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EMPLOYMENT OF CANADA'S DISABLED -

VETERANS AND OTHERS

Part 2 — The Selective Placement Process

THE SECOND OF A SERIES

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PREFACE TO BOOKLET II

This is the second in the series of booklets entitled "The Employment of Canada's Disabled—Veterans and Others" to be published at intervals. It is suggested that it be read in conjunction with the first booklet of the series, which is sub-titled "Basic Considerations".

The Objective of this second booklet is the same as that of the whole series. In particular, it aims to assist employers and others by setting forth many of the details and technical considerations involved in the successful employment of persons with physical disabilities. In so doing, this booklet sets forth a rather formal and comprehensive technique. This has been done advisedly because it appears the simplest manner in which the greatest number of the details can be described. The factors which contribute to the construction of this technique are important to all those concerned with the placement of the physically disabled, even though they do not intend to use the technique in its complete form.

This Selective Placement Process is the product of the work of many persons and agencies. Special tribute must be paid to the outstanding work of the United States War Manpower Commission, and of the United States Employment Service for their part in developing and furthering the use of the Selective Placement technique, and for their contribution to the successful re-establishment in employment of disabled persons. Much of the material in this booklet has been taken directly from publications of these agencies. A further part of it has been modified to suit Canadian conditions, and still another part is new. The Department of Veterans' Affairs gratefully acknowledges the work and co-operation of the United States Employment Service, the War Manpower Commission and the many other British, American and Canadian agencies and persons.



PREFACE TO BOOKLET I

This is the first of a series of booklets entitled "The Employment of Canada's Disabled—Veterans and Others", to be published at intervals. These booklets are dedicated to the proven propositions that a physical disability need not be an occupational handicap, and that a physical disability is but one of the wide variety of factors which differentiate the working potential of one man from another.

These booklets seek to foster an understanding of the question of physical disablement, particularly as it affects ex-members of the Canadian Armed Forces. They set forth the basic considerations involved, certain suggestions in the approach to the employment of disabled persons, and a short description of the rehabilitation programme of the Department of Veterans' Affairs.

While this series refers particularly to the rehabilitation and employment of disabled veterans, much of its content applies to disabled civilians, a group which veterans themselves do not wish to see disregarded.

It is hoped that these booklets will be of use to all interested persons.



FOREWORD TO THE SERIES

"THE EMPLOYMENT OF CANADA'S DISABLED —VETERANS AND OTHERS"

There are many agencies, public and private, which provide, or arrange for the provision of, rehabilitation services on behalf of various classes of the citizens of Canada.

These are agencies such as the Departments of Veterans' Affairs and Labour, Workmen's Compensation Boards of the Provinces, the Canadian National Institute for the Blind, and other community groups. In providing these services of rehabilitation, these agencies, and the disabled persons whom they serve, have one primary objective—to achieve suitable and productive work for the physically disabled. It has been proven abundantly that the disabled can compete in normal labour markets and work with full efficiency, without endangering their own safety or that of others, and with profit not only to the disabled person, but to the employer and community alike.

The successful rehabilitation of the physically disabled is an objective which is not opposed to, but rather in keeping with, the best interests of employers.

There can be no rehabilitation without employment. The agencies which provide rehabilitation services do so in accordance with certain fundamental principles. These must be understood by employers if there is to be employment, and consequent rehabilitation.

That these fundamentals must be understood is due to the fact that Canada is a free country. Rehabilitation agencies do not provide jobs. Employees have the right to seek employers where they will. Employers have the right to seek employees where they will, subject to the right of employees to bargain collectively.

The Government of Canada has not the right nor authority compulsorily to place disabled persons in employment.

The freedom and privilege of studying and understanding the employment of the physically disabled has been hard won for the people of Canada by the efforts of that valiant company whose cause this series of booklets seeks to foster.

SOUND PLACEMENT

Employers have always sought to place their workers in such a way that their qualifications are matched with the requirements of the available jobs. The success of this placement depends upon the knowledge which the placement officer has of the requirements of the job on one hand, and of the qualifications of the applicant on the other.

It has long been recognized that the employer, or his placement officer, requires complete information about the job, which in turn involves a knowledge of the duties performed, how and why they are performed and the skill and physical demands involved.

Complete information is also required about the individual applying for the job—information concerning his training, experience, aptitude, determination, ability to learn, ability to get along with others and like characteristics. On the basis of such information,

a good match can be effected, which is in the best interests of the employer and employee alike.

The necessary information on both these aspects of placement has been obtained by many employers in many ways. The methods used have depended not only upon the size of the company, and the volume of its hiring, but also upon the personal inclinations of the employer and his staff. In some cases, the employer may rely on a complete set of job analyses; in others, he may depend upon the knowledge which years of association with plant operations has given him. For the assessment of job applicants, in one concern, complete physical examinations may be coupled with trade and aptitude tests; whereas, in another, the employer and his staff may rely solely upon interviews combined with their understanding of human nature.

THE EMPLOYERS' PROBLEM

In the past the employment situation was such that there was a superabundance of able-bodied workers. Thus, only a few employers have any great experience of the special considerations which apply to the placement of disabled persons; i.e. the relating of the physical capacities of applicants, to the physical requirements of individual jobs.

In recent years, three important changes in this situation have taken place. First, more and more people, disabled and able-bodied, employer and employee alike, are realizing the social and economic folly of condemning the physically disabled to lives of uselessness and idleness. Second, Canada is more nearly approaching the goal of full employment. Third, some twenty-five thousand so-called disabled veterans are now entering the

labour market, seeking not charity, but an opportunity to compete for their livelihood on the same footing as their able-bodied fellows, and in accordance with their merits.

In actual fact, the placement of disabled persons is a process almost identical with that of the able-bodied. It calls for the measure of their particular abilities in relation to the particular requirements of jobs.

The placement of the disabled is not essentially difficult or complex. Many employers have long desired to hire disabled persons, and indeed, many have done so. It is natural therefore, that employers, eager and willing to hire the disabled, should demand the technique that will enable them to do so successfully, and which is the proven result of experience.

THE OBJECTIVE OF THIS BOOKLET

The physical factor in the employment of disabled persons is an important—though not by any means all-important—consideration. This booklet aims to assist employers by setting forth a technique which will help them to become more thoroughly familiar with the physical requirements of the jobs at their command. It also describes a method of assessing physical qualifications of disabled persons, in terms of job requirements. These processes together form the basis of the most modern technique for rating workers physical qualifications to job requirements. Combined with an employer's existing selection methods, this modern technique can open a vast new range of jobs to the disabled. Its intelligent application will enable the following conditions to be fulfilled:

That the disabled give full value for full wages received.

That they perform their tasks with full efficiency.

That their disabilities will not be aggravated.

That they are not unduly liable to further industrial accidents.

These conditions are desired as ardently by the disabled person as they are by the employer.

This booklet sets forth, for the attainment of these admirable objectives, as sound and complete a technique, as is known today. It provides a simple means by which all may study this matter **and is a source of material from which all may select that which is pertinent to their situation and discard that which is not.**

OUT-OF-DATE APPROACHES

The demand for a technique for the placement of disabled persons is not new, and, in the past it has given rise to certain techniques now considered to be obsolete.

One of the first approaches attempted in the placement of the disabled was the endeavour to list jobs which are suitable for persons with a specific disability. In this

approach an attempt was made to list all the jobs which were suitable for say, a leg amputee, a tubercular or an epileptic. At first sight this appears to have been quite logical. A closer inspection shows, however, that it had many grave drawbacks. Its use, consequently has never been crowned with real success, that is, from the point of view of either the disabled person or the employer.

ITS MAJOR DISADVANTAGES ARE THREEFOLD:

First, no two persons of like disability have like capacity. Thus, one leg amputee may be able to stand for hours on end but not be able to walk a great distance, whereas another leg amputee may be able to walk for hours on end, but not be able to stand for any great length of time.

Second, there are very many thousands of different kind of jobs. Two jobs of the same title may involve the same duties and skills, but may involve different physical demands because of the varying arrangements of the tasks at different work stations. It would, there-

fore, be impossible to list every job as suitable for this or that disability. Any such list would inevitably be restrictive in character.

But the third and major drawback is that this approach makes disability the qualifying factor for employment. No employer hires a man because he has the 'disability' for the job. He hires him because he has the required 'ability'—ability compounded of his capacity, his training, his experience, his aptitude and determination.

An example will help explain this point. There is no job for which a man is particularly qualified by reason of the amputation of an arm. It is, therefore, impossible to prepare a list of jobs suitable for arm amputees. If a man has lost an arm, the jobs which he is capable of performing should be determined in exactly the same way as they would have been had he not lost his arm. They are determined by reason of his physical and mental capacity in relation to his personality. One arm amputee may be ideally suited to become a machinist, another an accountant, whereas yet another may be trained as a carpenter or a counter clerk. The jobs for which an amputee or any other disabled person is qualified, can only be determined by a study of his qualifications. After consideration of the jobs for which he appears qualified on these grounds, some of them may have to be ruled out because of his physical disability. Bearing in mind that each individual's physical capacity is different, these might be jobs which involve as prime necessities, fingering or feeling, or a considerable amount of gripping, handling, pushing and pulling for which activities the so-called "working arm" compensates in part only.

A variation of the foregoing approach which has been tried from time to time is the listing of jobs suitable for so-called "handicapped" persons. Yet, the so-called "handicapped" do not have characteristics in common which qualify them for employment in particular jobs. Further, this results only in the earmarking of certain menial or sedentary jobs, such as flag-man, gate-guard, elevator operator or watchman.

It has also been suggested that jobs should be classified as "light," "moderate" or

"heavy." Combined with this, it is suggested that potential workers should be classified as capable of "light," "moderate" or "heavy" work. This has all the disadvantages of the methods already enumerated, and has certain disadvantages of its own. There are not enough so called "light" jobs, and it is very difficult to determine the exact nature of "light work." The job may be light insofar as the legs are concerned, but call for heavy work by the arms.

In fact, a person's over all working capacity cannot be determined in accordance with any rating scale such as: capable of "heavy," "moderate" or "light" work. Working capacity is not a composite, but is specific with respect to the ability to perform each of the physical activities which a job might require, or to endure each of the environmental conditions which might be present. Further, rating scales are necessarily so subjective as to yield no reliability between the opinions of two raters.

These approaches, if used, would lead inevitably to a situation where thousands of persons would be forced into work far below their proper level of attainment. They might in fact result in a serious waste of one of the nation's most precious assets—man-power—without profit to either the employer or employee concerned.

There is a method which is sometimes used to-day, which is better than any of the above methods, but which is not without its serious drawbacks. This is a classification of jobs according to the major physical requirements not involved. Thus, jobs may be classified in some such way as follows:

- (1) no heavy lifting;
- (2) no hazardous machinery;
- (3) no climbing;
- (4) no dust, fumes or skin irritants;
- (5) no extensive walking or standing;
- (6) no excessive noise.

In this scheme, job applicants are likewise classified. This method has one advantage over the others. It allows the employer, through his normal selection processes, to take some account of the man's individual qualifications on other grounds, such as training.

It has one very great disadvantage. It does not lead to the placement of many disabled persons. There are very few jobs which do not call for some of the activities involved in most of the above classes and there are very few people, able-bodied and disabled alike, who should not avoid at least one of these conditions.

It is apparent from this study of out-of-date techniques that they have one fault in common. They do not pay adequate regard to the individualities of either the disabled person or the job. Individuals cannot be sorted and classified into groups. No more is it possible to group all jobs under a limited number of headings. Jobs are, in fact, almost as different one from another, as are people.

These obsolete approaches have a further fault in common—they place the emphasis upon disability rather than upon ability.

CONCLUSION

CONCLUSION—THE CHARACTERISTICS OF A GOOD TECHNIQUE

The following conditions are therefore considered essential in any plan for the placement of disabled persons:

- (i) that the individual be considered as an individual in relation to the demands of individual jobs.
- (ii) that emphasis be laid upon the individual's abilities, and not upon his disabilities.

The selective placement technique, as described in the succeeding chapter fulfills these conditions and has, in addition, other desirable features.

THE NATURE OF SELECTIVE PLACEMENT

"Selective Placement" is a name which has been arbitrarily assigned to a technique which facilitates the placement in employment of physically disabled persons. The Physical Demands of a job are the product of the physical activities which it requires the worker to perform, together with the environmental conditions encountered. The Physical Capacity of an individual is the product of his ability to perform various physical activities together with his capacity to tolerate various environmental conditions.

Selective Placement is the process whereby physical capacity of individuals is related to the physical demands of jobs combined with normal methods of selection with respect to training, experience, aptitude, ability to learn, and like factors, for the purpose of successfully placing disabled persons in suitable work.

The Selective Placement process, as described in this booklet, is complete and versatile and is free of the disadvantages inherent in the obsolete techniques outlined in Chapter 1. Further, its correct use will enable the conditions set forth in Chapter 1 under the heading "The Objective of This Booklet" to be attained.

The Selective Placement technique herein

described may be modified to suit the needs of particular employers in accordance with the size of their plant, the number of jobs at their command, the volume of their hirings, their hiring procedure and general personnel organization. This Booklet is concerned only with the exposition of the Selective Placement technique in its purest form. The manner in which it may be fitted into various organizations is considered but briefly, as this will be obvious to those with an intimate knowledge of the organization concerned. This application may also be modified to suit the needs of vocational rehabilitation services, such as those of the Department of Veterans Affairs or of special placement services, such as those of the National Employment Service. This booklet deals with its most complete application, such as might be suitable only for larger employers or large rehabilitation or employment agencies. This has been done advisedly as the enunciation of the technique, in its most complete form, provides a simple method of enumerating the largest possible number of points important in the placement of disabled persons in the simplest manner. These are points which should be taken into consideration by all concerned with the employment of disabled persons, even where the technique has been modified or is not to be used in full.

ANALYSIS OF THE PHYSICAL DEMANDS OF JOBS

In order to effect Selective Placement, it is necessary to have sound information regarding the physical demands of jobs and the physical capacities of disabled job applicants.

The physical demands of jobs can be assessed with relative ease as a result of close observation of each individual job. The human body is an excellent machine capable of performing a multitude of mechanical functions. For placement purposes, however, some forty of these activities are significant. These are activities such as walking, standing,

running, bending, crouching, fingering, feeling, handling, gripping, seeing, hearing and the like. Whether or not a particular job calls for these activities, together with the amount and intensity of each activity required in its performance, may be determined. Similarly, there are some thirty environmental conditions which are significant, such as inside, outside, hot, cold, dry, humid, dusty, etc., and again whether or not they are present in a particular job, together with the amount and intensity with which the condition is present, can be determined. Analysis of any

job in this manner, which may be referred to as Physical Demands Analysis, gives a clear picture of its physical requirements.

This Physical Demands Analysis should indicate only the physical activities actually required for the successful performance of each job—that is to say, its minimum physical demands. It will be noted that the manner of performing many jobs is more the product of habit than of sheer physical necessity. Preconceived notions as to the physical demands of jobs frequently give the impression that the majority of jobs call for full physical capacity on the part of the worker, whereas, in fact, it will be found that very few jobs call for the performance of anything like a full range of

physical activities.

Physical Demands Analysis may be carried out by staffs of personnel divisions, or supervisors in industry, or by governmental analysts, depending upon the use to be made of the results. It does not require undue study and training.

Physical Demands Analyses may be recorded on paper in various ways, **or it may be found in certain situations that the placement needs of a particular company can be met where such analyses are affected mentally by the staff member responsible for hiring.** This subject is treated in detail in Chapter 3.

APPRAISAL OF THE PHYSICAL CAPACITY OF WORKERS

The physical capacity of workers may be appraised in terms similar to those used in the Analysis of Physical Demands of Jobs. Thus, it may be determined whether or not a person is capable of walking, standing, running, bending, crouching, fingering, feeling, and the like, and the amount and intensity with which he can perform each activity. Whether or not the person can tolerate the various environmental conditions, such as inside, outside, hot, cold, and the like, together with the amount and intensity of each condition which can be tolerated, can also be determined. The resultant appraisal of the person's positive physical capacity may be called a "Physical Capacity Appraisal."

It will be found that the multitude of activities of which most persons with physical disabilities are still capable of performing is surprisingly great. Those who are themselves without disability are inclined to the unfounded belief that disablement of one or more physical faculties or senses leads to the impairment of other faculties or senses, whereas the reverse is more usually the case.

Reports in the form of appraisals of the potential workers' actual capacity to perform the activities, or tolerate the working conditions, which have placement significance, are of the utmost importance to Placement

Officers. Placement Officers cannot be expected to interpret and evaluate medical diagnoses. Opinions as to a worker's capacity, given in terms such as "suitable for light work," are not only meaningless but dangerous. For example:

"to the man with rheumatism, the humid atmosphere of the tomato house may be unbearable, and yet if the doctor's report stops at the broad classification of 'fit for indoor or outdoor light work' the rheumatic outdoor gardener may find himself sent by a well-meaning Placement Officer to work indoors tomato growing." (1)

There are certain problems to be encountered in the establishment of accurate Physical Capacity Appraisals. Ideally, such appraisals should be made by a qualified physician, for there is no one better fitted so to do. At the same time, it has been found that trained Placement Officers or employment interviewers can establish reasonable Physical Capacity Appraisals in many cases. This is particularly true where the disabled person concerned has been subject to his disability for some time and where the interviewer is skillful in questioning the applicant and has, in addition, some general knowledge of the employment aspects of various dis-

(1) Mr. H. E. Griffiths, M.S., F.R.C.S., Surgeon, Albert Dock Hospital, London, England, at the conference of the National Institute of Industrial Psychology, February 17, 1945.

abling conditions. (2) Nevertheless, certain cases will always have to be referred for medical examination. Part of the training of Placement Officers or Employment Interviewers should be designed to assist them to deter-

- (2) See Part III of the series "The Employment of Canada's Disabled—Veterans and Others" entitled "The Assessment of the Working Capacity of Disabled Persons."

mine on which cases medical opinion is essential.

Physical Capacity Appraisals may be committed to paper in various ways **or may be retained in the mind of the Placement Officer concerned, depending upon the needs of particular situations.** This subject is treated in detail in Chapter 4.

MATCHING OF THE PHYSICAL CAPACITIES OF WORKERS WITH THE PHYSICAL DEMANDS OF JOBS

It is apparent that the physical capacity of disabled workers can be readily matched with the physical demands of jobs. This matching process can be facilitated where the recorded analyses or appraisals are tabulated or produced in "profile" form for easy comparison. It is also apparent that where the matching of well made Physical Demands Analyses with well made Physical Capacity Appraisals is carefully effected, the following will occur:

- (1) The jobs for which particular physically disabled persons are physically qualified will be at once apparent.
- (2) Many new fields of employment for disabled persons will be discovered.

- (3) The physically disabled so placed, will not be handicapped as a result of their disabilities, in that the jobs will call only for those activities which they can do and not for those activities which they cannot do.
- (4) The disabled so placed, will not aggravate their own disabilities or endanger their own safety or that of others, in that all pertinent factors will be carefully weighed.

This matching process is usually carried out by the person or persons responsible for hiring in any given industry, whether or not they actually effect the Physical Capacity Appraisals or the Physical Demands Analyses.

This subject is treated in detail in Chapter 5.

SPECIFIC ADVANTAGES OF THE SELECTIVE PLACEMENT TECHNIQUE

The above advantages of the Selective Placement technique are the result of a number of its features. Among these are:

- (1) THE POSITIVE APPROACH — Emphasis is laid on the 'ability' of the applicant and not upon his or her 'disability.' The disabled are considered for employment as having particular and individual qualifications for it, and need not, there-

fore, be considered as "handicapped cases."

- (2) THE INDIVIDUAL APPROACH — Each disabled job applicant is considered for employment as an individual and with regard to individual job requirements. Not only does this give the disabled applicant the opportunity to demonstrate his merits, but also allows of sufficient

flexibility for the employer to select the job. The disabled need not be considered in groups for groups of jobs, an approach which, as has been shown, rarely leads to success.

- (3) MEDICAL BARRIERS ARE ELIMINATED — One standard pre-placement medical examination is not necessary. This sort of examination usually bars the disabled from employment, as such standards are, of necessity, very often scaled to the requirements of the most strenuous job in the plant. With use of the Selective Placement technique, the Physical Demands Analysis, in effect, sets up an individual standard for each individual job.
- (4) COMMON TERMINOLOGY — Terminology used in the technique and defined in the back of this booklet, pages 55 to 56, provides a common language between physician and placement officer. The placement officer is not required to interpret medical diagnoses as the Physical Capacity Appraisal provides him with information significant for placement purposes. At the same time, the physician, when considering the suitability of a particular applicant for a particular job, may be provided with an accurate statement of the demands of that job. This terminology can obviate much confusion.
- (5) MAINTAINS DOCTOR-PATIENT RELATIONSHIP — The diagnosis of the applicant's condition need not be transmitted to the Placement Officer, as the Physical Capacity Appraisal provides information on remaining capacity for particular physical activities or working conditions only.
- (6) INDIVIDUAL PARTS OF TECHNIQUE ARE OF USE, ONE WITHOUT THE OTHER — The Physical Capacity Appraisal alone provides information of great value to Placement Officers, even though

NOTE: The Selective Placement Process, as described in the remaining parts of this Booklet, refers to selection with respect to physical factors only. Regard must be paid continually to other selection factors, such as training and experience, and the like, in exactly the same way as would be done in the case of able-bodied applicants.

they are not provided with Physical Demands Analyses. Similarly, Physical Demands Analyses are of great use to Placement Officers, even though they are not provided with Physical Capacity Appraisals. "Half a loaf is better than no loaf at all" and where used in standard form, Physical Demands Analyses and Physical Capacity Appraisals provide simple means of transmitting information.

- (7) MAY BE USED IN TRANSFER AS WELL AS INITIAL PLACEMENT OF WORKERS — Selective Placement technique may be used for transferring workers from job to job, and simple arrangements instituted within personnel departments which will ensure no worker is unwittingly transferred to a job which will not be suitable.
- (8) ENABLES EMPLOYERS TO CO-OPERATE WITH COMMUNITY AND OTHER PROGRAMMES OF VOCATIONAL REHABILITATION AND EMPLOYMENT OF DISABLED PERSONS — The fact that accurate information on the physical demands of jobs is available will greatly assist such community and national projects, and over a period of time, will enable scientific information to be collected which will be of great importance to all those concerned with vocational guidance of both the youthful and adult disabled. This will be, in fact, to the advantage of employers and the community as a whole, in that it will in time result in the reduction of tax charges, etc., necessitated for the relief of disabled persons maintained in unnecessary and undesirable idleness.
- (9) OF USE IN INDUSTRIAL AND SAFETY ENGINEERING — Physical demands information will be of value to industrial and safety engineers, and forms an important part of Job Evaluation.

THE NATURE OF PHYSICAL DEMANDS ANALYSIS

Physical Demands Analysis is an extension of Job Analysis. It may be carried out in conjunction with, subsequent to, or independent of, a job analysis programme. A complete job analysis schedule for any job indicates what a worker does, how he does it, why he does it, the physical demands and skill involved, the training required, sources of workers, wages, and standards, etc. (1). Obviously a job analysis is not complete without a Physical Demands Analysis. Although it is obvious, too, that written job analysis schedules will greatly assist employers in matching workers able-bodied and disabled alike and jobs, it is certainly not necessary to write a complete job analysis before attempting a Physical Demands Analysis.

A Physical Demands Analysis is a statement of the minimum physical activities required of a worker in the performance of his job, the working conditions encountered—the hazards involved—and the time and intensity required in each activity, or for each working condition. In certain circumstances, particularly in companies where the jobs involved are relatively few or the volume of hirings relatively small, preparation of written

Physical Demands Analyses may not be desirable. Instead, the Placement Officer concerned with hiring may make mental analyses, but the factors to be considered in this mental process are the same as those to be considered in the written analyses. For this reason, the remainder of this section deals particularly with the written analyses.

Physical Demands Analysis is not difficult to carry out. Where an employer has sufficient information to effect the placement of able-bodied applicants, the only additional information required with respect to the job, to effect the successful placement of disabled applicants, is a knowledge of the job's minimum physical demands.

In the remainder of this booklet Physical Demands Analysis, recorded or otherwise, will be referred to as "P.D.A." The term "analyst" will refer to the person who actually makes out the P.D.A., whether he be a professional or governmental analyst, personnel officer, placement officer, foreman or other. In industry P.D.A.'s will normally be carried out by the Personnel Department assisted by the supervisors in each Department or Division.

(1) Employers interested in job analysis as a whole, can obtain a very excellent booklet called "The Training and Reference Manual for Job Analysis" published by the United States Employment Service, through the United States Government Printing Office, Washington.

PHYSICAL DEMANDS MAY VARY

What the worker does, why he does it, and the skill involved, is constant in most jobs of the same title. For this reason, job analysts usually provide but one analysis for each job of the same title, irrespective of the number of

such jobs found in one place of employment.

It will be found, however, that the physical demands of jobs will vary quite considerably, due to the different arrangement of tasks, in each work station, although their title may be

the same. It will, therefore, be necessary that each individual job be analysed for its physical demands. For example, one spray painter may have to climb ladders, and another may never leave the floor level. For this reason, it is not possible for any central agency such as the government to issue a statement of the physical demands of all jobs, desirable though this might be. It is necessary, therefore, that physical demands analyses be constructed for the different jobs in each different plant. If it is found that the physical demands of two jobs of the same title are, in fact, identical, only one such analysis need be retained.

Preconceived ideas concerning the require-

ments of any given job may prove to be a handicap to the analyst. When studying the physical demands of any job, it will be an asset if the analyst can maintain an open mind. Any previous job knowledge he has will, however, assist him by directing his attention to significant points.

The physical demands analyst is particularly concerned with what the worker does, and how he does it. Rarely will the skill involved or the reasons for which each activity is performed, appear in a P.D.A. They are only recorded when they help to give a clear picture of the physical activities and environmental conditions.

THE STUDY OF MINIMUM PHYSICAL DEMANDS

The analyst should record only those activities which the job calls for. The manner of performing certain jobs is more a matter of habit than of physical necessity. The P.D.A. seeks to determine the minimum physical requirements. The significant factors are the activities which the job calls for, not those of the worker who happens to perform them.

One worker, for example, may jump from a platform to ground level. If, however, steps are or can be provided the activity of jumping is not a requirement of the job.

Another worker may prefer to stand while doing a job at a bench. He may not wish to use the chair provided. Standing is not, however, a physical requirement of this job, at least during those times when he could be sitting.

Many a welder maintains a proper arc by listening to its sound. Hearing is not, however, the essential physical activity. The essential physical activity is seeing, whereby the welder may maintain the proper arc by observing the welding process.

It may sometimes be found that certain physical activities are alternatives, one to the other. Seeing may sometimes be an alter-

native to the sense of touch. One man who cannot see may be able to perform a job by using his sense of touch, whereas another man who cannot feel, may be able to perform the job by directing his motions through the coordination of eye and hand. This may be illustrated by taking the case of the machinist and the machine operator. Either the machinist or the machine operator can place their stock into the chuck of a lathe, using one or another of the senses of touch or seeing. Neither need use both. The machinist who sets up his own machine requires eyesight in order to read micrometers, etc. Therefore, eyesight and not feeling is the essential activity involved in this job. On the other hand, a machine operator is not required to set up his own machine. Thus, a lathe operator may not require vision as well as sense of touch, or vice versa. Where the physical demands are alternative, a statement to this effect should be placed on the P.D.A.

Physical activities of an emergency nature should not be recorded by the analyst. The activities involved in the repair of a machine are not physical demands of the job, if a repairman is normally available to carry it out.

METHODS OF OBTAINING INFORMATION — BY OBSERVATION AND QUESTIONING

It would be an ideal situation were the analyst to be able to observe the whole work cycle, and obtain all his information by direct observation. This will not, of course, be practical where the work cycle is extended. The analyst will, therefore, have to obtain some information by questioning. He may have to question the workers concerning activities which are not performed during the time the job is being watched. He will also have to elicit from the worker certain information about activities being performed during the period of study.

It will always be preferable to obtain the greater part of the information by observing the worker concerned, but certain information will always have to be obtained by questioning the worker or supervisor. However, no hard and fast rule can be laid down as to which information should be obtained by which method.

Insofar as possible, the analyst should obtain the following information by observation:

- (1) the relationship of various physical activities to each other.
- (2) the time that the worker is engaged in each physical activity, or subject to each working condition.

- (3) the number of times the worker is engaged in each physical activity, or subject to each working condition, during the work cycle, or at least during a typical portion of the work cycle, such as one hour or one day.
- (4) the intensity factors, such as the distance walked, the weight lifted, the height climbed, the hottest temperatures reached, etc.

This information should be verified for accuracy by questioning the worker or the supervisor. In addition to verifying this information, the analyst should also obtain the following facts by questioning:

- (1) additional duties not observed by the analyst. This information may reveal additional physical demands.
- (2) weight of the heaviest object lifted, other equipment used by the worker, and other special facts about physical activities and working conditions.
- (3) differences in the way the job is performed on other shifts.

form is modified, then, too, the physical capacity form must be varied in order that the two may be matched.

The form illustrated on page 18 will be used in the remainder of this book. This form enables the significant physical activities and working conditions to be visualized by a glance at the activities and conditions which are set out in tabular form on the front of the

sheet. The reverse of the form allows space for writing in additional details. The correct recording of information in its various sections will result in a clear picture of the

physical activities involved in the job, the environmental conditions present, and the various hazards to which the worker may be subjected.

The various items on the form are described in turn.

JOB TITLE — is the common name by which the job is referred to within the company by management, not labour.

DICTIONARY TITLE — means the title found in the United States Dictionary of Occupational Titles, Part 1. This may be filled in, in the case of companies which use this Dictionary.

OCC. CODE — is the code under which the job is listed in the Dictionary of Occupational Titles, Parts I and II.

WORK CYCLE — means the length of time required by the worker for the series of activities necessary to complete one unit of work, or the length of time before the process is repeated. This may vary from seconds to days with or without regularity. If the cycle is constant, one amount is shown. If not, the approximate range is shown, e.g., 15 to 60 minutes.

PHYSICAL ACTIVITIES

Under the heading "Physical Activities" are listed most of the physical activities found in ordinary employment, and these are numbered serially for ready reference. A marginal column, "Check," is provided to indicate whether or not the activity is required by the job. If required, it is marked "x," if not "o" is used. When in doubt as to whether or not a particular activity is required by the job, the list of definitions at the back of the book, pages 55 to 56, should be referred to, and the

definition considered literally with the activity in question. In order that the analyses be accurate and reliable, it is necessary to make regular reference to the definition of activities and working conditions.

Under the heading of Physical Activities, items 44 to 48 are left blank. In these blanks the analyst may record unusual activities which may be found in certain jobs, such as "tasting" or "smelling".

WORKING CONDITIONS

In this section, terms describing the most common conditions of work, and environmental hazards, are listed serially with a

marginal column as in the first section. Certain hazards are included here, as they are actually part of working conditions. Here again, the

THE PHYSICAL DEMANDS ANALYSIS FORM

Various forms can be devised whereby the analysis of physical demands may be recorded. Many different forms have been made up, but all such forms have many features in common. On page 18 is illustrated a form which has been found suitable for this purpose. It is quite possible to vary this form to suit local conditions, but it should be borne in mind that if the physical demands

PHYSICAL DEMANDS ANALYSIS

Job Title _____ Plant Job No. _____
 Dictionary Title _____ Occ. Code _____
 Company _____ Plant _____ Date _____
 Dept. _____ Work Cycle _____ Shift _____
 Compiled by: _____

PHYSICAL ACTIVITIES

Check Serial No.	Physical Activities	Check Serial No.	Physical Activities	Check Serial No.	Physical Activities
1	Walking	20a	Lifting (1-7 lbs.)	33	Feeling (L. Hand)
2	Standing	20b	Lifting (8-20 lbs.)	34	Gripping (L. Hand)
3	Turning	20c	Lifting (21-45 lbs.)	35	Pushing (L. Arm)
4	Climbing (legs only)	20d	Lifting (over 45 lbs.)	36	Pulling (L. Arm)
5	Climbing (legs and arms)	21a	Carrying (1-7 lbs.)	37	Reaching above shoulder (L. Arm)
6	Sitting	21b	Carrying (8-20 lbs.)	38	Reaching below shoulder (L. Arm)
7	Twisting	21c	Carrying (21-45 lbs.)	39a	Seeing (far)
8	Treading (while sitting) R. Leg	21d	Carrying (over 45 lbs.)	39b	Seeing (near)
9	Treading (while standing) R. Leg	22	Throwing	39c	Seeing (colour)
10	Treading (while sitting) L. Leg	23	Fingering (R. Hand)	39d	Seeing (depth)
11	Treading (while standing) L. Leg	24	Handling (R. Hand)	40	Hearing
12	Balancing	25	Feeling (R. Hand)	41	Talking
13	Running	26	Gripping (R. Hand)	42	Working speed
14	Jumping	27	Pushing (R. Arm)	43	Resting
15	Crawling	28	Pulling (R. Arm)		
16	Scooping	29	Reaching above shoulder (R. Arm)		
17	Crouching	30	Reaching below shoulder (R. Arm)		
18	Kneeling	31	Fingering (L. Hand)		
19	Reclining	32	Handling (L. Hand)		

WORKING CONDITIONS

Check Serial No.	Working Conditions	Check Serial No.	Working Conditions	Check Serial No.	Working Conditions
60	Inside	71	Noisy	82	Electrical hazards
61	Outside	72	Vibration	83	Explosives
62	Hot	73	Poor lighting	84	Radiant energy
63	Cold	74	Poor ventilation	85	Toxic conditions
64	Sudden temp. changes	75	Mechanical Hazards	86	Working with others
65	Humid	76	Moving objects	87	Working around others
66	Dry	77	Cramped quarters	88	Working alone
67	Wet	78	Cluttered floors	89	Hazards to eye
68			Slippery floors	90	
69				91	
70				92	

Details of Physical Activities:—

NOTE:—
Further

conditions present are indicated with an "x" and those not present with an "o".

Very often some doubt may arise as to whether a condition exists to a significant extent. For example, many places may be described as "noisy," "dry," "dusty", etc., though they may not seem to be sufficiently so to justify special mention. In these cases, the definition of the term should be referred to and followed closely.

Under Working Conditions, items 90 to 92 are blank, and the analyst may here record unusual working conditions found in particular jobs such as "around heavy draught animals," or "underground."

It will be noted that the serial numbers in this section start at 60 in order that there be no confusion with items listed in the previous section.

DETAILS OF PHYSICAL ACTIVITIES, WORKING CONDITIONS AND HAZARDS

The front of the form enables information concerning the physical activities, working conditions and hazards to be classified for ready reference. In order to obtain a clear picture of the job adequate for placement purposes, however, further details should be added overleaf. Physical activities, working conditions, and hazards are described in three separate paragraphs. Only the heading "Details of Physical Activities" appears on

the back of the form because the statements will be of variable length. These sections describe the intensity of the various factors present, together with the inter-relation of the activities found. Although the front of the form gives a good picture of the job, the information on the back of the form in these three paragraphs is of the greatest importance to the placement officer.

NOTES ON PHYSICAL ACTIVITIES

In recording the information the analyst should emphasize the physical requirements of the job and, except where necessary for clarity, should not describe duties, equipment or materials. For every activity marked as present on the front of the form, there should be a descriptive statement in the section "Details of Physical Activities" found overleaf although several may be combined in one sentence as illustrated below.

Abundant use should be made of action verbs and these should be placed at the first part of each sentence; the subject, third person singular, is understood. Actual or

estimated distances, weights and frequencies are easy to obtain and should be used to give a positive character to the report.

Indefinite or ambiguous terms should be avoided as far as possible. Expressions such as: frequently, occasionally, heavy, light, etc., and technical terms as: skives, rams, warps, bucks, etc., very often create wrong impressions when used in a P.D.A. and do not give the placement officer a concept of the time and intensity required in the performance of physical activities which is sufficiently specific for the successful placement of disabled persons.

TIME AND INTENSITY FACTORS

Time may be expressed here in minutes or hours, as: "chips files grinds (40 min.)," or as a percentage of the working day, as: "chips files grinds (10%)". Time may also be

expressed by the number of operations per hour or day as "lifts 40 lb. casting 3 feet, 10 times a day." The percentage method of expressing time is useful when the work cycle

extends over a period of days but has the disadvantage that it must be converted to hours to give a satisfactory concept. The other two methods are, therefore, preferable for general use. All of the items marked "x" on the front side of the form should be covered by statements in this section to indicate their relationships to each other. These time and intensity factors are extremely important to the placement officer.

The following examples will serve to illustrate the relationships between physical activities, and the method of indicating time and intensity factors.

CROUCHING, LIFTING, GRASPING AND CARRYING—"Crouches and reaches down to grasp, lift and carry 25 pound metal parts 25 feet, 15-20 times per day."

HANDLING AND FINGERING—Specify the names of parts handled and fingered such as "Reaches forward, grasps, handles, and fingers valve, parts and micro-meters during inspection operations. (3 hrs.)."

PUSHING AND PULLING—Indicate the body position required, the direction pushed or pulled, and the object pushed or pulled such as "Stands and reaches forward to grasp and pull electric wires horizontally through conduit at waist level by bracing one foot against wall." It is not deemed advisable at this time, however, to include information on the force exerted in pushing and pulling since such information may be subject to misinterpretation. For instance in the above example, the worker, who is pulling electric wires horizontally through ½-inch conduit is capable of exerting a force around 150 pounds, on the other hand the body position of another worker reaching high above his head may allow him to exert only a limited pulling force, say 20 pounds. Experience with the pushing and pulling factors reveals that certain body positions require more effort to push or pull 5 pounds than other positions require to push or pull 300 pounds. Until such time, then, as it becomes possible to convert the force exerted in pushing and pulling from all body positions into standardized terms, the analyst should only state the body position required, the direction pushed or pulled and the object pushed or pulled.

CLIMBING, JUMPING, WALKING, AND CRAWLING—Specify the distance climbed, jumped, walked, and crawled such as "Climbs 40-foot ladder to and from crane cab, 4 times per day."

STANDING, STOOPING, CROUCHING, KNEELING, TURNING AND SITTING—The time factors on these activities will automatically explain intensity such as "Stands and stoops over workbench (4 hours)."

REACHING—Indicate the body position required and the direction reached such as "Stoops and reaches down," "Sits and reaches forward," "Stands and reaches above shoulder height," or "Stands and reaches above and below shoulder height."

FEELING—Indicate the reason why feeling is required, as in determining the size, shape, temperature, or texture of objects.

TALKING—If other than ordinary conversation is required, the analyst should indicate the quality of voice required, as in enunciating clearly over a public address system, or should indicate the volume of voice required as in overcoming background noises.

HEARING—Indicate the most difficult sounds required to be heard, such as ordinary conversation or warning whistles amid background noises.

SEEING—Specify the most difficult object required to be seen as well as the distance, such as "observes the indicator on a three-inch dial at 6 feet," or "Observes hand and finger signals at 100 feet."

COLOUR VISION—Specify the colours required to be distinguished such as, "red, green, orange, and brown electric wires."

DEPTH PERCEPTION—Indicate the reason why depth perception is required, such as to judge distance in operating a crane.

When physical activities involving the use of hands, arms, feet, and legs require particularly the use of one hand or arm, or one foot or leg, the analyst should make specific remarks in this connection. For example, "Stands on left leg while actuating trip of press with right leg (2 hours)."

RELATIONSHIP BETWEEN ACTIVITIES—In considering the relationship between activities, it will be noticed in the following example taken from the P.D.A. for an Engine Lathe Operator, that the items on the check list are not written up separately. Since activities are rarely undertaken independently, they

should be written up as they actually occur insofar as possible.

"Stands, stoops, and turns while operating machine (7 hours); walks about 10 feet lifting and carrying chucks and materials not over 30 lbs. (4-6 times per hour); pushes hand truck to transport, loads up to 300 lbs. about 75 feet four times daily; grips and handles lathe control handwheels with both hands to set controls to fine (1/64 inch) etched gradations visually (3 hours) and by fingering and feeling, examines finishes on machine parts

with either hand; stoops to read vernier and other fine etched gradations (2 hours); orally instructs Learner (1 hour)."

ALTERNATIVE ACTIVITIES—As a part of each sentence under Physical Activities, the analyst should record any note concerning activities which are considered to be alternatives. Thus "Seeing required only to direct stock into chuck. May be done by feeling." Or "feeling and fingering may be done by either hand."

NOTES ON WORKING CONDITIONS

The heading "Details of Working Conditions" does not appear on the back of the P.D.A. due to the variations in the length of the section on "Details of Physical Activities." It should be written in by the analyst as a heading directly following the conclusion of that section. These details of working conditions will be written in a similar manner. But in starting the paragraph the analyst should begin with the word "Works," the phrase "The Worker" being understood. He then continues with a brief description of the work environment and the time and intensity factors involved.

TIME AND INTENSITY FACTORS—These time and intensity factors may be indicated as follows:

INSIDE AND OUTSIDE—Specify the conditions under which the worker works inside or outside and the time involved such as "works inside plate shop with one side open to weather (6 hours), and outside in all kinds of weather (2 hours)."

HIGH PLACES—Indicate the height of elevated work places and the type of work place, such as "Works on scaffolding 2 feet wide at heights up to 60 feet (7 hours)."

CRAMPED QUARTERS—Indicate the size of cramped quarters as well as a short description of the cramped quarters, such as "Works in narrow compartments 6 feet by 3 feet by 2 feet (2 hours)."

HOT AND COLD—Indicate the range in degrees of high or low temperatures, such as

"Works in temperatures of 110 to 120 degrees (2 hours)" or "Works in temperatures of 5 degrees to 20 degrees (5 hours)."

SUDDEN TEMPERATURE CHANGES—Indicate the range in degrees of sudden temperature changes such as "Exposed to sudden temperature changes from 120 degrees to prevailing outside temperatures (4 times per day)."

HUMID AND DRY—Humidity and dryness should be related to the temperature when both are pertinent factors, such as "Works in temperature of 100 degrees with very high humidity (7 hours per day)."

WET—Sources of wetness should be indicated, such as "Works in constant contact with wet piping (4 hours)" or "Works in quarters likely to be wet from rain (2 hours)."

LIGHTING—If lighting is inadequate indicate source of light, extent of glare and shadows, and the light contrast between work and surroundings.

NOISY—Indicate the source of the noise, such as "Exposed to noises of nearby riveting hammer (7 hours)."

VIBRATION—Indicate the source of the vibration, such as, "Exposed to vibration from small pneumatic riveting hammer (7 hours)."

DUSTY—Indicate whether dust is of organic or inorganic origin.

If the job differs in any way on other shifts, the analyst should indicate these differences at the end of the paragraph.

NOTES ON HAZARDS

The heading "Details of Hazards" does not appear on the reverse of the Physical Demands Analysis form. It may be written in by the analyst, following the remarks under the previous heading regarding working conditions.

It is not necessary to outline every possible hazard which might be found on the job. Comments should only be placed in this section when the hazard is not obvious from a study of the section on Working Conditions, or where more information is required, or where the hazard has been reduced by safety devices.

It is not necessary to specify any hazard which might result from working in high places, it being obvious that the hazard is the danger of falling. Similarly, hazards resultant from working outside, or in wet conditions, will usually be those of illnesses which will be obvious to both the placement officer and the physician using the form.

It should also be noted that conditions which might be hazardous to an untrained employee will be less so to one skilled in his trade. On the assumption that workers will be placed in jobs within their skill, or will be

trained under supervision, it is not necessary to note, for example, that the carpenter is "liable to injury from cuts by a chisel."

Life is fraught with hazards. Any attempt to list exhaustively every possible hazard would give the placement officer or physician a false conception of the risks involved.

Immediately under the heading "Details of Hazards," the analyst should place the phrase "Possibility of" and then list the added information deemed necessary. He should avoid any expression of the degree of injury which might result from any particular hazard.

Some examples of the sort of notations which might be found, follow:

HIGH PLACES—"Possibility of falling 25' from catwalk to floor reduced by hand-rail."

TOXIC CONDITIONS—"Possibility of respiratory or skin disease from zinc chromate primer, reduced by protective mask and cream," or, "Exhaust fumes affecting those in close proximity to indoor tractor." The source and type of toxic condition should always be specified.

effect their placements without the use of written P.D.A.'s. To match disabled persons in jobs intelligently, it is not enough to know, for example, that walking is required.

In this case, the Placement Officer will have to have either on paper in the form of a recorded P.D.A. or in his mind, information as to how far the worker walks, how often, what if anything he carries and why he does so. This information combined with a knowledge of the floor surfaces traversed, will enable the Placement Officer to determine the suitability of this job, or that, for persons with various leg disabilities which in turn result in varying capacities for walking, etc.

CHAPTER 4

PHYSICAL CAPACITY APPRAISAL

THE NATURE OF PHYSICAL CAPACITY APPRAISAL

Physical Capacity Appraisal is, as its name implies, an appraisal of an individual's positive capacity with relation to the physical activities he can perform, his physical compensations for lost capacities, and the working conditions to which he may be subjected. The Physical Capacity Appraisal is the counterpart of the Physical Demands Analysis. With comparable information on both the job and the worker, the placement or hiring officer may then rapidly select jobs which are suitable, at least in so far as physical factors are concerned.

Physical Capacity Appraisal is, then, an appraisal of the actual working capacity of an individual, in terms which have placement significance, and which are readily understood by the placement officer. It may be passed to Placement Officers as the appraisal of a man's capacity for any work which is available. The decision as to the proper employment of the applicant then rests with the Placement Officer.

"The doctor's duty is to investigate the patient's physical, and to a certain extent, his mental capabilities, and then to convey the results of his examination to the layman who is responsible for the actual placement It is therefore apparent that if the doctor is to be understood by the layman, and vice versa, they must speak a common language The placement officer will have a difficult task if the doctor's report is couched in such words as these:

1. 'Right Hand: guillotine amputation of the index finger through the distal end of the second phalanx. Typical Dupuytran's contracture.

2. Spondylolistheses with compensatory lumbar lordosis.

Let us suppose that such a report is handed to you: Would you (the Placement Officer) be able to tell from it whether he or she (whichever it may be) were capable of—say—welding?

If you were told that the worker could walk, stand, work indoors or outdoors, could balance, climb, kneel, lift, strike, carry and handle, but could not stoop or crouch, you would be in a very much stronger position." (1)

This booklet does not attempt to describe any of the medico-technical considerations in the establishment of such an appraisal. The Physical Capacity Appraisal Form, the use and compilation of which is herein described, provides an excellent means of passing the significant information to the Placement Officer. A Physical Capacity Appraisal may be recorded in various ways, on standard pro forma or in simple memorandum form. **On the other hand, a mental appraisal may be made, and used for placement purposes.** It is preferable, however, to have the physician's appraisal recorded on a suitable pro forma. For this reason, together with the fact that the considerations involved in both the written and mental appraisals are identical, this Section is particularly concerned with the written appraisal.

In the above, where the information is passed to the Employment Officer, he is the final judge. Instances may arise in certain organizations or in certain types of cases where it will be preferred to have the physician give the final employment decision. Here the physician will be handicapped if he has not a full statement of the physical activities and environmental conditions found on the job or jobs in question. This may be overcome if the physician is provided with Physical Demands Analyses.

It would be an ideal situation were the Placement Officer to have all the knowledge of the physician, and vice versa. In some cases, in fact, the industrial physician, who happens to be well acquainted with the jobs in his particular concern, may combine the functions of Placement Officer with those of physician.

¹ Mr. H. E. Griffiths, M.S., F.R.C.S., Surgeon, Albert Dock Hospital, London, England at the Conference of the National Institute of Industrial Psychology, February 17, 1945.

EXAMPLES OF COMPLETED PHYSICAL DEMANDS ANALYSES

Completed physical demands analyses forms are found on pages 37, 41, 45, 49, 50 and 54. These are given as examples of the manner in which such analyses may be completed and recorded on the type of form suggested.

STYLE—A plain simple abbreviated style is most descriptive and informative and is the easiest possible method of recording.

NOTE: Placement Officers responsible for the placement of disabled persons should appreciate the physical activities, working conditions, and hazards in a manner similar to that illustrated in these examples and in the foregoing, even though they intend to

Only rather large concerns have full-time industrial physicians. In such large businesses, the industrial physician is usually so busy with other parts of his occupational health programme as to be unable to study the exact minimum physical demands of every job, let alone other significant demands of training, experience, aptitude and skill. He will, therefore, welcome a division of labour in the placement of the disabled.

Although it is greatly to be preferred to have a trained physician carry out the appraisal capacity, good results can be obtained when appraisals are made out by especially trained employment interviewers. This is particularly true where the employment interviewer or placement officer appreciates the sort of cases upon which medical opinion should be obtained. It applies particularly where the applicant has been subject to his disability for some time, and is aware of his own capacities and limitations. Employment interviewers will find Part III of this series, entitled "Assessment of the Working Capacity of Disabled Persons," of help in this connection.

SOURCES OF MEDICAL OPINION—Although not every employer has a full or

part-time industrial physician at his disposal, there are other resources of medical opinion available to him. One of these is the man's own family doctor. The Department of Veterans Affairs is prepared to assist, and such arrangements as are necessary can be effected through the District Supervisor of Casualty Rehabilitation. Similar arrangements can be made by the Special Placements Section of the National Employment Service.

TERMINOLOGY—The terminology in the Physical Capacity Appraisal Form, on page 25, prevents confusion, and eliminates the necessity of revealing diagnostic information, which might constitute a breach of medical confidence. The definitions of these terms, found on pages 55 to 56, should be referred to. Only by so doing is it possible to differentiate accurately between activities such as "turning" and "twisting," or "stooping" and "crouching."

In the remainder of this booklet, the term "examiner" will be used to refer to the physician or interviewer who makes out the Physical Capacity Appraisal. This Form will be referred to as P.C.A., which should be distinguished from P.D.A.

If the employer wishes to change this Form to suit his own particular needs, the P.D.A. should be changed likewise. In the same way that the physical demands aspect of the Selective Placement Process may be modified to suit local needs, so too, physical capacity aspects can be modified. Certain examiners may prefer to give written reports which utilize the standard terminology but which are not committed to any particular form.

is made for describing the limitations which are merely indicated on the front of the form. "May work . . . hours per day, . . . days per week"—this will be filled in, in the case of tuberculars or cardiacs or others where there is any reason to believe that they cannot work a full day.

In filling out both these sections on the front of the form, various items are indicated as follows: Full capacity for an activity or a condition is indicated by a blank space in the "check" column, partial capacity by a check, and no capacity by a zero. "X" is not used.

On the reverse side of the form, provision

DVA Form RCS 20

PHYSICAL CAPACITY APPRAISAL

Name _____ Case or Appln. No. _____ Dist. or Region _____
Sex _____ Age _____ Weight _____ lbs. Height _____ ft. _____ inches
Employment Interviewer _____ Date _____

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
	1	Walking		20a	Lifting (1—7 lbs.)
	2	Standing		20b	Lifting (8—20 lbs.)
	3	Turning		20c	Lifting (21—45 lbs.)
	4	Climbing (legs only)		20d	Lifting (over 45 lbs.)
	5	Climbing (legs and arms)		21a	Carrying (1—7 lbs.)
	6	Sitting		21b	Carrying (8—20 lbs.)
	7	Twisting		21c	Carrying (21—45 lbs.)
	8	Treading (while sitting) R. Leg		21d	Carrying (over 45 lbs.)
	9	Treading (while standing) R. Leg		22	Throwing
	10	Treading (while sitting) L. Leg		23	Fingering (R. Hand)
	11	Treading (while standing) L. Leg		24	Handling (R. Hand)
	12	Balancing		25	Feeling (R. Hand)
	13	Running		26	Gripping (R. Hand)
	14	Jumping		27	Pushing (R. Arm)
	15	Crawling		28	Pulling (R. Arm)
	16	Stooping		29	Reaching above shoulder (R. Arm)
	17	Crouching		30	Reaching below shoulder (R. Arm)
	18	Kneeling		31	Fingering (L. Hand)
	19	Reclining		32	Handling (L. Hand)
				33	Feeling (L. Hand)
				34	Gripping (L. Hand)
				35	Pushing (L. Arm)
				36	Pulling (L. Arm)
				37	Reaching above shoulder (L. Arm)
				38	Reaching below shoulder (L. Arm)
				39a	Seeing (far)
				39b	Seeing (near)
				39c	Seeing (colour)
				39d	Seeing (depth)
				40	Hearing
				41	Talking
				42	Working speed
				43	Resting
				44	
				45	
				46	
				47	
				48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
	60	Inside		71	Noisy
	61	Outside		72	Vibration
	62	Hot		73	Poor lighting
	63	Cold		74	Poor ventilation
	64	Sudden temp. changes		75	Mechanical Hazards
	65	Humid		76	Moving objects
	66	Dry		77	Cramped quarters
	67	Wet		78	Cluttered floors
	68	Dusty		79	Slippery floors
	69	Dirty		80	High places
	70	Odors		81	Exposure to burns
				82	Electrical hazards
				83	Explosives
				84	Radiant energy
				85	Toxic conditions
				86	Working with others
				87	Working around others
				88	Working alone
				89	Hazards to eye
				90	
				91	
				92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used. See Overleaf.

May work _____ hours per day _____ days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations.

Details of limitations for specific working conditions.

Job objective (if known) _____

M.O.'s comments on job objective _____

M.O.'s signature _____

NOTE:—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments.

DETAILS OF LIMITATIONS FOR SPECIFIC PHYSICAL ACTIVITIES, AND RELATED COMPENSATIONS

In this section, the actual limitations are described briefly for each item marked under the section on the front of the form headed "Physical Activities." For example, if walking was marked with a check, sentences such as "should not be required to walk more than 15 feet at a time," or "should not be required to walk up steep incline unless allowed to take his time" would be entered in this section. The following examples may serve as a guide in making notations:

CLIMBING—"Should not climb more than 10 or 12 feet unless allowed to take time." Or "May climb where steps or rungs are not more than 6 inches apart."

CRAWLING—"Able to crawl occasionally during working day."

STANDING—"Should alternately stand and sit every 15 or 20 minutes." Or "May stand if short rest is possible once an hour." Or "Must lean against bench or similar object while standing."

TURNING—"Able to turn occasionally."

STOOPING—"Able to stoop frequently for very brief periods."

CROUCHING—"Able to crouch if allowed to straighten up every few minutes."

KNEELING—"Able to kneel if allowed to stand up when desired."

SITTING—"Able to sit continually in chair with back."

LIFTING—"May lift up to 20 lbs. up to 6 times per hour."

PUSHING AND PULLING—"Capacity to pull equal to capacity to lift."

HANDLING—"Should not handle object over 10 lbs." Or "Should avoid constant handling."

FINGERING—"Restricted to right hand." Or "May finger intensively if rest periods may be taken when desired."

FEELING—"Feeling with left hand only."

TALKING—"Unable to talk other than in normal voice."

HEARING—"May work where safety does not depend upon auditory warning." Or "Able to hear human voice when raised only."

SEEING—"Field of vision limited to right side."

COLOUR VISION—"Red-green colour blind."

SHIFT WORK—Shift work is not indicated on the front of the P.C.A. Form. If, however, the worker is in some way limited with respect to the shifts he can work, it may be written in one of the blank spaces and checked. Statements such as "Must work day-time hours on regular shifts only" would then be found on the back of the form.

COMPENSATIONS—Physical and mental compensations for the loss or lessening of the power to perform certain physical activities are to be included under the heading "Specific Limitations for Physical Activities and Related Compensations." Following each activity for which a specific physical limitation is described, compensations, if any, should be estimated and written in. Almost invariably a physical disability is accompanied by some degree of physical compensation. This compensation may be as a result of the use of prosthetic appliances, such as limbs, braces and hearing aids, or it may be the result of some specific training such as lip-reading, or again, it may be the result of practice and particular dexterity in the use of remaining function or faculty. Increased muscle development in non-affected limbs is common. Also common is increased ability to use non-affected senses. In addition to these, temperamental compensations often occur, such as increased ambition, determination, perseverance, tolerance, independence, patience, and ingenuity. Although these may be hard to estimate, and a good deal of

experience may be required to estimate them accurately, they should not be overlooked or disregarded.

The following examples may assist the examiner in the construction of notations with regard to specific compensations related to specific limitations for physical activities:

HEARING—"Hearing aid combined with lip-reading enables this man readily to understand oral instructions against ordinary background noises."

WALKING—"Walks with the use of two artificial legs, one for above, the other for below knee amputation, and ordinary floor surfaces present no problem."

FINGERING, FEELING, HANDLING—"Right arm amputated below elbow, fitted with Dorrance hook. Has nearly full capacity for gripping, lifting, pushing, pulling, writing."

DETAILS OF LIMITATIONS FOR SPECIFIC WORKING CONDITIONS

This section comes next on the form and again where a working condition is marked with either a check or an "O" on the front of the form, the specific limitation should be described in this section. Examples of sentences which might be found in this section follow:

HOT, COLD—"Should work in temperatures over 100° Fahrenheit for short periods only." Or "May not work where temperature is below 30 degrees."

SUDDEN TEMPERATURE CHANGES—"Should not be subject to sudden temperature changes more than twice a day."

HUMID—"Cannot stand high humidity when temperature is over 90 degrees."

WET—"Must not stand on wet floors."

Or "Both arms amputated, one above, one below, elbow. Fitted with Dorrance hooks. Has remarkable dexterity with hooks, and performs operations such as writing, tying shoe laces, driving car, holding and lifting small pins from table, etc."

In this connection, it may be noted that one-arm amputees with good prosthesis can be placed almost as for two-handed men.

DEPTH PERCEPTION—"Although worker has but one eye, has adjusted and estimates ranges accurately, and eye-hand co-ordination excellent—e.g., drives car and plays ping-pong."

Information concerning compensations can be gained easily with a little experience on the part of the examiner. Well phrased questions concerning certain activities—such as work done around the home, games played, etc.—elicit this information.

DUSTY—"Should avoid inorganic dust."

NOISY—"Should not work near hammering or other loud noises."

Where it is imperative that the worker have adequate lighting or adequate ventilation, a note to this effect should be made under the "Details of Limitations for Specific Working Conditions." In such a case, no check will appear in the check list portion of the form. Examples may be: "Should not work in dim lighting" or "May work around occasional but not constant vibration."

Compensation may to a certain extent be indicated in this section also. For example, a man may be noted as "Can work in loud, noisy conditions with less than average bother."

MEDICAL OFFICER'S COMMENTS ON JOB OBJECTIVE (IF KNOWN)

In the section Job Objective (if Known), the job objective is inserted. In the next section, the Medical Officer comments upon the job objective from the physical point of view. In an ideal situation a statement of the physi-

cal demands of the job would accompany the referral slip to the Medical Officer so his comments on the job objective could be more accurate and intelligent.

POSSIBLE TRENDS IN APPRAISAL TECHNIQUE

It is admittedly difficult to establish the physical capacity of persons suffering certain disabling conditions, with respect, particularly, to certain activities.

A few research organizations, both in the United States and in the United Kingdom, are endeavouring to develop objective tests which will assist physicians or other examiners.

While such difficulties are appreciated, the person best qualified to effect the appraisal is the physician. Until the appearance of validated objective tests, or until the appearance of other clinical appraisal techniques, the physician must rely upon his professional knowledge and his experience.

The maximum of objectivity attainable at present is achieved when the physician or examiner makes his notes under the headings "Details of Limitations for Specific Physical Activities and Related Compensations" or "Details of Limitations for Specific Working Conditions" in the manner suggested in the examples given above.

Statements such as "May lift up to 20 lbs.

up to 6 times per hour" may be liable to some misinterpretation, but the objectivity and specificity achieved thereby are considerably greater than that obtainable by the use of a rating scale. Rating a worker's ability for, say, "lifting," as being that required to perform "arduous," "heavy," "moderate," "little" or "no" lifting, is relatively easy to write out, but, due to the impossibility of adequately defining these, and due to the fact that no two physicians, job analysts or placement officers will interpret them in the same way, their use is discouraged.

Where the security of medical information is not of prime importance, use of the American Heart Association Therapeutic and Functional Classifications may assist placement officers trained in their interpretation. These classifications can be noted on the reverse of the appraisal form.

Examiners may also wish to consider the temperamental make-up of certain applicants with respect to working conditions such as "high places," "cramped quarters," "working alone" and others.

NOTE: Placement officers responsible for the placement of disabled applicants require information about the applicant's specific limitations and compensations in terms similar to those described above. If the Placement Officer does not get it from the P.C.A. form, he must get it from other sources, for example, consultation with the physician and/or the disabled applicant. Examples of completed Physical Capacity Appraisals are found on pages 35, 39 and 43.

THE MATCHING OF PHYSICAL DEMANDS AND PHYSICAL CAPACITIES

THE MATCHING PROCESS

Placement Officers must have complete information on the skill and physical requirements of jobs on the one hand, and on the other they must have complete information on the skill, aptitudes, interests, and physical capacities of workers, so that the worker and job may be properly matched. It is the method of relating the physical characteristics of workers and jobs that is presented here.

In order to relate P.C.A.'s to P.D.A.'s, Placement Officers should be thoroughly familiar with both techniques. While it is true that Chapters III and IV have been directed primarily to the analyst and physician or examiner, these chapters also contain basic information for the Placement Officer.

In this chapter the term "Placement Officer" is used to denote that official who actually arranges for the matching of man and job. The Placement Officer may in fact be the same person who does the job of examiner, in Chapter IV, or of analyst in Chapter III, or both. Some companies assign the responsibility for the placement of disabled persons to their medical division or to a personnel officer attached to the medical division, others assign this function to their personnel division generally, or to a specially selected personnel officer, and different arrangements can be made to suit the circumstances of every concern.

The P.D.A. Form provides a complete picture of the physical requirements of the job, and the P.C.A. Form provides a record complete for practical purposes of the man's physical capabilities and limitations for employment. The selection, then, on the basis of physical factors, of either a job for a man, or a man for a job, is a matter of matching.

This matching may be done, if the numbers are not too great, by observation and comparison of these two records. The advantages

of the parallel manner in which the fronts of the P.C.A. and P.D.A. Forms are constructed will at once be obvious.

Where the numbers are even smaller it may be done, as has been already pointed out, by a straightforward mental process. At the time, the Placement Officer must always keep in mind the information about man and job which he has obtained through personal contact, through his general knowledge of men and jobs, his good judgment and his general understanding of human nature.

CONSIDERATIONS IN THE MATCHING PROCESS—It will be seen from the above description of the matching process, together with the study of the various examples of forms illustrated throughout the book, that this process will quickly reveal those jobs for which disabled applicants are physically qualified. It will also be apparent that while reasonable matching might be made as a result of co-relation of the information on the face of both the P.D.A. and P.C.A. Forms, nonetheless, the information found on the backs of both forms is of the greatest importance in sound placement.

Applicants should not be rejected automatically due to failure of one or two items to match—the fact that a job apparently calls for certain physical activities or working conditions, for which the disabled applicant is not fitted, should not be considered on its face value as barring him from a job for which he appears otherwise well qualified. The Placement Officer should consider first whether the method of doing the job and not actual physical necessity has been recorded by the analyst. The placement officer should then study the job in detail in order to determine:

- (i) Whether or not the analysis has been correctly made;
- (ii) In consultation with the disabled

applicant concerned, whether or not he can compensate for his disability in regard to these factors; and finally

- (iii) Whether or not it may be possible to modify or re-engineer the job.

It will be seen that this method reduces the considerations to those factors which are relevant. It thus simplifies the task of the Placement Officer so that he does not have to consider all and every aspect of the job, but only those aspects which are of direct importance.

THE RESULT OF ACCURATE MATCHING OF PHYSICAL DEMANDS AND PHYSICAL CAPACITIES

The result will be those advantages enumerated in Chapters I and II which are here recapitulated:

- (i) Suitable jobs for disabled persons will be revealed.
- (ii) The disabled will be able to be fully efficient in the performance of these jobs, and will not be occu-

pationally handicapped.

- (iii) They will not endanger the safety of others.
- (iv) They will not aggravate their disabilities.
- (v) They will not be unduly liable to industrial accident and further disablement.

SUPPLEMENTARY AIDS TO THE MATCHING PROCESS

The procedure involved in the comparison and matching of the P.C.A. and P.D.A. forms, where the numbers involved are not unduly large, is quite effective. When these increase to the point that the Placement Officer cannot rely upon his knowledge of the men and jobs concerned, or where the number of records become so great that a comparison of the existing forms is slow and difficult, a system of tabulation may be employed to facilitate selection.

It is for this purpose that the Physical Demands Recapitulation Form illustrated on Page 33 and the Physical Capacities Form (Modified) illustrated on Page 33 have been devised.

The Recapitulation Form is usually completed for the jobs in each particular plant or department from the information on the front of P.D.A. forms. The jobs are listed down the left hand side of the form, and the activities and conditions involved in each job are

listed in the appropriate column across the face of the sheet. It will be noted that the physical activities and working conditions are numbered identically with those of the P.D.A. form.

A Physical Capacity Appraisal (Modified) may be completed either directly by the doctor, or it may be made out by copying from the regular P.C.A. form. It will be noted that the activities, conditions and other information on the P.C.A. form is duplicated on the P.C.A. Form (Modified).

In selecting possible jobs for a man, this modified form, which is ruler-like in pattern, is placed against the recapitulation form and the various items, which are within the man's capabilities are then noted and the final or trial selection is made from this list. It may also be necessary to refer to the actual P.D.A.'s in order to get the significant information from the reverse of the forms.

POSSIBLE VARIATIONS IN APPLYING THE MATCHING PROCESS

In all the above it has been assumed that, if a physician's appraisal is to be obtained, the physician will examine the disabled applicant, and forward the resulting P.C.A. to the placement officer. Job selection in this situation is made by the placement officer, taking into account the applicant's capacity and skill in relation to job demands and possible vacancies.

In many organizations, however, it may often, if not always, be possible to reverse the process. Where applicants are being selected for particular jobs, the placement officer may prepare a list of jobs available, or for which the applicant is particularly qualified with respect to skill, experience or interest. He may then pass this list to the company's full or part time physician. The physician will see from this list for what jobs the man is being considered. If the doctor has in his possession the Physical Demands

USE BY SMALLER EMPLOYERS

The smaller employer may not have the staffs of physicians, analysts and placement officers mentioned in the booklet so far. This booklet has, however, presented the Selective Placement technique in its pure form. Even though such special full or part time officials are not available to the smaller employer, he himself—or one of his staff—may combine in himself all these functions, although he may not apply the technique in a formal way. He may rely upon outside medical opinion, such as that of the applicant's own physician or that obtained through the Department of Veterans Affairs. He may study the employment aspects of disabling conditions as well.

It is hoped that this booklet will help the

FOLLOW-UP

Post-placement follow-up is a usual feature of good placement operations. It is particularly important that placements of disabled persons be followed up, usually once during the first week after placement, and once after about three to four weeks. This gives the placement officer an opportunity to carry out

Analyses—possibly the Recapitulation Form as well—he can turn to these, and after the examination is completed, he can mark a "Yes" or "No" against each job on the list, indicating that the applicant is physically qualified for the jobs, or not, as the case may be. The list will then be returned to the placement officer, who can confirm placement in the most appropriate of those jobs which are within the applicant's physical capacity.

A method such as that just described will be particularly welcome to the industrial physician, as he would then be relieved of writing or dictating the P.C.A. He will also be relieved of having to commit his appraisal of the workers objective and specific capacity to a few brief sentences which would be intelligible to the lay placement officer. The physician could take into account rather elusive and intangible factors while making his "Yes" or "No" decision.

smaller employer to answer these two significant questions:

1. "What does the job actually require the worker to do—What are the minimum physical demands of this job?"
2. "What can the applicant do—What is his or her physical capacity?"

These questions answered, and combined with the intimate knowledge of jobs and staffs found in smaller organizations, should lead to the best possible type of selective placement.

any necessary adjustments which may make all the difference between a really successful placement and one which is not. Simple adjustments of bench or work station frequently make the difference between partial and full production.

[illegible]

CHAPTER 6

COMPOSITE CASE HISTORIES AND ILLUSTRATIONS OF THE USE OF SELECTIVE PLACEMENT

Below are reproduced the histories of five men. These are composite histories prepared to illustrate not only the use of the selective placement process and the manner of matching physical capacities with physical demands

but also because they give an indication of the way this technique can be used by employers, by the National Employment Service, and by the Department of Veterans' Affairs.

CASE NO. 1—TOM JONES

Tom Jones, 32, married with two children. At the time of Tom's enlistment in an Infantry Battalion in 1939, he was employed as a refrigerator crater. This was a very active job and required the constant use of his hands, arms, legs and feet. However, as it was in keeping with his liking for doing things with his hands, he was a very steady and satisfactory employee.

In 1944, during an attack in Holland, he stepped on a "mine" which caused the loss of his left leg, four inches below the knee. Following immediate treatment, he was returned to Canada in due course where he was fitted with an artificial leg.

With practice and training, he became very proficient in the use of his new limb and could perform most of the activities which he had performed before his injury. He could not, however, remain on his feet for many hours of the day. Consequently, he was no longer suited for his former employment.

He could have taken training for a desk job, but he felt too old for "book work and study." Besides, he wanted to get back to work as soon as possible.

After consultation with the Casualty Rehabilitation Officer in a Department of Veterans' Affairs Hospital, he decided to return to his old employer. He had in his mind one or two jobs which he felt he could do, and which had always interested him. He believed that his seniority, preserved under the Reinstatement in Civil Employment Act, and by the helpful attitude of both Company and Union, would entitle him to one of these jobs.

A representative of his old company welcomed him back, and various jobs were discussed. Crane operation was suggested and this was one of the jobs in which Jones was interested. Immediately following his interview, he was taken to the plant doctor for medical checkup and for the completion of a P.C.A. Form. This he took to the Personnel Office where

DVA Form RCS 20

PHYSICAL CAPACITY APPRAISAL

Name Thomas Jones Case or Appl. No. 327 Dist. or Region York Co.
Sex M Age 32 Weight 165 lbs. Height 5 ft. 10 inches
Employment Interviewer J. B. Smith Date 25 Sept 1945

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
<input checked="" type="checkbox"/>	1	Walking	<input checked="" type="checkbox"/>	20a	Lifting (1-7 lbs.)
<input checked="" type="checkbox"/>	2	Standing	<input checked="" type="checkbox"/>	20b	Lifting (8-20 lbs.)
<input checked="" type="checkbox"/>	3	Turning	<input checked="" type="checkbox"/>	20c	Lifting (21-45 lbs.)
<input checked="" type="checkbox"/>	4	Climbing (legs only)	<input checked="" type="checkbox"/>	20d	Lifting (over 45 lbs.)
<input checked="" type="checkbox"/>	5	Climbing (legs and arms)	<input checked="" type="checkbox"/>	21a	Carrying (1-7 lbs.)
<input checked="" type="checkbox"/>	6	Sitting	<input checked="" type="checkbox"/>	21b	Carrying (8-20 lbs.)
<input checked="" type="checkbox"/>	7	Twisting	<input checked="" type="checkbox"/>	21c	Carrying (21-45 lbs.)
<input checked="" type="checkbox"/>	8	Treading (while sitting) R. Leg	<input checked="" type="checkbox"/>	21d	Carrying (over 45 lbs.)
<input checked="" type="checkbox"/>	9	Treading (while standing) R. Leg	<input checked="" type="checkbox"/>	22	Throwing
<input checked="" type="checkbox"/>	10	Treading (while sitting) L. Leg	<input checked="" type="checkbox"/>	23	Fingering (R. Hand)
<input checked="" type="checkbox"/>	11	Treading (while standing) L. Leg	<input checked="" type="checkbox"/>	24	Handling (R. Hand)
<input checked="" type="checkbox"/>	12	Balancing	<input checked="" type="checkbox"/>	25	Feeling (R. Hand)
<input checked="" type="checkbox"/>	13	Running	<input checked="" type="checkbox"/>	26	Gripping (R. Hand)
<input checked="" type="checkbox"/>	14	Jumping	<input checked="" type="checkbox"/>	27	Pushing (R. Arm)
<input checked="" type="checkbox"/>	15	Crawling	<input checked="" type="checkbox"/>	28	Pulling (R. Arm)
<input checked="" type="checkbox"/>	16	Stooping	<input checked="" type="checkbox"/>	29	Reaching above shoulder (R. Arm)
<input checked="" type="checkbox"/>	17	Crouching	<input checked="" type="checkbox"/>	30	Reaching below shoulder (R. Arm)
<input checked="" type="checkbox"/>	18	Kneeling	<input checked="" type="checkbox"/>	31	Fingering (L. Hand)
<input checked="" type="checkbox"/>	19	Reclining	<input checked="" type="checkbox"/>	32	Handling (L. Hand)
			<input checked="" type="checkbox"/>	33	Feeling (L. Hand)
			<input checked="" type="checkbox"/>	34	Gripping (L. Hand)
			<input checked="" type="checkbox"/>	35	Pushing (L. Arm)
			<input checked="" type="checkbox"/>	36	Pulling (L. Arm)
			<input checked="" type="checkbox"/>	37	Reaching above shoulder (L. Arm)
			<input checked="" type="checkbox"/>	38	Reaching below shoulder (L. Arm)
			<input checked="" type="checkbox"/>	39a	Seeing (far)
			<input checked="" type="checkbox"/>	39b	Seeing (near)
			<input checked="" type="checkbox"/>	39c	Seeing (colour)
			<input checked="" type="checkbox"/>	39d	Seeing (depth)
			<input checked="" type="checkbox"/>	40	Hearing
			<input checked="" type="checkbox"/>	41	Talking
			<input checked="" type="checkbox"/>	42	Working speed
			<input checked="" type="checkbox"/>	43	Resting
			<input checked="" type="checkbox"/>	44	
			<input checked="" type="checkbox"/>	45	
			<input checked="" type="checkbox"/>	46	
			<input checked="" type="checkbox"/>	47	
			<input checked="" type="checkbox"/>	48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
<input checked="" type="checkbox"/>	60	Inside	<input checked="" type="checkbox"/>	71	Noisy
<input checked="" type="checkbox"/>	61	Outside	<input checked="" type="checkbox"/>	72	Vibration
<input checked="" type="checkbox"/>	62	Hot	<input checked="" type="checkbox"/>	73	Poor lighting
<input checked="" type="checkbox"/>	63	Cold	<input checked="" type="checkbox"/>	74	Poor ventilation
<input checked="" type="checkbox"/>	64	Sudden temp. changes	<input checked="" type="checkbox"/>	75	Mechanical Hazards
<input checked="" type="checkbox"/>	65	Humid	<input checked="" type="checkbox"/>	76	Moving objects
<input checked="" type="checkbox"/>	66	Dry	<input checked="" type="checkbox"/>	77	Cramped quarters
<input checked="" type="checkbox"/>	67	Wet	<input checked="" type="checkbox"/>	78	Cluttered floors
<input checked="" type="checkbox"/>	68	Dusty	<input checked="" type="checkbox"/>	79	Slippery floors
<input checked="" type="checkbox"/>	69	Dirty	<input checked="" type="checkbox"/>	80	High places
<input checked="" type="checkbox"/>	70	Odors	<input checked="" type="checkbox"/>	81	Exposure to burns
			<input checked="" type="checkbox"/>	82	Electrical hazards
			<input checked="" type="checkbox"/>	83	Explosives
			<input checked="" type="checkbox"/>	84	Radiant energy
			<input checked="" type="checkbox"/>	85	Toxic conditions
			<input checked="" type="checkbox"/>	86	Working with others
			<input checked="" type="checkbox"/>	87	Working around others
			<input checked="" type="checkbox"/>	88	Working alone
			<input checked="" type="checkbox"/>	89	Hazards to eye
			<input checked="" type="checkbox"/>	90	
			<input checked="" type="checkbox"/>	91	
			<input checked="" type="checkbox"/>	92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used. See Overleaf.

May work _____ hours per day _____ days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations. *Walking standing and climbing somewhat circumscribed due to artificial left leg (amputation 4" below knee).*

Unable to carry awkward or heavy (over 50 lbs.) objects

Can jump down heights of 1 or 2 feet occasionally when not carrying heavy articles

Details of limitations for specific working conditions. *Must be allowed to take his time walking over uneven or cluttered floors and should avoid unusually slippery floors. Should not be required to work continuously in cold (below 25°) or hot (above 80°) temperatures. Extremely dusty conditions may lead to stump irritation*

Job objective (if known) *Crane operator*

M.O.'s comments on job objective. *Will be quite capable of this, providing that he can take his time getting in and out of cab*

M.O.'s signature *Arthur Bland M.D.*

NOTE:—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments.

TOM JONES' NEW JOB PHYSICAL DEMANDS ANALYSIS

DVA Form RCS 2

Job Title *Crane Operator* Dictionary Title *Electric-bridge-crane operator* Plant Job No. _____
Company _____ Occ. Code *5-73.010*
Dept. *Shipping* Work Cycle *1-20 min.* Shift *8 - 5* Plant _____
Compiled by: _____ Date *16 June 45*

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
<input type="checkbox"/>	1	Walking	<input type="checkbox"/>	20a	Lifting (1-7 lbs.)	<input type="checkbox"/>	33	Feeling (L. Hand)
<input type="checkbox"/>	2	Standing	<input type="checkbox"/>	20b	Lifting (8-20 lbs.)	<input checked="" type="checkbox"/>	34	Gripping (L. Hand)
<input type="checkbox"/>	3	Turning	<input type="checkbox"/>	20c	Lifting (21-45 lbs.)	<input checked="" type="checkbox"/>	35	Pushing (L. Arm)
<input checked="" type="checkbox"/>	4	Climbing (legs only)	<input type="checkbox"/>	20d	Lifting (over 45 lbs.)	<input checked="" type="checkbox"/>	36	Pulling (L. Arm)
<input checked="" type="checkbox"/>	5	Climbing (legs and arms)	<input type="checkbox"/>	21a	Carrying (1-7 lbs.)	<input type="checkbox"/>	37	Reaching above shoulder (L. Arm)
<input type="checkbox"/>	6	Sitting	<input type="checkbox"/>	21b	Carrying (8-20 lbs.)	<input checked="" type="checkbox"/>	38	Reaching below shoulder (L. Arm)
<input type="checkbox"/>	7	Twisting	<input type="checkbox"/>	21c	Carrying (21-45 lbs.)	<input checked="" type="checkbox"/>	39a	Seeing (far)
<input type="checkbox"/>	8	Treading (while sitting) R. Leg	<input type="checkbox"/>	21d	Carrying (over 45 lbs.)	<input type="checkbox"/>	39b	Seeing (near)
<input type="checkbox"/>	9	Treading (while standing) R. Leg	<input type="checkbox"/>	22	Throwing	<input checked="" type="checkbox"/>	39c	Seeing (colour)
<input type="checkbox"/>	10	Treading (while sitting) L. Leg	<input type="checkbox"/>	23	Fingering (R. Hand)	<input checked="" type="checkbox"/>	39d	Seeing (depth)
<input type="checkbox"/>	11	Treading (while standing) L. Leg	<input checked="" type="checkbox"/>	24	Handling (R. Hand)	<input type="checkbox"/>	40	Hearing
<input type="checkbox"/>	12	Balancing	<input type="checkbox"/>	25	Feeling (R. Hand)	<input type="checkbox"/>	41	Talking
<input type="checkbox"/>	13	Running	<input checked="" type="checkbox"/>	26	Gripping (R. Hand)	<input type="checkbox"/>	42	Working speed
<input type="checkbox"/>	14	Jumping	<input checked="" type="checkbox"/>	27	Pushing (R. Arm)	<input checked="" type="checkbox"/>	43	Resting
<input type="checkbox"/>	15	Crawling	<input checked="" type="checkbox"/>	28	Pulling (R. Arm)			
<input type="checkbox"/>	16	Stooping	<input type="checkbox"/>	29	Reaching above shoulder (R. Arm)			
<input type="checkbox"/>	17	Crouching	<input type="checkbox"/>	30	Reaching below shoulder (R. Arm)			
<input type="checkbox"/>	18	Kneeling	<input checked="" type="checkbox"/>	31	Fingering (L. Hand)			
<input type="checkbox"/>	19	Reclining	<input checked="" type="checkbox"/>	32	Handling (L. Hand)			

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
<input checked="" type="checkbox"/>	60	Inside	<input checked="" type="checkbox"/>	71	Noisy	<input type="checkbox"/>	82	Electrical hazards
<input type="checkbox"/>	61	Outside	<input type="checkbox"/>	72	Vibration	<input type="checkbox"/>	83	Explosives
<input type="checkbox"/>	62	Hot	<input type="checkbox"/>	73	Poor lighting	<input type="checkbox"/>	84	Radiant energy
<input type="checkbox"/>	63	Cold	<input type="checkbox"/>	74	Poor ventilation	<input type="checkbox"/>	85	Toxic conditions
<input checked="" type="checkbox"/>	64	Sudden temp. changes	<input type="checkbox"/>	75	Mechanical Hazards	<input checked="" type="checkbox"/>	86	Working with others
<input type="checkbox"/>	65	Humid	<input checked="" type="checkbox"/>	76	Moving objects	<input type="checkbox"/>	87	Working around others
<input type="checkbox"/>	66	Dry	<input checked="" type="checkbox"/>	77	Cramped quarters	<input type="checkbox"/>	88	Working alone
<input type="checkbox"/>	67	Wet	<input type="checkbox"/>	78	Cluttered floors			
<input type="checkbox"/>	68	Dusty	<input type="checkbox"/>	79	Slippery floors			
<input type="checkbox"/>	69	Dirty	<input checked="" type="checkbox"/>	80	High			
<input type="checkbox"/>	70	Odors						

NOTE:—In job

Details of Physical Activities:— Climbs ladder to crane cab (20 ft.) 4 times daily. Pushes and pulls various levers intermittently to direct movement of hook with and without load of 2 tons and carriage of crane. Observes constantly the position of hook and load in relation to other objects. Watches for hand signals from other workers. Listens to verbal instructions from foreman.

Details of Working Conditions: Works inside crane cab in well lighted cab. Exposed to noises of heavy power shears and presses. Exposed to sudden changes of temperature when large outside doors are open.

a Placement Officer compared it with a list of jobs and their Physical Demands. It appeared at first, that with respect to physical factors, Tom could do well over half the jobs in the plant. This was cut down to six when Jones' training and experience were considered in the light of actual vacancies. The final choice among these was still crane operation. It so happened that the company had been considering moving the crane operator to another job for some time, and it was decided that this was the time to do it.

At first the foreman was concerned about Tom's ability to get up and down the ladder to the cab. However, his complete confidence was soon established after a trial. Having good co-ordination, vision and common sense, Jones soon learned to handle the crane dexterously. Today he is equally as efficient as his fellow operators and has no occupational handicap.

NOTE:

For the convenience of the reader, Tom's P.C.A. is reproduced on page 35, and the P.D.A. of his new job of crane operator on Page 37. Readers will note that in this particular crane operation job, only gross hand and arm movements are required and no fingering or feeling is involved, and that, therefore, it could be done quite successfully by an arm amputee skilled in the use of his prosthesis. It is very interesting to note in

this connection the exact definitions of such activities as "balancing". (See Page 55, etc.)

The individual capacity of different persons with similar disabilities is well indicated by the different degrees of cold and heat which can be tolerated by different amputees. One amputee with a good stump and good circulation and a background of outdoor work may be able to tolerate temperatures of zero or less, whereas another with a poorer stump, or with an office background, may experience considerable discomfort at 30°.

CASE NO. 2 — JOHN RUTHERFORD

John Rutherford, 22, Single—John received a back injury as a result of a motorcycle accident in England which in turn resulted in the complete paralysis of both legs.

John was a young man with a good grade X education. Following long months of hospitalization, during which he learned to walk slowly and painfully by the use of crutches and orthopaedic braces, and during which he learned self sufficiency and attained reasonable mobility by the use of folding wheel chairs, John was examined by the Department of Veterans' Affairs' Doctor, and the P.C.A. Form on Page 39 was made out. The form was passed to the Casualty Rehabilitation Officer responsible for assisting John to re-establish himself.

From this form, he learned something about John, which he might not otherwise have known, namely, that he should not work in toxic, odorous,

DVA Form RCS 20

PHYSICAL CAPACITY APPRAISAL

Name John Rutherford Case or Appln. No. 513 Dist. or Region York Co.
Sex M Age 22 Weight 150 lbs. Height 5 ft. 10 inches
Employment Interviewer R.S. Metcalfe Date 27 Aug. 1945.

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
<input checked="" type="checkbox"/>	1	Walking	<input checked="" type="checkbox"/>	20a	Lifting (1—7 lbs.)		33	Feeling (L. Hand)
<input checked="" type="checkbox"/>	2	Standing	<input checked="" type="checkbox"/>	20b	Lifting (8—20 lbs.)		34	Gripping (L. Hand)
<input checked="" type="checkbox"/>	3	Turning	<input checked="" type="checkbox"/>	20c	Lifting (21—45 lbs.)		35	Pushing (L. Arm)
<input checked="" type="checkbox"/>	4	Climbing (legs only)	<input checked="" type="checkbox"/>	20d	Lifting (over 45 lbs.)		36	Pulling (L. Arm)
<input checked="" type="checkbox"/>	5	Climbing (legs and arms)	<input checked="" type="checkbox"/>	21a	Carrying (1—7 lbs.)		37	Reaching above shoulder (L. Arm)
<input checked="" type="checkbox"/>	6	Sitting	<input checked="" type="checkbox"/>	21b	Carrying (8—20 lbs.)		38	Reaching below shoulder (L. Arm)
<input checked="" type="checkbox"/>	7	Twisting	<input checked="" type="checkbox"/>	21c	Carrying (21—45 lbs.)		39a	Seeing (far)
<input checked="" type="checkbox"/>	8	Treading (while sitting) R. Leg	<input checked="" type="checkbox"/>	21d	Carrying (over 45 lbs.)		39b	Seeing (near)
<input checked="" type="checkbox"/>	9	Treading (while standing) R. Leg		22	Throwing		39c	Seeing (colour)
<input checked="" type="checkbox"/>	10	Treading (while sitting) L. Leg		23	Fingering (R. Hand)		39d	Seeing (depth)
<input checked="" type="checkbox"/>	11	Treading (while standing) L. Leg		24	Handling (R. Hand)		40	Hearing
<input checked="" type="checkbox"/>	12	Balancing		25	Feeling (R. Hand)		41	Talking
<input checked="" type="checkbox"/>	13	Running		26	Gripping (R. Hand)		42	Working speed
<input checked="" type="checkbox"/>	14	Jumping		27	Pushing (R. Arm)		43	Resting
<input checked="" type="checkbox"/>	15	Crawling		28	Pulling (R. Arm)		44	
<input checked="" type="checkbox"/>	16	Stooping		29	Reaching above shoulder (R. Arm)		45	
<input checked="" type="checkbox"/>	17	Crouching		30	Reaching below shoulder (R. Arm)		46	
<input checked="" type="checkbox"/>	18	Kneeling		31	Fingering (L. Hand)		47	
<input checked="" type="checkbox"/>	19	Reclining		32	Handling (L. Hand)		48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
<input checked="" type="checkbox"/>	60	Inside		71	Noisy	<input checked="" type="checkbox"/>	82	Electrical hazards
<input checked="" type="checkbox"/>	61	Outside		72	Vibration		83	Explosives
<input checked="" type="checkbox"/>	62	Hot		73	Poor lighting		84	Radiant energy
<input checked="" type="checkbox"/>	63	Cold		74	Poor ventilation		85	Toxic conditions
<input checked="" type="checkbox"/>	64	Sudden temp. changes		75	Mechanical Hazards		86	Working with others
<input checked="" type="checkbox"/>	65	Humid	<input checked="" type="checkbox"/>	76	Moving objects		87	Working around others
<input checked="" type="checkbox"/>	66	Dry	<input checked="" type="checkbox"/>	77	Cramped quarters		88	Working alone
<input checked="" type="checkbox"/>	67	Wet	<input checked="" type="checkbox"/>	78	Cluttered floors		89	Hazards to eye
<input checked="" type="checkbox"/>	68	Dusty	<input checked="" type="checkbox"/>	79	Slippery floors		90	
<input checked="" type="checkbox"/>	69	Dirty	<input checked="" type="checkbox"/>	80	High places		91	
<input checked="" type="checkbox"/>	70	Odors	<input checked="" type="checkbox"/>	81	Exposure to burns		92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used. See Overleaf.

May work _____ hours per day _____ days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations. Locomotion is accomplished by means of crutches and splints on both legs or by a wheel-chair. May stand for periods not over 5 minutes, 5 or 6 times per day. Is able to lift 20 lbs. while in a sitting position and to carry 45 lbs. while in wheel-chair. Capable of exceptionally fine work because of unusually high degree of manual and finger dexterity.

Details of limitations for specific working conditions. Must work indoors in adequately heated building. Must avoid steps and slippery or cluttered floors. Due to comparatively slow locomotion while on crutches should avoid such hazards as moving objects and explosives. Should also avoid toxic vapours, dusts, odorous and humid conditions, as he would have great difficulty ridding himself of any resultant respiratory condition.

Job objective (if known) Unknown

M.O.'s comments on job objective. His main handicap will be getting to and from any job. This may be facilitated by adjusting his working hours 10 minutes ahead of rush hours.

M.O.'s signature G. Jackson M.D.

NOTE:—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments.

JOHN RUTHERFORD Could do this job.
PHYSICAL DEMANDS ANALYSIS

DVA Form RCS 25

Job Title Electrical Bench Fitter Plant Job No. _____
Dictionary Title Electrical Instrument Repairman Occ. Code 5-00.911
Company _____ Plant _____
Dept. _____ Work Cycle 10 to 30 min. 8 - 5 Date 4 Oct. 45
Compiled by: _____

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
X	1	Walking	X	20a	Lifting (1-7 lbs.)	X	33	Feeling (L. Hand)
O	2	Standing	O	20b	Lifting (8-20 lbs.)	O	34	Gripping (L. Hand)
O	3	Turning	O	20c	Lifting (21-45 lbs.)	O	35	Pushing (L. Arm)
O	4	Climbing (legs only)	O	20d	Lifting (over 45 lbs.)	O	36	Pulling (L. Arm)
O	5	Climbing (legs and arms)	O	21a	Carrying (1-7 lbs.)	O	37	Reaching above shoulder (L. Arm)
O	6	Sitting	O	21b	Carrying (8-20 lbs.)	O	38	Reaching below shoulder (L. Arm)
O	7	Twisting	O	21c	Carrying (21-45 lbs.)	O	39a	Seeing (far)
O	8	Treading (while sitting) R. Leg	O	21d	Carrying (over 45 lbs.)	O	39b	Seeing (near)
O	9	Treading (while standing) R. Leg	O	22	Throwing	O	39c	Seeing (colour)
O	10	Treading (while sitting) L. Leg	O	23	Fingering (R. Hand)	O	39d	Seeing (depth)
O	11	Treading (while standing) L. Leg	O	24	Handling (R. Hand)	O	40	Hearing
O	12	Balancing	O	25	Feeling (R. Hand)	O	41	Talking
O	13	Running	O	26	Gripping (R. Hand)	O	42	Working speed
O	14	Jumping	O	27	Pushing (R. Arm)	O	43	Resting
O	15	Crawling	O	28	Pulling (R. Arm)		44	
O	16	Scooping	O	29	Reaching above shoulder (R. Arm)		45	
O	17	Crouching	O	30	Reaching below shoulder (R. Arm)		46	
O	18	Kneeling	O	31	Fingering (L. Hand)		47	
O	19	Reclining	O	32	Handling (L. Hand)		48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
X	60	Inside	O	71	Noisy	X	82	Electrical hazards
O	61	Outside	O	72	Vibration	O	83	Explosives
O	62	Hot	O	73	Poor lighting	O	84	Radiant energy
O	63	Cold	O	74	Poor ventilation	O	85	Toxic conditions
O	64	Sudden temp. changes	O	75	Mechanical Hazards	O	86	Working with others
O	65	Humid	O	76	Moving objects	O	87	Working around others
O	66	Dry	O	77	Cramped quarters	O	88	Working alone
O	67	Wet	O	78	Cluttered floors			
O	68	Dusty	O	79	Slippery floors			
O	69	Dirty						
O	70	Odors						

Details of Physical Activities:— Sits (8 hours) while assembling and repairing electric thermostats, relays, and control instruments. Fingers, handles and grips parts and tools weighing up to 5 lbs. Feels while inserting any screws and parts. Reaches to rack at back of bench occasionally for tools. Goes to stockroom (60 feet on same floor) to get new replacement parts 2 or 3 times daily.

Details of Working Conditions: Works inside well lighted and ventilated building around others.

Details of Hazards: Possibility of electric shock while making continuity test on 110 volts.

humid or dusty conditions. This indicates the value of having P.C.A.'s made out by or checked by a qualified physician in certain types of cases. The C.R.O. had never dealt with a case exactly like this before. From various talks with Rutherford, the C.R.O. had developed a pretty fair idea of his mental and physical capacity. He was glad to have his opinion of John's ability confirmed by a qualified physician. It was, of course, obvious that John could do almost any job that did not call for considerable standing or for any marked degree of mobility. A course in watchmaking was arranged at John's request, and he is now taking this course.

However, it is obvious that he could do very many jobs, among them the job of bench fitter, a P.D.A. form for which is shown on Page 41.

CASE NO. 3 — ROBERT WILSON

Robert Wilson, 20, Single—Wilson was a young man who enlisted in the Army in 1943 at the age of 18. He had had no real vocational experience having, since his graduation from school at the age of 16, worked with his father on various odd jobs. He was discharged from the Army some 4 months after he had enlisted.

Wilson had considerable difficulty in finding a job during 1944, but early in 1945, he went into the office of the Special Placements Division of the National Employment Service in his home city. Here, he told his story to the Special Placements Officer who made out the P.C.A. shown on Page 43. Wilson was a reliable young man who gave straight answers to straight questions.

It will be noted from Wilson's P.C.A. that he has limited capacity for climbing, particularly with respect to climbing ladders, but that he is perfectly capable of all other physical activity.

It will also be noted that he is restricted for working in high places, around dangerous machinery and that he should work around others and not alone. There are, of course, an infinite variety of jobs in which these particular limitations would be no occupational handicap. Wilson was particularly keen to get into a job where he would develop a real skill and which would lead to his security.

It so happened that Wilson was placed on the job of terrazzo worker, the physical demands of which are illustrated in the form on Page 45. This was due to the fact that this Company, in common with many others in this city, had carried out a series of physical demands analyses on all their jobs, copies of which they had filed with the Special Placements Division. The selection of this job was rapid and accurate, as these copies were always filed with the job orders in the Employment Service Office.

DVA Form RCS 20

PHYSICAL CAPACITY APPRAISAL

Name Robert Wilson Case or Appln. No. 532 Dist. or Region Vancouver
Sex M Age 19 Weight 132 lbs. Height 5 ft 7 inches
Employment Interviewer F. K. Green Date 13 March 1945

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
	1	Walking		20a	Lifting (1—7 lbs.)		33	Feeling (L. Hand)
	2	Standing		20b	Lifting (8—20 lbs.)		34	Gripping (L. Hand)
	3	Turning		20c	Lifting (21—45 lbs.)		35	Pushing (L. Arm)
	4	Climbing (legs only)		20d	Lifting (over 45 lbs.)		36	Pulling (L. Arm)
	5	Climbing (legs and arms)		21a	Carrying (1—7 lbs.)		37	Reaching above shoulder (L. Arm)
	6	Sitting		21b	Carrying (8—20 lbs.)		38	Reaching below shoulder (L. Arm)
	7	Twisting		21c	Carrying (21—45 lbs.)		39a	Seeing (far)
	8	Treading (while sitting) R. Leg		21d	Carrying (over 45 lbs.)		39b	Seeing (near)
	9	Treading (while standing) R. Leg		22	Throwing		39c	Seeing (colour)
	10	Treading (while sitting) L. Leg		23	Fingering (R. Hand)		39d	Seeing (depth)
	11	Treading (while standing) L. Leg		24	Handling (R. Hand)		40	Hearing
	12	Balancing		25	Feeling (R. Hand)		41	Talking
	13	Running		26	Gripping (R. Hand)		42	Working speed
	14	Jumping		27	Pushing (R. Arm)		43	Resting
	15	Crawling		28	Pulling (R. Arm)		44	
	16	Stooping		29	Reaching above shoulder (R. Arm)		45	
	17	Crouching		30	Reaching below shoulder (R. Arm)		46	
	18	Kneeling		31	Fingering (L. Hand)		47	
	19	Reclining		32	Handling (L. Hand)		48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
	60	Inside		71	Noisy		82	Electrical hazards
	61	Outside		72	Vibration		83	Explosives
	62	Hot		73	Poor lighting		84	Radiant energy
	63	Cold		74	Poor ventilation		85	Toxic conditions
	64	Sudden temp. changes		75	Mechanical Hazards		86	Working with others
	65	Humid		76	Moving objects		87	Working around others
	66	Dry		77	Cramped quarters		88	Working alone
	67	Wet		78	Cluttered floors		89	Hazards to eye
	68	Dusty		79	Slippery floors		90	
	69	Dirty		80	High places		91	
	70	Odors		81	Exposure to burns		92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used.
See Overleaf.

May work _____ hours per day _____ days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations. *Should avoid climbing, such as use of ladders, but may use stairs normally, although should not be required to work actually on stairways.*
Note: This young man unusually determined to secure and hold employment. Medical observation of his work over a period of months might justify upward revision of his capacity to climb and work alone.

Details of limitations for specific working conditions. *Should not work in high places or around hazardous machinery. Should not be employed around open electrical circuits, furnaces or very hot objects. Should not be required to work alone or as part of a team where his rare but occasional absence might cause a work stoppage.*
Terrazzo Worker.

Job objective (if known) _____

M.O.'s comments on job objective _____

M.O.'s signature _____

NOTE:—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments.

PHYSICAL DEMANDS ANALYSIS

Job Title *Terrazzo Worker* Plant Job No. _____
Dictionary Title *as above* Occ. Code *5-24.510*
Company _____ Work Cycle _____ Shift _____
Dept. _____ Date *15 Jan. 45*
Compiled by: *R. Brown*

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activity	Check	Serial No.	Physical Activity	Check	Serial No.	Physical Activity
<input checked="" type="checkbox"/>	1	Walking	<input checked="" type="checkbox"/>	20a	Lifting (1-7 lbs.)	<input type="checkbox"/>	33	Feeling (L. Hand)
<input checked="" type="checkbox"/>	2	Standing	<input checked="" type="checkbox"/>	20b	Lifting (8-20 lbs.)	<input type="checkbox"/>	34	Gripping (L. Hand)
<input checked="" type="checkbox"/>	3	Turning	<input checked="" type="checkbox"/>	20c	Lifting (21-45 lbs.)	<input type="checkbox"/>	35	Pushing (L. Arm)
<input checked="" type="checkbox"/>	4	Climbing (legs only)	<input checked="" type="checkbox"/>	20d	Lifting (over 45 lbs.)	<input type="checkbox"/>	36	Pulling (L. Arm)
<input checked="" type="checkbox"/>	5	Climbing (legs and arms)	<input checked="" type="checkbox"/>	21a	Carrying (1-7 lbs.)	<input type="checkbox"/>	37	Reaching above shoulder (L. Arm)
<input checked="" type="checkbox"/>	6	Sitting	<input checked="" type="checkbox"/>	21b	Carrying (8-20 lbs.)	<input type="checkbox"/>	38	Reaching below shoulder (L. Arm)
<input checked="" type="checkbox"/>	7	Twisting	<input checked="" type="checkbox"/>	21c	Carrying (21-45 lbs.)	<input type="checkbox"/>	39a	Seeing (far)
<input checked="" type="checkbox"/>	8	Treading (while sitting) R. Leg	<input checked="" type="checkbox"/>	21d	Carrying (over 45 lbs.)	<input type="checkbox"/>	39b	Seeing (near)
<input checked="" type="checkbox"/>	9	Treading (while standing) R. Leg	<input checked="" type="checkbox"/>	22	Throwing	<input type="checkbox"/>	39c	Seeing (colour)
<input checked="" type="checkbox"/>	10	Treading (while sitting) L. Leg	<input checked="" type="checkbox"/>	23	Fingering (R. Hand)	<input type="checkbox"/>	39d	Seeing (depth)
<input checked="" type="checkbox"/>	11	Treading (while standing) L. Leg	<input checked="" type="checkbox"/>	24	Handling (R. Hand)	<input type="checkbox"/>	40	Hearing
<input checked="" type="checkbox"/>	12	Balancing	<input checked="" type="checkbox"/>	25	Feeling (R. Hand)	<input type="checkbox"/>	41	Talking
<input checked="" type="checkbox"/>	13	Running	<input checked="" type="checkbox"/>	26	Gripping (R. Hand)	<input type="checkbox"/>	42	Working speed
<input checked="" type="checkbox"/>	14	Jumping	<input checked="" type="checkbox"/>	27	Pushing (R. Arm)	<input type="checkbox"/>	43	Resting
<input checked="" type="checkbox"/>	15	Crawling	<input checked="" type="checkbox"/>	28	Pulling (R. Arm)	<input type="checkbox"/>	44	
<input checked="" type="checkbox"/>	16	Scooping	<input checked="" type="checkbox"/>	29	Reaching above shoulder (R. Arm)	<input type="checkbox"/>	45	
<input checked="" type="checkbox"/>	17	Crouching	<input checked="" type="checkbox"/>	30	Reaching below shoulder (R. Arm)	<input type="checkbox"/>	46	
<input checked="" type="checkbox"/>	18	Kneeling	<input checked="" type="checkbox"/>	31	Fingering (L. Hand)	<input type="checkbox"/>	47	
<input checked="" type="checkbox"/>	19	Reclining	<input checked="" type="checkbox"/>	32	Handling (L. Hand)	<input type="checkbox"/>	48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
<input checked="" type="checkbox"/>	60	Inside	<input checked="" type="checkbox"/>	71	Noisy	<input type="checkbox"/>	82	Electrical hazards
<input checked="" type="checkbox"/>	61	Outside	<input checked="" type="checkbox"/>	72	Vibration	<input type="checkbox"/>	83	Explosives
<input checked="" type="checkbox"/>	62	Hat	<input checked="" type="checkbox"/>	73	Poor lighting	<input type="checkbox"/>	84	Radiant energy
<input checked="" type="checkbox"/>	63	Cold	<input checked="" type="checkbox"/>	74	Poor ventilation	<input type="checkbox"/>	85	Toxic conditions
<input checked="" type="checkbox"/>	64	Sudden temp. changes	<input checked="" type="checkbox"/>	75	Mechanical Hazards	<input type="checkbox"/>	86	Working with others
<input checked="" type="checkbox"/>	65	Humid	<input checked="" type="checkbox"/>	76	Moving objects	<input type="checkbox"/>	87	Working around others
<input checked="" type="checkbox"/>	66	Dry	<input checked="" type="checkbox"/>	77	Cramped quarters	<input type="checkbox"/>	88	Working alone
<input checked="" type="checkbox"/>	67	Wet	<input checked="" type="checkbox"/>	78	Cluttered floors	<input type="checkbox"/>	89	Hazards to eye
<input checked="" type="checkbox"/>	68	Dusty	<input checked="" type="checkbox"/>	79	Slippery floors	<input type="checkbox"/>	90	
<input checked="" type="checkbox"/>	69	Dirty	<input checked="" type="checkbox"/>	80	High places	<input type="checkbox"/>	91	
<input checked="" type="checkbox"/>	70	Odors	<input checked="" type="checkbox"/>	81	Exposure to _____	<input type="checkbox"/>	92	

NOTE:—In check column, activities or conditions present, marked with "O".
Further details may be filled in _____

Details of Physical Activities:— Walks up to 100 feet around job site. Stoops, reaches for, grasps, lifts, and handles a roll of roofing paper weighing up to 20 pounds to spread it over sub-floor as a base (1 hour). Intermittently stoops, crouches, kneels, or crawls, and using either hand spreads and dexterously manipulates a push and pull stroke (4 hours). Using either or both hands, throws marble chips on soft surface of composition. Stands, walks, and turns to push and pull an electric floor surfacing machine (3 hours) to grind marble and polish surfaces. Observes all operations using color vision in working with color patterns. Receives and gives oral instructions.

Details of working conditions: Works with others inside and outside in adequately lighted surroundings. Exposed to dust, dirt, and moisture from sand mixing operations, and to noise and vibration from polishing and grinding machine.

Details of hazards: None, if mask and goggles worn during time polishing machine in operation.

The Company report that Robert is an excellent worker and that he has missed less time from work than the average among their employees.

NOTE:

It so happens that Robert suffers from occasional epileptic seizures. It will be noted that the medical diagnosis of his condition is not indicated on the P.C.A. form. There is no real need that medical diagnosis ever be included on these forms. Nonetheless, on the advice of the Special Placements Officer, Robert told his new employer about his condition and the fact that the employer appre-

ciated the matching of physical capacity and physical demands enabled him to get the job.

This example also serves to illustrate the value of the standard definitions of terms such as found in the back of this Booklet. In connection with this case, it will be interesting to note the exact definitions of "working with others," "working around others," and "working alone," found on page 56.

CASE NO. 4 — JOE RACOWITZ

Joe Racowitz—Joe was in the employ of a small contractor when he was injured in a street accident. As a result, he found it impossible to carry on with his old job of chipper, in the out-fitting department. His employer had taken considerable interest in the placement of disabled persons and felt that here was an opportunity to make practical use of his interest. His being a very small contracting business, he had not thought it worth-while to construct a complete set of P.D.A.'s, but had made notes on the physical demands of many of the jobs in his concern.

He did not have a full-time doctor, but he did have one who was on call in case of accident.

Joe and the employer discussed the case and by questioning, the employer worked out an appraisal of Joe's physical capacity. Between them they decided that Joe couldn't very well run or jump and that he should avoid long walking and standing, and that he should not engage in strenuous pulling and pushing activities which involved the use of his legs. Other than this, there seemed to be little that Joe could not do.

The employer called in the part-time doctor to confirm his findings and found out that they were indeed correct. He could equally well have telephoned Joe's family doctor.

He ruffled through his notes of the physical demands of various jobs and was surprised to see that Joe could do perfectly well the job of chipper in the plate shop. Although he'd always thought of these two jobs as being the same, he was surprised to see that their physical demands were quite different. A man was moved from the plate shop to the outfitting department and Joe is carrying on at his old type of work.

NOTE:

For the interest of readers, Joe's Physical Capacity Appraisal and the analysis of the

physical demands of the two jobs as chipper, such as might have been made out in this case, are found on Pages 47, 48, 49 and 50 respectively.

DVA Form RCS 20

PHYSICAL CAPACITY APPRAISAL

Name: Joe Racowitz

Sex: M

Age: 43

Case or Appln. No.: 736

Dist. or Region: Halifax

Weight: 156 lbs.

Height: 5 ft. 8 inches

Employment Interviewer: G. Lester

Date: 17 Aug. 45

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
V	1	Walking		20a	Lifting (1-7 lbs.)		33	Feeling (L. Hand)
V	2	Standing		20b	Lifting (8-20 lbs.)		34	Gripping (L. Hand)
V	3	Turning		20c	Lifting (21-45 lbs.)		35	Pushing (L. Arm)
V	4	Climbing (legs only)	V	20d	Lifting (over 45 lbs.)		36	Pulling (L. Arm)
	5	Climbing (legs and arms)		21a	Carrying (1-7 lbs.)		37	Reaching above shoulder (L. Arm)
	6	Sitting		21b	Carrying (8-20 lbs.)		38	Reaching below shoulder (L. Arm)
V	7	Twisting		21c	Carrying (21-45 lbs.)		39a	Seeing (far)
O	8	Treading (while sitting) R. Leg		21d	Carrying (over 45 lbs.)		39b	Seeing (near)
V	9	Treading (while standing) R. Leg		22	Throwing		39c	Seeing (colour)
O	10	Treading (while sitting) L. Leg		23	Fingering (R. Hand)		39d	Seeing (depth)
O	11	Treading (while standing) L. Leg		24	Handling (R. Hand)		40	Hearing
O	12	Balancing		25	Feeling (R. Hand)		41	Talking
O	13	Running		26	Gripping (R. Hand)		42	Working speed
	14	Jumping		27	Pushing (R. Arm)		43	Resting
	15	Crawling		28	Pulling (R. Arm)		44	
	16	Stooping		29	Reaching above shoulder (R. Arm)		45	
	17	Crouching		30	Reaching below shoulder (R. Arm)		46	
	18	Kneeling		31	Fingering (L. Hand)		47	
	19	Reclining		32	Handling (L. Hand)		48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
	60	Inside		71	Noisy		82	Electrical hazards
	61	Outside		72	Vibration		83	Explosives
	62	Hot		73	Poor lighting		84	Radiant energy
	63	Cold		74	Poor ventilation		85	Toxic conditions
	64	Sudden temp. changes		75	Mechanical Hazards		86	Working with others
	65	Humid		76	Moving objects		87	Working around others
	66	Dry		77	Cramped quarters		88	Working alone
	67	Wet		78	Cluttered floors		89	Hazards to eye
	68	Dusty		79	Slippery floors		90	
	69	Dirty		80	High places		91	
	70	Odors		81	Exposure to burns		92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used. See Overleaf.

May work.....hours per day.....days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations.....Should avoid prolonged walking and standing.....May climb short distance occasionally.

Should not engage in strenuous pushing and pulling activities which involve the legs. Cannot run or jump.

Details of limitations for specific working conditions.....Nil

Job objective (if known).....Chipper

M.O.'s comments on job objective.....Man knows his limitations and will likely adapt himself to any employment in keeping with the above mentioned limitations.

M.O.'s signature.....Joseph Wilkins M.D.

NOTE:—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments.

JOE RACOWITZ'S OLD JOB
PHYSICAL DEMANDS ANALYSIS
DVA Form RCS

Job Title.....Chipper Out Fitting Dept.....Plant Job No.....
Dictionary Title.....Chipper Metal.....Occ. Code.....6-84.920
Company.....Work Cycle.....Shift.....Date.....
Dept.....
Compiled by:.....

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
X	1	Walking	X	20a	Lifting (1-7 lbs.)
X	2	Standing	X	20b	Lifting (8-20 lbs.)
X	3	Turning	X	20c	Lifting (21-45 lbs.)
X	4	Climbing (legs only)	X	20d	Lifting (over 45 lbs.)
X	5	Climbing (legs and arms)	X	21a	Carrying (1-7 lbs.)
X	6	Sitting	X	21b	Carrying (8-20 lbs.)
X	7	Twisting	X	21c	Carrying (21-45 lbs.)
X	8	Treading (while sitting) R. Leg	X	21d	Carrying (over 45 lbs.)
X	9	Treading (while standing) R. Leg	X	22	Throwing
X	10	Treading (while sitting) L. Leg	X	23	Fingering (R. Hand)
X	11	Treading (while standing) L. Leg	X	24	Handling (R. Hand)
X	12	Balancing	X	25	Feeling (R. Hand)
X	13	Running	X	26	Gripping (R. Hand)
X	14	Jumping	X	27	Pushing (R. Arm)
X	15	Crawling	X	28	Pulling (R. Arm)
X	16	Stooping	X	29	Reaching above shoulder (R. Arm)
X	17	Crouching	X	30	Reaching below shoulder (R. Arm)
X	18	Kneeling	X	31	Fingering (L. Hand)
X	19	Reclining	X	32	Handling (L. Hand)
			X	33	Feeling (L. Hand)
			X	34	Gripping (L. Hand)
			X	35	Pushing (L. Arm)
			X	36	Pulling (L. Arm)
			X	37	Reaching above shoulder (L. Arm)
			X	38	Reaching below shoulder (L. Arm)
			X	39a	Seeing (far)
			X	39b	Seeing (near)
			X	39c	Seeing (colour)
			X	39d	Seeing (depth)
			X	40	Hearing
			X	41	Talking
			X	42	Working speed
			X	43	Resting
				44	
				45	
				46	
				47	
				48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
X	60	Inside	X	71	Noisy
X	61	Outside	X	72	Vibration
X	62	Hot	X	73	Poor lighting
X	63	Cold	X	74	Poor ventilation
X	64	Sudden temp. changes	X	75	Mechanical Hazards
X	65	Humid	X	76	Moving objects
X	66	Dry	X	77	Cramped quarters
X	67	Wet	X	78	Cluttered floors
X	68	Dusty	X	79	Slippery floors
X	69	Dirty	X	80	High places
X	70	Odors	X	81	Exposure to burn
			X	82	Electrical hazards
			X	83	Explosives
			X	84	Radiant energy
			X	85	Toxic conditions
			X	86	Working with others
			X	87	Working around others
			X	88	Working alone
			X	89	Hazards to eye
				90	
				91	
				92	

NOTE:—In check column, activities or conditions present, marked with "X".
Further details may be filled in over this page.

Details of Physical Activities: Climbs about 100 feet up and down hull ramps twice daily, and about 60 feet up and down stairs and ladders 16 times daily, half the time while carrying 40 pounds of equipment (1 hour). Stands, sits, stoops, kneels, crouches, and turns, reaching above and below shoulder height to grasp, lift, handle, push and pull 13 pound chipping gun (7 hours). Observes shipping operations (7 hours).

Details of working conditions: Works in and around all parts of ship (frequently in cramped quarters). Noisy from riveting and hammering on hull and decks of ship.

Details of hazards: Possibility of injury from falling as far as 20 feet, of respiratory irritation from welding and burning fumes, of flashes from nearby welding arcs, of injury from flying metal particles, and of impairment of hearing from chipping and hammering noises and vibration.

PHYSICAL DEMANDS ANALYSIS

Job Title Chipper Plate Shop Plant Job No. _____
 Dictionary Title Chipper Metal Occ. Code 6-84.920
 Company _____ Plant _____
 Dept. _____ Work Cycle _____ Shift _____ Date _____
 Compiled by: _____

PHYSICAL ACTIVITIES

Check Serial No.	Physical Activities	Check Serial No.	Physical Activities	Check Serial No.	Physical Activities
<input checked="" type="checkbox"/> 1	Walking	<input checked="" type="checkbox"/> 20a	Lifting (1-7 lbs.)	<input checked="" type="checkbox"/> 33	Feeling (L. Hand)
<input checked="" type="checkbox"/> 2	Standing	<input checked="" type="checkbox"/> 20b	Lifting (8-20 lbs.)	<input checked="" type="checkbox"/> 34	Gripping (L. Hand)
<input checked="" type="checkbox"/> 3	Turning	<input checked="" type="checkbox"/> 20c	Lifting (21-45 lbs.)	<input checked="" type="checkbox"/> 35	Pushing (L. Arm)
<input checked="" type="checkbox"/> 4	Climbing (legs only)	<input checked="" type="checkbox"/> 20d	Lifting (over 45 lbs.)	<input checked="" type="checkbox"/> 36	Pulling (L. Arm)
<input checked="" type="checkbox"/> 5	Climbing (legs and arms)	<input checked="" type="checkbox"/> 21a	Carrying (1-7 lbs.)	<input checked="" type="checkbox"/> 37	Reaching above shoulder (L. Arm)
<input checked="" type="checkbox"/> 6	Sitting	<input checked="" type="checkbox"/> 21b	Carrying (8-20 lbs.)	<input checked="" type="checkbox"/> 38	Reaching below shoulder (L. Arm)
<input checked="" type="checkbox"/> 7	Twisting	<input checked="" type="checkbox"/> 21c	Carrying (21-45 lbs.)	<input checked="" type="checkbox"/> 39a	Seeing (far)
<input checked="" type="checkbox"/> 8	Treading (while sitting) R. Leg	<input checked="" type="checkbox"/> 21d	Carrying (over 45 lbs.)	<input checked="" type="checkbox"/> 39b	Seeing (near)
<input checked="" type="checkbox"/> 9	Treading (while standing) R. Leg	<input checked="" type="checkbox"/> 22	Throwing	<input checked="" type="checkbox"/> 39c	Seeing (colour)
<input checked="" type="checkbox"/> 10	Treading (while sitting) L. Leg	<input checked="" type="checkbox"/> 23	Fingering (R. Hand)	<input checked="" type="checkbox"/> 39d	Seeing (depth)
<input checked="" type="checkbox"/> 11	Treading (while standing) L. Leg	<input checked="" type="checkbox"/> 24	Handling (R. Hand)	<input checked="" type="checkbox"/> 40	Hearing
<input checked="" type="checkbox"/> 12	Balancing	<input checked="" type="checkbox"/> 25	Feeling (R. Hand)	<input checked="" type="checkbox"/> 41	Talking
<input checked="" type="checkbox"/> 13	Running	<input checked="" type="checkbox"/> 26	Gripping (R. Hand)	<input checked="" type="checkbox"/> 42	Working speed
<input checked="" type="checkbox"/> 14	Jumping	<input checked="" type="checkbox"/> 27	Pushing (R. Arm)	<input checked="" type="checkbox"/> 43	Resting
<input checked="" type="checkbox"/> 15	Crawling	<input checked="" type="checkbox"/> 28	Pulling (R. Arm)		
<input checked="" type="checkbox"/> 16	Scooping	<input checked="" type="checkbox"/> 29	Reaching above shoulder (R. Arm)		
<input checked="" type="checkbox"/> 17	Crouching	<input checked="" type="checkbox"/> 30	Reaching below shoulder (R. Arm)		
<input checked="" type="checkbox"/> 18	Kneeling	<input checked="" type="checkbox"/> 31	Fingering (L. Hand)		
<input checked="" type="checkbox"/> 19	Reclining	<input checked="" type="checkbox"/> 32	Handling (L. Hand)		

WORKING CONDITIONS

Check Serial No.	Working Conditions	Check Serial No.	Working Conditions	Check Serial No.	Working Conditions
<input checked="" type="checkbox"/> 60	Inside	<input checked="" type="checkbox"/> 71	Noisy	<input checked="" type="checkbox"/> 82	Electrical hazards
<input checked="" type="checkbox"/> 61	Outside	<input checked="" type="checkbox"/> 72	Vibration	<input checked="" type="checkbox"/> 83	Explosives
<input checked="" type="checkbox"/> 62	Hot	<input checked="" type="checkbox"/> 73	Poor lighting	<input checked="" type="checkbox"/> 84	Radiant energy
<input checked="" type="checkbox"/> 63	Cold	<input checked="" type="checkbox"/> 74	Poor ventilation	<input checked="" type="checkbox"/> 85	Toxic conditions
<input checked="" type="checkbox"/> 64	Sudden temp. changes	<input checked="" type="checkbox"/> 75	Mechanical Hazards	<input checked="" type="checkbox"/> 86	Working with others
<input checked="" type="checkbox"/> 65	Humid	<input checked="" type="checkbox"/> 76	Moving objects	<input checked="" type="checkbox"/> 87	Working around others
<input checked="" type="checkbox"/> 66	Dry	<input checked="" type="checkbox"/> 77	Cramped quarters	<input checked="" type="checkbox"/> 88	Working alone
<input checked="" type="checkbox"/> 67	Wet	<input checked="" type="checkbox"/> 78	Cluttered floors	<input checked="" type="checkbox"/> 89	Hazards to eye
<input checked="" type="checkbox"/> 68	Dusty	<input checked="" type="checkbox"/> 79	Slippery floors		
<input checked="" type="checkbox"/> 69	Dirty	<input checked="" type="checkbox"/> 80	High places		
<input checked="" type="checkbox"/> 70	Odors	<input checked="" type="checkbox"/> 81	Exposure to burns		

NOTE:—In check column
Further details may be

Details of Physical Activities:— Intermittently crawls, stoops, crouches, kneels, sits, and turns while reaching forward to lift handle, push, and pull 13-pound chipping gun in chipping on flat plates (7 hours). Walks up to 100 feet while carrying chipping gun, and pulling 30-pound hose 3 or 4 times per day. Observes chipping operation.

Details of working conditions: Works inside (70%) and outside in good weather 30%. Noisy from riveting and hammering of nearby workers.

Details of hazards: Possibility of respiratory irritation from welding and burning fumes, of flashes from nearby welding arcs, of injury from flying metal particles, of cuts from sharp edges of tools and materials, and of impairment of hearing, from chipping and hammering noises.

CASE NO. 5 — MARCEL DUPONT

This young ex-serviceman, aged 28, single, suffered the amputation of an arm while overseas. Following his discharge from medical treatment he started work in the office of a small sized engineering company. Although his clerical work was well within his physical and mental capabilities, he did not enjoy the work.

He appeared much more interested in the work going on in the plant. He and the office manager had a number of discussions and then the office manager decided to talk the case over with the plant manager. The plant manager believed that Marcel could be fitted into the shop.

This plant always considered disabled applicants in accordance with their merits. The plant manager had an interview with Marcel and together they went through the various possible openings. After studying Dupont's various qualifications in relation to the various jobs, it was decided that he should start as a learner in the machine shop, first learning to be an engine lathe operator. By questioning, the plant manager carefully ascertained Dupont's physical capacities. It will be noted from the forms on Page 52 and 53 that these matched perfectly with the requirements of the job; P.D.A. Page 54.

Dupont made good progress and both he and the plant manager believe that he could develop skill to operate nearly every machine in the plant, and that in time he will become a first class machinist. He has taken instruction well, and continually practises in the use of his working hand.

He is interested in developing devices which will assist him to perform other jobs and is going into this question with the superintendent of the local orthopaedic and surgical appliance workshop of the Department of Veterans' Affairs.

PHYSICAL CAPACITY APPRAISAL

Name Marcel Dupont Case or Appln. No. 273 Dist. or Region Winnipeg
 Sex M Age 28 Weight 150 lbs. Height 5 ft 9 inches
 Employment Interviewer K. Stearn Date 12 Sept. 45

PHYSICAL ACTIVITIES

Check	Serial No.	Physical Activities	Check	Serial No.	Physical Activities
	1	Walking		20a	Lifting (1-7 lbs.)
	2	Standing	<u>V</u>	20b	Lifting (8-20 lbs.)
	3	Turning	<u>O</u>	20c	Lifting (21-45 lbs.)
	4	Climbing (legs only)		20d	Lifting (over 45 lbs.)
	5	Climbing (legs and arms)	<u>V</u>	21a	Carrying (1-7 lbs.)
	6	Sitting	<u>O</u>	21b	Carrying (8-20 lbs.)
	7	Twisting		21c	Carrying (21-45 lbs.)
	8	Treading (while sitting) R. Leg		21d	Carrying (over 45 lbs.)
	9	Treading (while standing) R. Leg		22	Throwing
	10	Treading (while sitting) L. Leg		23	Fingering (R. Hand)
	11	Treading (while standing) L. Leg		24	Handling (R. Hand)
	12	Balancing		25	Feeling (R. Hand)
	13	Running		26	Gripping (R. Hand)
	14	Jumping		27	Pushing (R. Arm)
	15	Crawling		28	Pulling (R. Arm)
	16	Scooping		29	Reaching above shoulder (R. Arm)
	17	Crouching		30	Reaching below shoulder (R. Arm)
	18	Kneeling	<u>O</u>	31	Fingering (L. Hand)
	19	Reclining	<u>V</u>	32	Handling (L. Hand)
				33	Feeling (L. Hand)
				34	Gripping (L. Hand)
				35	Pushing (L. Arm)
				36	Pulling (L. Arm)
				37	Reaching above shoulder (L. Arm)
				38	Reaching below shoulder (L. Arm)
				39a	Seeing (far)
				39b	Seeing (near)
				39c	Seeing (colour)
				39d	Seeing (depth)
				40	Hearing
				41	Talking
				42	Working speed
				43	Resting
				44	
				45	
				46	
				47	
				48	

WORKING CONDITIONS

Check	Serial No.	Working Conditions	Check	Serial No.	Working Conditions
	60	Inside		71	Noisy
	61	Outside		72	Vibration
	62	Hot		73	Poor lighting
<u>V</u>	63	Cold		74	Poor ventilation
	64	Sudden temp. changes		75	Mechanical Hazards
	65	Humid		76	Moving objects
	66	Dry		77	Cramped quarters
	67	Wet		78	Cluttered floors
	68	Dusty		79	Slippery floors
	69	Dirty		80	High places
	70	Odors		81	Exposure to burns
				82	Electrical hazards
				83	Explosives
				84	Radiant energy
				85	Toxic conditions
				86	Working with others
				87	Working around others
				88	Working alone
				89	Hazards to eye
				90	
				91	
				92	

NOTE—In Check Column, blank space = full capacity; "✓" = partial capacity; "O" = no capacity; "X" is not used. See Overleaf.

May work _____ hours per day _____ days per week, if TB., Cardiac or other disability requiring limited working hours.

Details of limitations for specific physical activities, and related compensations. Handles and grips objects by means of Dorrance Hook for left below elbow amputation. Has partial capacity for lifting and carrying with left arm (up to 20 lbs.) - has considerable dexterity and can perform such activities such as knot-tying and lifting small pins with hook. Has developed unusual strength in right arm and hand and is particularly dextrous with right hand.

Details of limitations for specific working conditions. Should not be required to work in cold conditions more than 15 - 30 minutes at a time.

Job objective (if known) Turret-lathe operator.

M.O.'s comments on job objective. Some provision might have to be made to prevent hook from slipping off rounded handles on lathe, otherwise Dupont would be quite capable as a turret-lathe operator.

M.O.'s signature B. Johnson, M.D.

NOTE—If job objective known, statement of physical demands may be given to M.O., to assist him in making his comments,

PHYSICAL DEMANDS ANALYSIS

DVA Form RCS 2b

Job Title Turret Lathe operator Plant Job No. _____
 Dictionary Title as above Occ. Code 4-78.021
 Company _____ Plant _____ Date 10 Sept. 45.
 Dept. _____ Work Cycle _____ Shift _____
 Compiled by: _____

PHYSICAL ACTIVITIES

Check Serial No.	Physical Activities	Check Serial No.	Physical Activities	Check Serial No.	Physical Activities
<input checked="" type="checkbox"/> 1	Walking	<input checked="" type="checkbox"/> 20a	Lifting (1-7 lbs.)	<input checked="" type="checkbox"/> 33	Feeling (L. Hand)
<input checked="" type="checkbox"/> 2	Standing	<input checked="" type="checkbox"/> 20b	Lifting (8-20 lbs.)	<input checked="" type="checkbox"/> 34	Gripping (L. Hand)
<input checked="" type="checkbox"/> 3	Turning	<input checked="" type="checkbox"/> 20c	Lifting (21-45 lbs.)	<input checked="" type="checkbox"/> 35	Pushing (L. Arm)
<input checked="" type="checkbox"/> 4	Climbing (legs only)	<input checked="" type="checkbox"/> 20d	Lifting (over 45 lbs.)	<input checked="" type="checkbox"/> 36	Pulling (L. Arm)
<input checked="" type="checkbox"/> 5	Climbing (legs and arms)	<input checked="" type="checkbox"/> 21a	Carrying (1-7 lbs.)	<input checked="" type="checkbox"/> 37	Reaching above shoulder (L. Arm)
<input checked="" type="checkbox"/> 6	Sitting	<input checked="" type="checkbox"/> 21b	Carrying (8-20 lbs.)	<input checked="" type="checkbox"/> 38	Reaching below shoulder (L. Arm)
<input checked="" type="checkbox"/> 7	Twisting	<input checked="" type="checkbox"/> 21c	Carrying (21-45 lbs.)	<input checked="" type="checkbox"/> 39a	Seeing (far)
<input checked="" type="checkbox"/> 8	Treading (while sitting) R. Leg	<input checked="" type="checkbox"/> 21d	Carrying (over 45 lbs.)	<input checked="" type="checkbox"/> 39b	Seeing (near)
<input checked="" type="checkbox"/> 9	Treading (while standing) R. Leg	<input checked="" type="checkbox"/> 22	Throwing	<input checked="" type="checkbox"/> 39c	Seeing (colour)
<input checked="" type="checkbox"/> 10	Treading (while sitting) L. Leg	<input checked="" type="checkbox"/> 23	Fingering (R. Hand)	<input checked="" type="checkbox"/> 40	Seeing (depth)
<input checked="" type="checkbox"/> 11	Treading (while standing) L. Leg	<input checked="" type="checkbox"/> 24	Handling (R. Hand)	<input checked="" type="checkbox"/> 41	Hearing
<input checked="" type="checkbox"/> 12	Balancing	<input checked="" type="checkbox"/> 25	Feeling (R. Hand)	<input checked="" type="checkbox"/> 42	Talking
<input checked="" type="checkbox"/> 13	Running	<input checked="" type="checkbox"/> 26	Gripping (R. Hand)	<input checked="" type="checkbox"/> 43	Working speed
<input checked="" type="checkbox"/> 14	Jumping	<input checked="" type="checkbox"/> 27	Pushing (R. Arm)	<input checked="" type="checkbox"/> 44	Resting
<input checked="" type="checkbox"/> 15	Crawling	<input checked="" type="checkbox"/> 28	Pulling (R. Arm)		
<input checked="" type="checkbox"/> 16	Stooping	<input checked="" type="checkbox"/> 29	Reaching above shoulder (R. Arm)		
<input checked="" type="checkbox"/> 17	Crouching	<input checked="" type="checkbox"/> 30	Reaching below shoulder (R. Arm)		
<input checked="" type="checkbox"/> 18	Kneeling	<input checked="" type="checkbox"/> 31	Fingering (L. Hand)		
<input checked="" type="checkbox"/> 19	Reclining	<input checked="" type="checkbox"/> 32	Handling (L. Hand)		

WORKING CONDITIONS

Check Serial No.	Working Conditions	Check Serial No.	Working Conditions	Check Serial No.	Working Conditions
<input checked="" type="checkbox"/> 60	Inside	<input checked="" type="checkbox"/> 71	Noisy	<input checked="" type="checkbox"/> 82	Electrical hazards
<input checked="" type="checkbox"/> 61	Outside	<input checked="" type="checkbox"/> 72	Vibration	<input checked="" type="checkbox"/> 83	Explosives
<input checked="" type="checkbox"/> 62	Hot	<input checked="" type="checkbox"/> 73	Poor lighting	<input checked="" type="checkbox"/> 84	Radiant energy
<input checked="" type="checkbox"/> 63	Cold	<input checked="" type="checkbox"/> 74	Poor ventilation	<input checked="" type="checkbox"/> 85	Toxic conditions
<input checked="" type="checkbox"/> 64	Sudden temp. changes	<input checked="" type="checkbox"/> 75	Mechanical Hazards	<input checked="" type="checkbox"/> 86	Working with others
<input checked="" type="checkbox"/> 65	Humid	<input checked="" type="checkbox"/> 76	Moving objects	<input checked="" type="checkbox"/> 87	Working around others
<input checked="" type="checkbox"/> 66	Dry	<input checked="" type="checkbox"/> 77	Cramped quarters	<input checked="" type="checkbox"/> 88	Working alone
<input checked="" type="checkbox"/> 67	Wet	<input checked="" type="checkbox"/> 78	Cluttered floors	<input checked="" type="checkbox"/> 89	Hazards to eye
<input checked="" type="checkbox"/> 68	Dusty	<input checked="" type="checkbox"/> 79	Slippery floors		
<input checked="" type="checkbox"/> 69	Dirty	<input checked="" type="checkbox"/> 80	High places		
<input checked="" type="checkbox"/> 70	Odors	<input checked="" type="checkbox"/> 81	Exposure to burns		

NOTE:—In check column
Further details may be

Details of Physical Activities:— Stands (100%); stoops and turns while setting up and operating turret lathe (80%); occasionally walks about 10 feet, lifting and carrying chucks and materials not over 30 lbs. (5%); pushes hand truck to transport, loads up to 300 lbs. of stock, each item not more than 30 lbs. about 75 feet (5%); manipulates lathe control handwheels to set controls to fine (1/64 inch) etched gradations (30%); visually examines finish on machined parts (5%); stoops to read vernier and other fine etched gradations (30%); receives oral instruction (15%); fingers and feels work surface.

Note: Fingering and feeling activities are required of one hand only, which may be either.

Details of working conditions: Inside (100%); noisy from operating machines (100%); dirty and greasy from machine equipment (70%); works around other machine shop employees without direct contact (100%); adequate light and ventilation, (100%).

Details of Hazards: Occasionally suffers minor cuts since gloves cannot be worn (70%).

CHAPTER 7

DEFINITIONS OF PHYSICAL ACTIVITIES AND WORKING CONDITIONS

1. WALKING

Moving about on the feet by taking alternate steps setting one foot before the other without running.

2. STANDING

Supporting oneself on the feet and legs in an upright or nearly upright position.

3. TURNING

Twisting partly around while in a standing position- most of the movement being provided by feet, ankles, knees and hips.

4. CLIMBING

(Legs only.) Ascending or descending stairs, ramps or steep grades, etc., using the feet and legs only.

5. CLIMBING

(Legs and Arms.) Ascending or descending ladders, scaffolding, poles, ropes and the like using the hands and arms as well as the feet and legs.

6. SITTING

Resting upon the haunches as in occupying a bench, chair, saddle, squatting or sitting on the heels should be considered as crouching, not sitting.

7. TWISTING

Turning partly around while in a sitting position. Most of the movement provided by waist, back and shoulders.

8. TREADING

Exerting force upon an object by the use of feet (ball of foot or heel) and legs.

12. BALANCING

Walking, standing or running on narrow, slippery or elevated surfaces by maintaining body equilibrium to prevent falling.

13. RUNNING

Moving rapidly by using the feet and legs more quickly than in walking.

14. JUMPING

Projecting the body up, down or horizontally through the air; primarily by the muscular action of the feet and legs.

15. CRAWLING

Moving about on the hands and knees or hands and feet.

16. STOOPING

Bending the body downward and forward by bending the spine only at the waist; not to be confused with crouching.

17. CROUCHING

Bending the body forward and downward by bending the legs and spine; not to be confused with stooping.

18. KNEELING

Bending the legs at the knees to come to rest on the knee or knees.

19. RECLINING

Assuming a horizontal working position on the back, side or front.

20. LIFTING

Raising or lowering an object from one level to another; includes upward pulling.

21. CARRYING

Transporting an object, usually by holding it in the hands and arms.

22. THROWING

Propelling an object through space by swinging motion of the hand and arm with or without the use of tongs or other devices.

23, 31. FINGERING

Picking, pinching, or otherwise working with the fingers primarily rather than with the whole hand or arm, as in Handling).

24, 32. HANDLING

Seizing, holding, grasping, turning or otherwise working with the hand or hands; not to be confused with fingering.

25, 33. FEELING

Perceiving such attributes of objects as size, shape, temperature or texture, by means of receptors in the skin, typically those of the finger tips.

26, 34. GRIPPING

Such as holding firmly by applying pressure, between the thumb and fingers.

27, 35. PUSHING

Exerting force upon an object so that the object moves away from the worker, including slapping, striking and kicking.

28, 26. PULLING

Exerting force upon an object so that the object moves toward the working, including jerking.

29, 30, 37, 38. REACHING

Extending the hands and arms.

39. SEEING

Perceiving the nature of objects by the eye.
 Far: more than 6 feet.
 Near: less than 6 feet.
 Colour: distinguishing between the colours of objects.
 Depth: perceiving relative or absolute distances of an object from the observer or from one object to another.

40. HEARING

Perceiving the nature of sounds by the ear.

41. TALKING

Expressing or exchanging ideas by means of spoken words.

42. WORKING SPEED

In physical demands analysis; the rate of speed the job required of the worker. This item is checked with an "X" only where the job requires a significantly high rate of working speed.

In Physical Capacities analysis; man's capacity or stamina for maintaining high rate of working speed.

DEFINITIONS OF PHYSICAL ACTIVITIES AND WORKING CONDITIONS (Continued)

43. RESTING

In Physical Demands Analysis; in-activity due to the intermittent nature of the job.

In Physical Capacities appraisal: required inactivity due to lack of stamina.

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60. INSIDE

Indoor protection from weather conditions.

61. OUTSIDE

Out of doors, or under an overhead covering with slight protection from the weather.

62. COLD

Temperature sufficiently low to cause perceptible bodily discomfort.

63. HOT

Temperature sufficiently high to cause perceptible bodily discomfort.

64. SUDDEN TEMPERATURE CHANGES

Variations in temperature which are sufficiently marked and abrupt to cause perceptible bodily reactions.

65. HUMID

Atmospheric condition with moisture content sufficiently high to cause perceptible bodily discomfort.

66. DRY

Atmospheric condition with moisture content sufficiently low to cause perceptible bodily discomfort.

67. WET

Contact with water or other liquids.

68. DUSTY

Air filled with small particles of any kind such as textile dust, flour, wood, leather, feathers, etc., and inorganic dust including silica and asbestos, which make the workplace unpleasant or are the source of occupational disease.

69. DIRTY

Necessary contact with or exposure to dirt, litter, soiled materials, etc.

70. ODOURS

Perceptible smells, either toxic or non-toxic. The type of odour should be indicated in P.D.A., as what is pleasant to one person may be unpleasant to another, and they cannot be classified simply as "pleasant" or "unpleasant."

71. NOISY

Sufficient sound to cause thought distraction or possible injury to the sense of hearing.

72. VIBRATION

Production of an oscillating or quivering movement of the body or strain on the muscles, particularly of the legs and arms; as from repeated motion, pressure and shock.

73. POOR LIGHTING

Insufficient light which would cause eyestrain when performing the tasks of this specific job.

74. POOR VENTILATION

Ventilation or lack of it causing either a feeling of suffocation or exposure to drafts.

75. MECHANICAL HAZARDS

Exposure to materials or mechanical parts involving the risk of bodily injury.

76. MOVING OBJECTS

Exposure to moving equipment and objects such as overhead cranes, hand and motor driven vehicles, falling objects, etc., which involve the risk of bodily injury; also the act of operating such equipment.

77. CRAMPED QUARTERS

Working where freedom of movement is restricted or where worker cannot maintain an upright position.

78. CLUTTERED FLOORS

Walking surfaces or workplace necessarily strewn with equipment, tools or materials (not a condition of poor housekeeping), involving the risk of tripping and falling.

79. SLIPPERY FLOORS

Walking surfaces of workplace which involve the risk of slipping and falling due to such agents as grease, oil, water and polish, or due to use as in the case of steel surfaces.

80. HIGH PLACES

Workplace at an elevation above the floor or ground level from which it is possible to fall and be injured.

81. EXPOSURE TO BURNS

Workplace involving the risk of being burned from hot materials, fire or chemical agents.

82. ELECTRICAL HAZARDS

Exposure to high tension wires, transformers, busbars, or other uninsulated or unshielded electrical equipment which involve the risk of electric shock.

83. EXPLOSIVES

Exposure to explosive gases, vapors, dusts, liquids, and substances which involve the risk of bodily injury.

84. RADIANT ENERGY

Exposure to radio-active substances (radium, uranium, thorium, etc.), X-Ray ultra-violet rays, or infra-red rays, which involve the risk of impairment of sight or general or localizing disabling conditions.

85. TOXIC CONDITIONS

Exposure to toxic dusts, fumes, gases, vapors, mists or liquids which cause general or localized disabling conditions as a result of inhalation, ingestion or absorption by the skin.

86. WORKING WITH OTHERS

Job requires occupational co-operation with fellow workers or direct contact with the public.

87. WORKING AROUND OTHERS

Job requires independent occupational effort but in proximity to fellow workers or the public.

88. WORKING ALONE

Job requires independent occupational effort and virtually no contact with fellow workers or the public.

89. HAZARDS TO EYE

Exposure to injury from flying particles as chips, emery, glass, etc.

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