

## **Hints on the use of an artificial limb.**

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MINISTRY OF PENSIONS

HINTS ON THE USE OF AN  
**ARTIFICIAL  
LIMB**



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## *Hints on the use of an* **ARTIFICIAL LIMB**

**T**HE Ministry of Pensions is responsible, on behalf of the Ministry of Health, the Department of Health for Scotland and the Northern Ireland Hospitals Authority, for the supply of artificial limbs to all Civilian cases.

This booklet has been prepared for those who are being issued with an artificial limb for the first time. It does not aim at recapitulating the instruction that will have been given, but rather at emphasising certain points regarding care of the stump and of the artificial limb. It also attempts to give a general idea of how some of the common daily activities may be tackled, as well as of some of the further possibilities which lie ahead.

In the early stages in hospital the future may seem to some to be rather an uncertain quantity. Moreover, it is unlikely that the average man or woman who loses a limb will have concerned himself with the subject of artificial limbs, or know the things which those who have been fitted with limbs are capable of doing.

Reassurance comes quickly from surgeons and nurses, and the patient hears with something like incredulity, for example, how even those with an amputation of the thigh can be taught to walk—and walk well—with a special type of limb.

A close accord springs up almost spontaneously in the ward and heads are put together from an early stage on how this or that problem of locomotion or adjustment can best be tackled. This grows later into a strong bond of fellow feeling among all users of artificial limbs, wherever they may meet, and contributes very largely to the ease with which the various difficulties, both physical and mental, are overcome.

There is also this further point, and it is one which concerns the inner feelings of the patient. Many experienced limb-wearers will agree—although they may not admit it openly—

that they gain a certain feeling of satisfaction in learning to do things which they once may have thought they would never do again. Sometimes, too, certain faculties appear to be sharpened, perceptions and insight become keener and ambitions stronger. Indeed many have found that from what at one time may have threatened to be a calamity there grows, in some mysterious way, an actual strengthening of character. This is not to say that there are not limits to the activities that can be indulged in with an artificial limb, in a strictly literal sense, but rather that these limitations have their compensations, and further, that these compensations are of a kind of which the patient, with his growing insight into the problem, may make the greatest use.

Those who help themselves deserve the help of others, and sound advice throughout the hospital and limb fitting periods is given on many aspects of limb-wearing. It is clear, however, that the individual problems of different limbless patients will vary considerably. Moreover, it is not until the wearer of a new limb goes out into the world that he becomes faced with many of the small difficulties of accommodating himself to the demands of everyday life. The necessity for these adjustments remains throughout life, but experience has shown that the reaction to them of the great majority of the limbless is very good. Whilst most British people are strong individualists who like to work out their own methods of doing things, the following information may be helpful for those who have not yet adopted or evolved their own ideas.

## INSTRUCTION

**Legs.** Special instruction in walking is given in all Limb Fitting Centres. The properly fitted modern leg, in the case of a below-knee amputation, will enable a man to walk so that his disability should hardly be noticed. Above-knee cases will need to continue to bear in mind the instruction that has been given to correct the more common faults, such as allowing the leg to swing out, rising on the ball of the good foot and taking too long a step with the artificial foot. By adjusting the knee brake and elastic pick-up (if used) according



The Arm Training School  
Roehampton.

"On Parade,"  
Patients with  
double am-  
putations learn-  
ing to walk.



A queue for the bus :—  
practice in getting on  
and off the bus. A  
patient is sitting on a  
scale model of a railway  
carriage step used for  
practice in getting in  
and out of trains.

to the strength of the muscles, the weight of the shoe and the speed of walking, the properly fitted limb, in the case of a mid-thigh amputation, will enable a man with practice to walk very nearly naturally. On boarding buses, or going upstairs, the sound foot goes first : on stepping off a bus or going down stairs, the artificial precedes the sound foot. When using escalators it is best to step both on and off with the sound foot first.

**Arms.** Owing to the numerous functions which the natural arm and hand are called upon to perform, it has always been more difficult to supply an artificial arm which will meet with as much general satisfaction as an artificial leg. Consequently, in the past, those who have lost arms have been too ready to regard an artificial arm merely as something "to fill the sleeve," and too often have they tended to concentrate on doing everything with their "good" arm. The provision of artificial limbs is being speeded up to prevent patients from becoming too one-arm minded while they are waiting, and finality has by no means been reached in providing them with the most useful arms, hands and appliances that inventive genius can devise. Patients with both below and above-elbow amputations can be taught to write well with the modern writing hand.

When preliminary instruction in general uses and possibilities has been given at Ministry of Pensions arm training schools, there are more specialised courses at Ministry of Labour training centres where particular trades may be learned. In fact, thanks to the greatly increased interest which the public and employers of labour are showing in the capabilities of wearers of artificial limbs, there is no need to-day for those who have been so fitted to fear that they will not be able to play an effective part in the modern world.

## **DRESSING AND CLOTHING**

**Dressing.** The first difficulties are soon overcome where there is an amputation of only one limb. Patients suffering from double amputations have more difficulty and although they are in most cases able to dress and undress, the time taken to do

so is necessarily longer. The man who has lost both arms usually requires assistance.

Where a single artificial arm is used, it should be passed through the sleeve of the jacket before the other arm.

Many patients with one artificial leg find it easiest to dress the limb with pants, trousers and shoe before fitting it on the stump and before dressing the sound leg. Others, in order not to pass a dirty shoe through the clothes, put the shoe on last, i.e. after the leg has been passed through the clothing. Others again may find it possible to clothe the limb after it has been fitted to the stump.

In double leg amputations, both legs are usually dressed completely before fitting them on to the stumps.

**Clothing.** This should tend to be light in weight and loose fitting. However light the artificial limb, and however good the fit, there will always be more exertion expended in using it than there is with the natural limb, and loose fitting clothes will



Cycling with two below-knee artificial legs.



A "double" decides to go up on top of the bus.

give more ventilation and comfort, besides lasting longer. At the same time, flimsy material for underwear should be avoided, as this is liable to be damaged by the harness and suspenders, which are usually worn over the vest and under the shirt. Where possible, a hard wearing material should be selected which, even though it may be more expensive to buy, will prove to be more economical in the end owing to its much longer life.

**Socks.** The sock on the artificial foot will wear out quickly if the shoe is a loose fit on the foot. Less damage is done to the sock if a thick sock is used underneath the outer sock. If the under sock makes the leg too bulky, the leg and ankle part may be cut off.

When buying socks it is advisable to buy more than one pair of exactly the same pattern, since if the sock on the artificial foot wears out, there are then a number of serviceable socks remaining. If a single pair of pattern socks is bought, and one sock is worn out, then the remaining sock is wasted. It is better to change the socks over from one foot to the other as often as possible to get the maximum amount of wear out of each.

Some give up the battle of mending holes in socks altogether, and cut the feet off all the socks that they use on their artificial foot. Instead, the tops of these socks are fixed to the artificial foot with adhesive tape, just below the level of the shoe. This can be regarded as an extreme measure, however.

**Sock suspenders.** It may be difficult to keep these from slipping down on the artificial leg. One or two metal studs can be riveted or screwed on to the shin by the limb-makers to hold the suspender in the proper place.

**Boots and Shoes.** Light shoes have the advantage over heavy boots or shoes. The light shoe does not add appreciably to the weight of the leg, and it gives a greater sense of security and balance in walking: also, the sole is more flexible in walking and so bends more easily with the joint movement of the artificial foot. It will be found that the shoe on the good

foot will wear out far more quickly than that on the artificial foot: it will pay to have two shoes, if possible, for the good foot, to one for the other. It will also add to comfort if the shoe of the artificial leg is kept in good repair and not allowed to get worn down at the heel.

**Long pants** present a difficulty when used with artificial legs. Some patients have the leg of the pants cut off near to the top of the artificial leg. Short pants or trunks, although not so warm in winter, are more convenient.

**Trousers** may need to be protected from damage by a clothing pad of leather fixed to the back of the thigh piece by the limb-maker or by a lining inserted into the back of the trouser leg to prevent wear by the artificial limb. Joints on artificial limbs are now provided with leather protective covers, and protuberances are either cut down to a minimum or rounded off. If it is found that the protection is unsatisfactory the fact should be reported to the Limb Fitting Centre.

**Gloves** are issued singly to wearers of artificial hands to meet their special needs, as it may be that the glove on one hand will wear out more quickly than that on the other, or it may be necessary for a different size or even a different type of glove to be worn on each hand.

### **CARE OF THE STUMP**

It is necessary not only to develop the stump muscles, but also to shape the stump correctly by bandaging so that it becomes tapered from wide at the top to narrow at the bottom. It is important to remember the correct method of bandaging that has been taught, since it is as well to put a bandage on if

more than a day has to be spent in bed without using the leg :— otherwise, the stump may swell, and it may be impossible to get a comfortable fit for a day or two after getting up until exercise has reduced it again. Some people, even, find that a bandage every night is necessary in order to reduce this tendency of the stump to swell while at rest.

The most important treatment for the skin of the stump is to wash it every day with soap and water. Following washing, remove all traces of the soap, and then dry the stump thoroughly, taking especial care to dry all scars. Talcum powder may be applied afterwards if considered necessary or desirable. Spirit lotions may dry the skin too much and make it liable to crack.

Washing is necessary to remove salt deposited from perspiration. Salt retains moisture and keeps the skin damp and sticky, causing friction between the skin, stump-sock and socket, with consequent irritation.



He has an amputation through the right knee and is employed as van and car driver.



A Naval Officer of the Fleet Air Arm who returned to flying duties with a Right above-knee artificial leg.

*Reprinted from Production and Engineering Bulletin.*

**Stump-socks.** A healthy condition of the stump is maintained by the right size of stump-sock and by proper care in its washing. Stump-socks should never be washed in hot water or rubbed. The best method of washing is to dissolve soap flakes in lukewarm water: then squeeze the sock in this water by hand only, and never by wringing. To keep the stump in a healthy condition, the stump-socks should be changed as frequently as possible, especially in hot weather. A shrinkage of the stump may cause discomfort. If the shrinkage is slight, comfort may be restored by wearing an extra stump-sock.



Mr. Henry Cotton demonstrating to Mr. Wilfred Paling (late Minister of Pensions) how the special fittings on the golf clubs are attached to the artificial arms.

*Photo by  
Sport and General Press Agency Ltd.,  
London.*

Golf practice with artificial arms at the L.F.C. Roehampton.

*Photo by Mirror Features.*



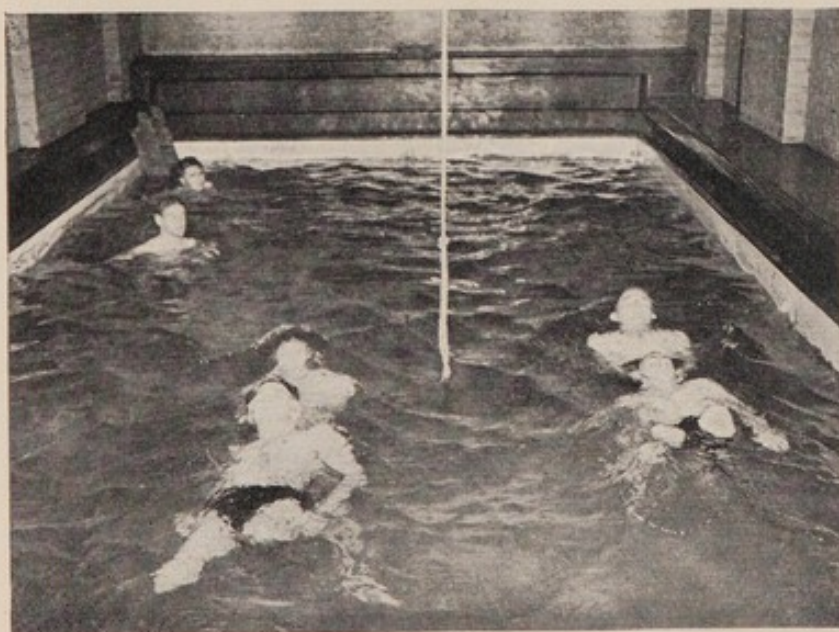
In some cases, shrinkage continues to such an extent that several stump-socks have to be worn. It is not advisable, however, to resort to the use of too many stump-socks for any length of time, and if it is ever necessary to wear more than two stump-socks, the Limb Fitting Centre should be advised accordingly. When the stump increases in size the limb becomes too long, and also uncomfortable: in such a case, the Limb Fitting Centre should be informed immediately.

Stump-socks which are no longer serviceable will be replaced on application to the Limb Fitting Centre.

### CARE OF THE LIMB

The Ministry of Pensions is responsible for the maintenance of both the original and duplicate limbs. At the same time every reasonable care should be taken to prevent loss or damage. Remember that these limbs are valuable articles which have been fitted to individual requirements.

**Repairs and adjustments.** To ensure that a patient is never without one serviceable artificial limb it is essential that immediately a limb requires repair or alteration of any kind, he should at once report the fact on the stamped form provided for the purpose (MPM 169) to the appropriate Limb Fitting Centre. If the form is not available, full particulars as to the repair or adjustment required should be sent by letter to the Limb Fitting Centre.



"Doubles" enjoying a swim.

If the answers on the form, or the letter, indicate that only a mechanical repair is needed, a box (with a carriage free label) will be sent to the patient (if one is not already in his possession) in which to forward the limb to the Centre for the necessary repair.

If, on the other hand, the information given indicates the need for a refit, the patient will be called to attend the Centre, in which case the limb should be brought with him. If this is not possible, arrangements will be made for the limb to be conveyed to the Centre in a box with a carriage free label in advance of his attendance.

The patient should not in any circumstances continue to wear the limb after a defect has been noticed or a repair become necessary, as by so doing a minor repair or adjustment may become a major repair.

Special tools are necessary for the assembly or dismantlement of any part of the artificial limb and no attempt, therefore, should be made to take it apart in any particular.

**Cleaning the limb.** A limb that is kept clean will last longer and will give less trouble than one which is neglected in this respect, and when sent in for repair or examination it should be in a clean condition.

**Lubrication.** The use of lubricating oil is unnecessary as all bearing parts are packed with grease when the limb is delivered, and the grease will last a long time without any attention. The lubrication will automatically receive attention whenever the limb is returned to the Ministry for repair or adjustment.

Try to avoid getting the artificial foot wet, as this may cause deterioration of the foot and ankle joint.

## **SPORT AND RECREATIONS**

Besides the normal everyday activities, there are many sports and hobbies open to those who wear artificial limbs. A great deal will depend on the energy, the inventiveness and the tastes of the individual, as well as on the nature and condition of the stump. Generally speaking, anything which results in

the over-straining or chafing of the limb should be avoided, and in cases of doubt the advice of the limb surgeon should be sought. It would be beyond the scope of this booklet to detail the many pastimes which are possible, but swimming, billiards, dancing and bowls are obvious examples of the less strenuous activities : swimming, in fact, is regarded as beneficial to the stump. Many persons are able to indulge in golf, tennis, badminton, squash or cricket. Provided these games are tackled in the right way, they will add greatly to one's confidence, and will help to dispel, as nothing else will, any lurking impression that one is a cripple. The Limb Fitting Centre will be ready to help in putting men interested in any of these sports in contact with other limbless men who have become experienced players.

**Motoring.** The use of a car is usually subject only to mechanical alteration to the controls dependent upon the nature of the disability. On the other hand, legislation has put some restrictions in the way of the prospective disabled motorist in the interest of the common welfare. The loss of one limb, or even two, does not prevent a man from driving, however, and there are many with double leg amputations who have passed the driving tests and have complied with the Third Party Regulations. Full particulars may be obtained from :—

The Hon. Secretary,  
The Disabled Drivers' Club,  
33, Rockingham Road,  
Uxbridge, Middlesex.

## CONCLUSION

As has been pointed out, different individuals will have varying needs, as well as different methods of approach, and it is not claimed that these notes include all that can be said.

If there are any further suggestions which it is felt would help those who wear artificial limbs, they should be sent to :—

The Director of Medical Services,  
Ministry of Pensions Limb Fitting Service,  
Queen Mary's Hospital,  
Roehampton,  
London, S.W.15.

All comments will be welcomed, and carefully considered with a view to their incorporation in later editions of this booklet.

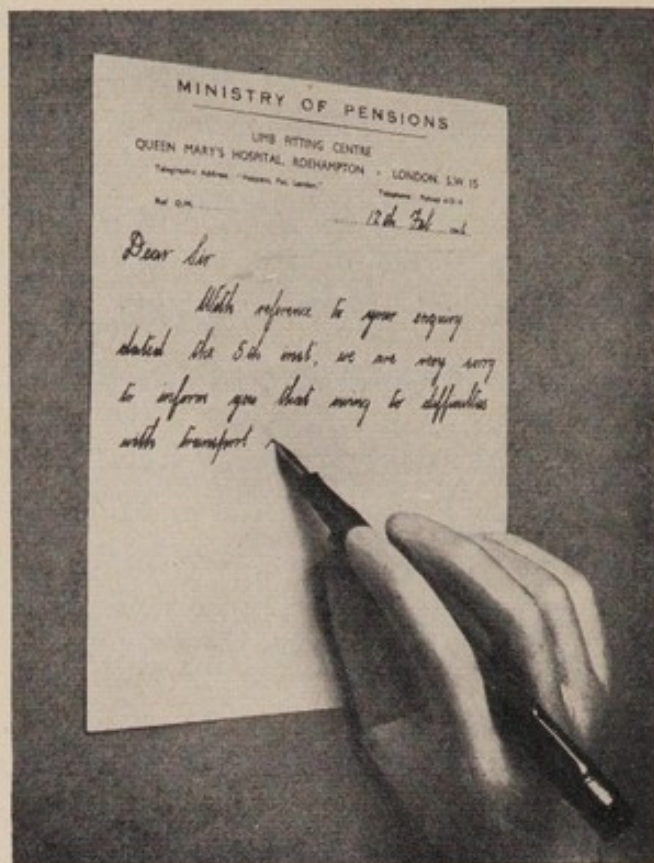
It is hoped, however, that these notes will have given some hint of what the limbless can do and that they will serve to stimulate inventiveness amongst them.

But remember to take things slowly at first.

Remember, also, what has been taught in hospital and at the Limb Fitting Centre, and concentrate on eliminating the faults that have been previously pointed out. Bad habits will then be avoided and a greater amount of satisfaction will be gained from the use of the limb.



Mr. Snell, who lost both arms below the elbow and one leg, demonstrates a few of his useful achievements with his artificial arms.



Mr. Snell writing with his artificial hand; a close-up photograph of the hand and handwriting.



Using the telephone and making notes.



Here he is seen shaving.



**Dancing.** The girl has an artificial leg (left).



**A useful Office Appliance.**  
*From Production and Engineering Bulletin.*



**A leather worker who has double below-knee amputations working a treadle machine with his artificial legs.**  
*From Production and Engineering Bulletin.*



**Holding a knife in the Artificial Hand.**  
*From Production and Engineering Bulletin.*



**Artificial Arm Appliance. Tweezers for small articles.**

*From Production and Engineering Bulletin.*

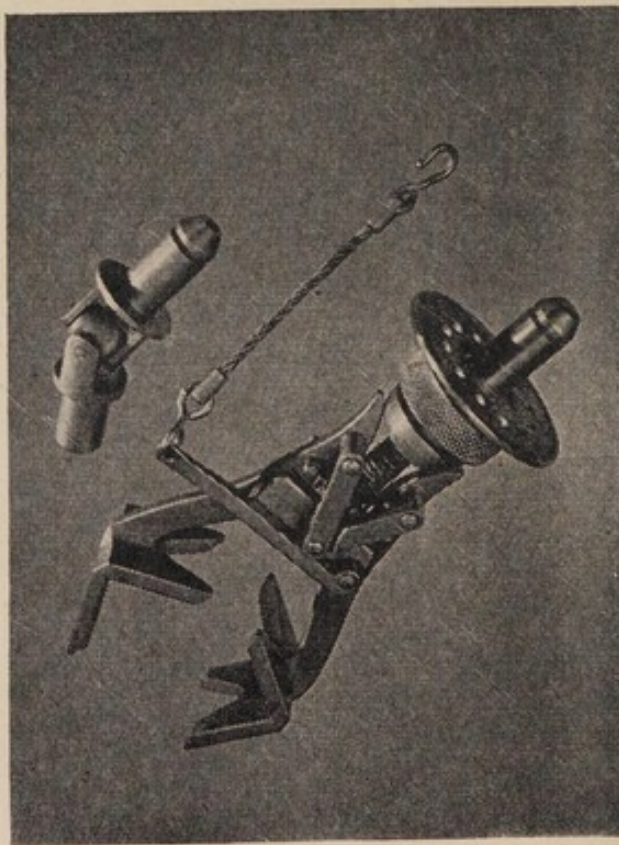


**Artificial Arm Appliance. The "Rubber Finger." A very useful appliance for pressing on articles to hold them in position.**

*Reprinted from Production and Engineering Bulletin.*



**Artificial Arm Appliance. Pliers.**



**Artificial Arm Appliance. Implement and Tool Holder.**

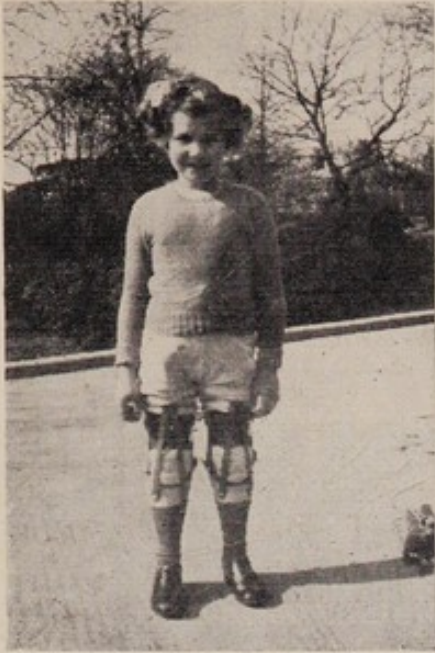


**Artificial Arm Appliance. The Tool and Implement Holder in use.**  
*Reprinted from Production and Engineering Bulletin.*



The girl with a right below-knee  
artificial leg shown opposite,  
is seen skipping in the picture  
above.





Double below-knee.

## Children wearing Artificial Limbs



"First Steps."



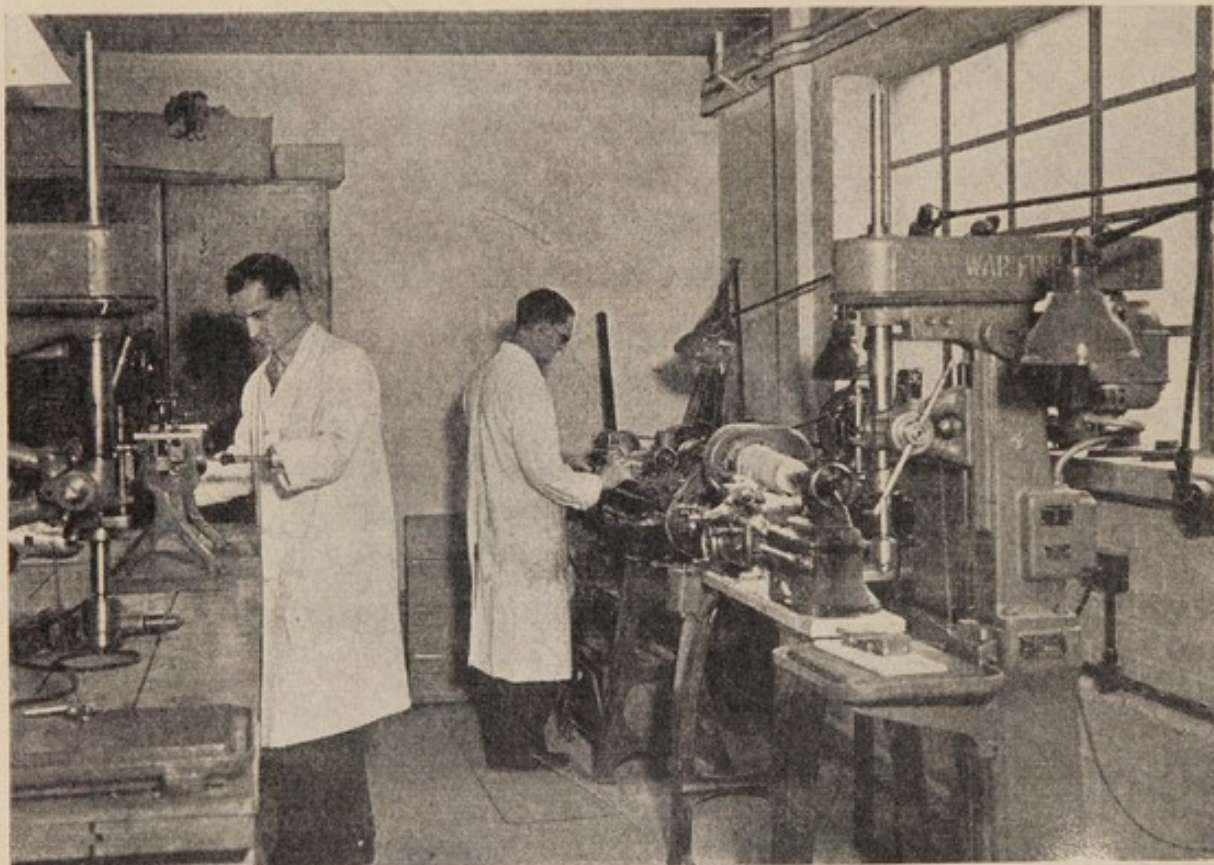
Right above-elbow.



Left below-elbow.



Left below-knee. Boy running.



A corner of the Ministry of Pensions Research  
Workshop, Roehampton.



