessment of Alternative Pensions, 1917, (price 3d.), from which this information is derived.

The scale of the alternative pensions is the amount of the man's pre-war earnings up to 50s., plus one-half of the excess, if any, over 50s. and up to 100s. a week, after deducting the amount which the man still remains capable of earning. The maximum pension, therefore, which can be awarded is 75s. a week.

APPENDIX VI.

THE TRAINING OF THE DISABLED SAILOR AND SOLDIER: A COUNTY SCHEME FOR LANCASHIRE.

[Abstracted from the *Lancet*, July 21, 1917, p. 99.]

A Conference of representatives of local committees under the Navy and Military War Pensions Act, 1915, with the Education Authorities and other bodies in Lancashire, was convened by the Lord Lieutenant of the county, and held in Preston on February 16, when Mr. G. M. Barnes, M.P., the Minister of Pensions, and Sir Arthur Griffith-Boscawen, M.P., the Parliamentary Secretary to the Ministry, strongly supported the idea of co-operative action among the various interested bodies. At this Conference it was resolved that it was the duty of the Government to provide the necessary cost of dealing with disabled sailors and soldiers, and to repay any expenditure thrown upon local education authorities and other bodies in making provision for them. A Committee appointed at this Conference to go into the question has presented a report, signed by Professor H. Lloyd Snape, Director of Education for Lancashire County Council.

The report states the unanimous conviction of the Committee that a scheme for co-operative action among the local statutory committees is the only method by which each committee will be able to carry out its duties

with efficiency and economy. It recommends the appointment of an advisory committee with a central bureau for the collection and distribution of information, able to focus the requirements of all the local committees, and to suggest schemes which can be carried out to meet the combined demand with a reasonable expenditure. Where such scheme related to training in technical or other educational institutions, it would be sent to the education or other appropriate authority. If the scheme had reference to the extension of hospital or hostel accommodation and treatment, the advisory committee would be a useful medium for pressing the subject forward on behalf of all the local committees. The central bureau would, further, be the medium for bringing the local committee requiring any treatment or training for a man into direct communication with the institution capable at the moment of supplying it, and would keep a register of hostels and lodging-houses suitable for men who might require accommodation in any district, while receiving outdoor treatment at a hospital, or training.

An Appendix contains the report of a committee instructed to collect information on the available sources of supply for training disabled men in the county. Education committees were circularized in whose areas it seemed likely that facilities for training disabled men could be provided during the day-time, and replies to the circular were received from fifty-six authorities, all of whom were willing to make their resources available for training men. A detailed list has been compiled from these returns, the Committee seeking to select from the information before them those areas where training for particular trades could be

carried out under the best conditions. They believe that it would be preferable to provide thoroughly good opportunities of training at a limited number of centres, rather than a much larger number, in some of which, at least, training could only be of a partial character. By following such a policy, not only would training be more efficient, but expenses materially reduced. A number of education authorities were relying on the co-operation of private as well as public employers in training men. Such assistance had actually been offered in some areas, pointing to a means whereby the facilities for training could be almost indefinitely extended.

The list of facilities available includes large groups, such as (*a*) agriculture and horticulture; (*b*) engineering trades; (*c*) building and allied trades; (*d*) coal mining; (*e*) textile occupations; (*f*) boot and shoe manufacture; (*g*) nautical occupations; (*h*) printing and allied trades; (*i*) commercial and clerical occupations; (*k*) art and art industries, and a miscellaneous group including gas-fitting, instrument-making, basket-making, boot-repairing, tailoring, hair-dressing, and various other minor occupations.

A further Appendix to the report gives detailed information with regard to the hospitals and kindred institutions and their ability to deal with disabled sailors and soldiers. The table is an extensive one, giving under the several headings: (1) name and address of institution; (2) particulars of treatment given; (3) the use of electrical and mechanical apparatus, with the qualifications of the operator; (4) availability for men resident outside the district; and (5) and (6) the number of in- and out-patients respectively who could be treated.

APPENDIX VII.

THE VETERAN'S CLUB.

Its Record and its Aims.

THE Veterans' Club, Hand Court, High Holborn, was opened six years ago for the purpose of providing a meeting and resting place for men leaving the Navy and Army. Since its inception, the Club has done much useful work, not merely by providing accommodation for ex-service men (the Union Jack Club being only available for men actually serving), but by helping them to obtain employment through advice and mutual co-operation, and, by means of the Veterans' Corps, for which the Club serves as headquarters. It also helps Service men in numerous other ways, notably by advising with regard to pensions, by arranging the storage of sailors' and soldiers' furniture without charge, thus saving their homes from being sold up, by legal and medical advice, and in other ways. Upwards of 8,000 members have been enrolled since it opened its doors.

It has recently been decided to establish the Club as a Veterans' Headquarters, on a permanent basis, in new and larger premises, for the recreation and assistance of all members of the Services on their re-entry into civil life, and for the benefit of others who leave the Services in future.

The Veterans' Club is affiliated to similar institutions in other parts of the Empire and the whole is intended

as an imperial memorial to those who are giving their lives for their country. The Veterans' Association has been formed to enlist public interest in the scheme by collecting donations and annual subscriptions.

A bureau for inquiry and advice will be included in the scheme.

Convalescent Homes for sick and incapacitated members of the Club are also contemplated, and suitable premises at the seaside and in the country have already been offered to the Association for this purpose.

The annual subscription to the Veterans' Association has been fixed at 2s. 6d. and payment of £5 5s. or upwards constitutes a life membership. Donors of £100, or upwards, will be entitled to dedicate a bedroom or bedrooms, in the proposed new premises of the Veterans' Club, as memorials to ships, regiments, or individuals, or in any way desired.

The offices of the Veterans' Club are at 47, Bedford Row, London, W.C.

INDEX.

John Bale, Sons & Danielsson, Ltd., 83-91, Great Titchfield Street, London, W. 1.

WHY SUFFER NEEDLESSLY?

Holland's Patent Foot Supports are being worn by men on Active Service, Convalescent in Red Cross Hospitals, and by all Workers whose occupation entails continuous standing.

No more TIRED AND ACHING FEET after a hard day's work.

Price 4/6 to 8/6 a pair.

OF ALL SURGICAL HOUSES OR DIRECT.

BOOTS FOR SHORTENED LIMBS.

T. Holland has had large experience and possesses skilled workmen to deal with Discharged Soldiers or Sailors who require Surgical Boots.

A PROPER BOOT IS A GREAT HELP IN WALKING.

T. HOLLAND & SON,

Foot Appliance Manufacturers,

46, South Audley St., London, W. 1.

Recalled to Life.

A Journal devoted to the Care, Re-education, and Return to Civil Life of Disabled Sailors and Soldiers.

Editor, LORD CHARNWOOD.

Assistant Editor, EVERARD COTES.

PUBLISHED AT INTERVALS.

Price 2s. net.

. . Postage 4d. . .

LONDON :

JOHN BALE, SONS & DANIELSSON, LTD.

OXFORD HOUSE

83-91, GT. TITCHFIELD STREET, OXFORD STREET, W. 1.

ESTABLISHED 76 YEARS.

YOU MUST WEAR A TRUSS

IF YOU ARE RUPTURED.

AWARDED MEDAL,

Great Exhibition, 1851.

NO METAL BAND.
Soft and Pliable.

For 76 years we have been supplying

WHITE'S MOC-MAIN PATENT LEVER TRUSS

(The original and only genuine) for the alleviation of rupture—

A Scientific and Simple Truss

Eminent Medical Men recommend it and the Medical Text-Books mention it—because it is comfortable and efficient.

Thousands of sufferers have been relieved by wearing White's Moc-Main Patent Lever Truss (the original and only genuine), and are to-day going about their ordinary avocations, no more conscious of the fact that they are wearing a truss than that they are wearing clothes, and even when lying in bed are as unconscious of the presence of the White Moc-Main Patent Lever Truss as of their night attire.

WHY SUFFER?

We stake our reputation on the accuracy of our statements, and we say, without hesitation, that if you let us fit you with one of our Trusses you need not suffer.

Send a postcard to-day for booklet and price list, or call if possible.

Experienced fitters for ladies and gentlemen—**We have no agents**, our **ONLY** address:—

J. WHITE & CO.,

THE TRUSS HOUSE,

15, Walbrook, London, E.C. 4.