PERSONALITY FACTORS ASSOCIATED WITH PARAPLEGIA

BY

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H. D.

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PART A

CHAPTER I

INTRODUCTION

The advent of new techniques in medicine and sugery gained through experience during the last two decades has enabled the doctor to save the life of many a man who would otherwise have died. Once the crisis of injury and disease has been averted, there remains the problem of rehabilitation. A niche in society must be found for each man.

This study will deal with a group of patients afflicted with a particularly severe trauma, and, it is hoped, some light may be thrown on the means whereby a more successful treatment and rehabilitation can be affected. The patients in question are a group of Paraplegics.

Paraplegia is defined as the transverse severance of the spinal chord. The severity of the resultant limitation of physical capacities varies with the level of the spinal lesion. Paraplegia implies far more than paralysis for such a state is not without its psychological aspects. For these patients, it means a long period of hospitalization, dependence on others, and suffering with never any hope of regaining lost powers. For many, it excludes marriage and the participation in an untold variety of life's activities. The ensuing process of readjustment is a long and bitter struggle, a severe strain on the most stable personality which cannot fail to be affected, even with adequate adaptation to a new mode of life.

Bill, an ambitious young corporal in the artillery, is but one of many tragic examples that might be chosen to portray the handicaps with which the paraplegic is faced. Happily married and approaching the prime of life, Bill had much to live for. Being hit by a shell fragment in the spinal chord, this happy picture has changed. With the lower half of his body hopelessly

paralyzed, Bill has found that most of his life's ambitions have been thwarted. He had hoped to raise a fine family, now he is impotent. His prowess in the field of sports once assured him of a livelihood, now he cannot walk. He has suffered, and will suffer more in the future. Barred from many aspects of a normal life, handicapped in others, Bill now finds and feels that there is little left in life for him.

CHAPTER II

PURPOSE

It is only through knowledge gained from experience in this last war that rehabilitation of the Paraplegic, on any sizable scale, is possible. The group described in this study, in fact, represents one of the first whose treatment seems well nigh a success. However, much is yet to be learned, particularly of the extent and manner in which Paraplegia affects the personality.

To the knowledge of the author, this project represents the first attempt at psychological appraisal of such a group.

Since the patient-doctor relationship is most significant in prolonged treatment, any knowledge which will enable a closer cooperation between the physician and patient is of much value. The patient at first, is despondent. His helplessness and physical dependence leaves him little room for hope. Small wonder then that rapport with these men is difficult to gain, especially in the initial phases of treatment. These cases present difficult problems, at all times requiring special attention. The need of a better understanding of factors inherent in Paraplegia became apparent to the medical personnel. It was for such reason that this project was undertaken.

Thus, the primary purpose in conducting this research was that of endeavouring to yield some insight into the characteristic reactions of the Paraplegic to his debility which might be of aid in the treatment and rehabilitation of these men.

In order to determine the extent of personality change resulting from Paraplegia, the group was administered a battery of psychological tests. It was hoped that this test battery would screen for symptoms of mental pathology in the group members themselves and could therefore be used to indicate where and if psychiatric aid might be needed.

PART B

CHAPTER III

THE MEDICAL PROBLEMS OF PARAPLEGIA

Before describing the manner in which this material has been collected or discussing the results obtained, it would seem advisable to acquaint the reader with the medical problems the patient and staff must face and also various aspects of the treatment. Through a greater appreciation of these problems, it is felt that a more accurate appraisal of the results will be possible.

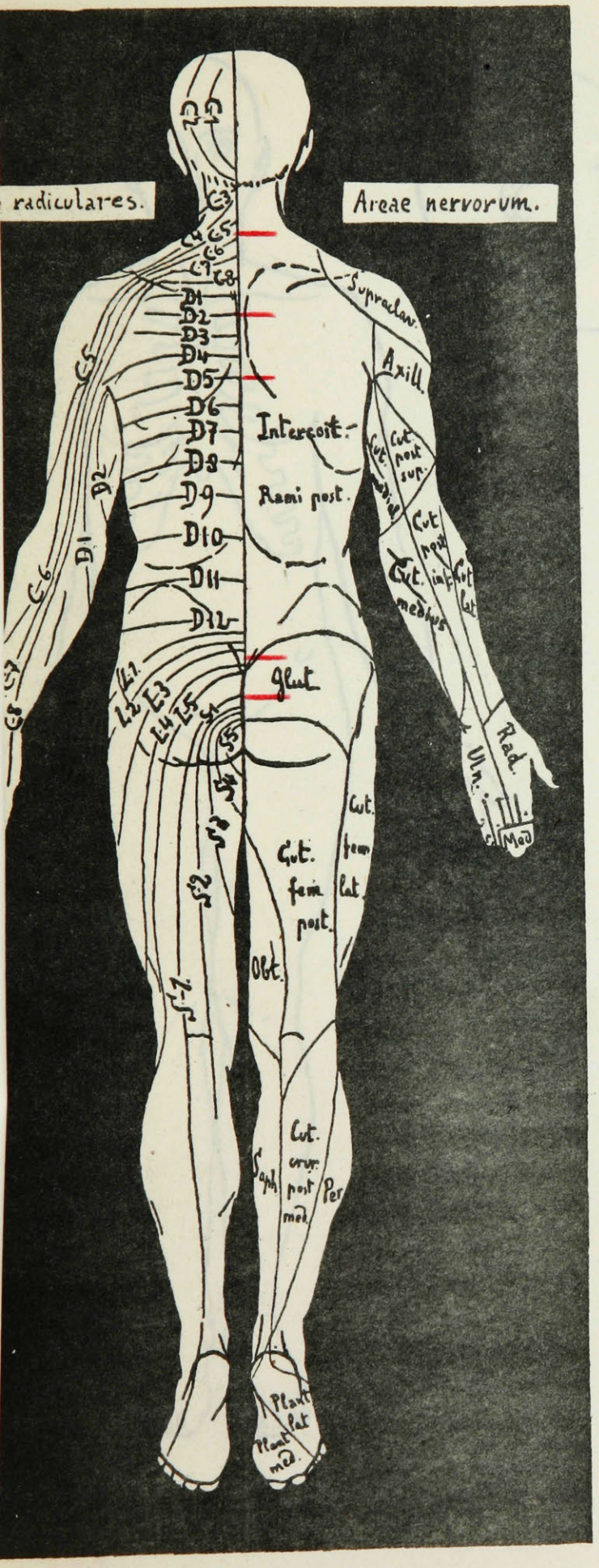
i Physical Limitations

Paraplegia results in an immediate and complete loss of voluntary power below the level of the lesion which is, in effect, a dire limitation of the physical capacities. The complications and accompanying disturbances are many and varied. All skeletal muscles below the level of the lesion are quite toneless since there is a flaccid paralysis, with, of course, a complete loss of visceral and somatic sensations. After a stage of spinal shock there follows a stage of reflex activity known as Paraplegia in flexion, in which spontaneous reflex spasms of the paralyzed limbs may occur and a mild stimulus applied to these members or to the genital region results in a wide spread reflex contraction of the flexor muscles. This is called the mass reflex and is an exaggeration of the normal protective or withdrawal reflex. In this stage there is an automatic emptying of the bladder and rectum. Thus it is evident that walking becomes impossible and genito-urinary control is lost as is sexual potency.+ Referral to the Dermatome chart (P. # 6) will perhaps lend a better appreciation of the relationship between the trauma to spinal

+ Where the lesion is cauda equina there may or may not be a retention of certain of these functions in varying degrees. This explains why five of the patients still possess some sexual capacity.

Dermatome Chart

back



The segmental cutaneous distribution of spinal nerves.

Threshold of Life :- C 5-6

A lesion above this, the bulbar region is always fatal since this is the location of the respiratory and cardiac centers.

Ambulation :- D 2

Any means of ambulation is impossible if the lesion is above this level. In fact, it is seldom possible when above D 5.

N S F Position Sense :- D 5

If the lesion is above this level, the patient is unable to sit without support for he has insufficient position sense.

Cauda Equina :- L 3-4

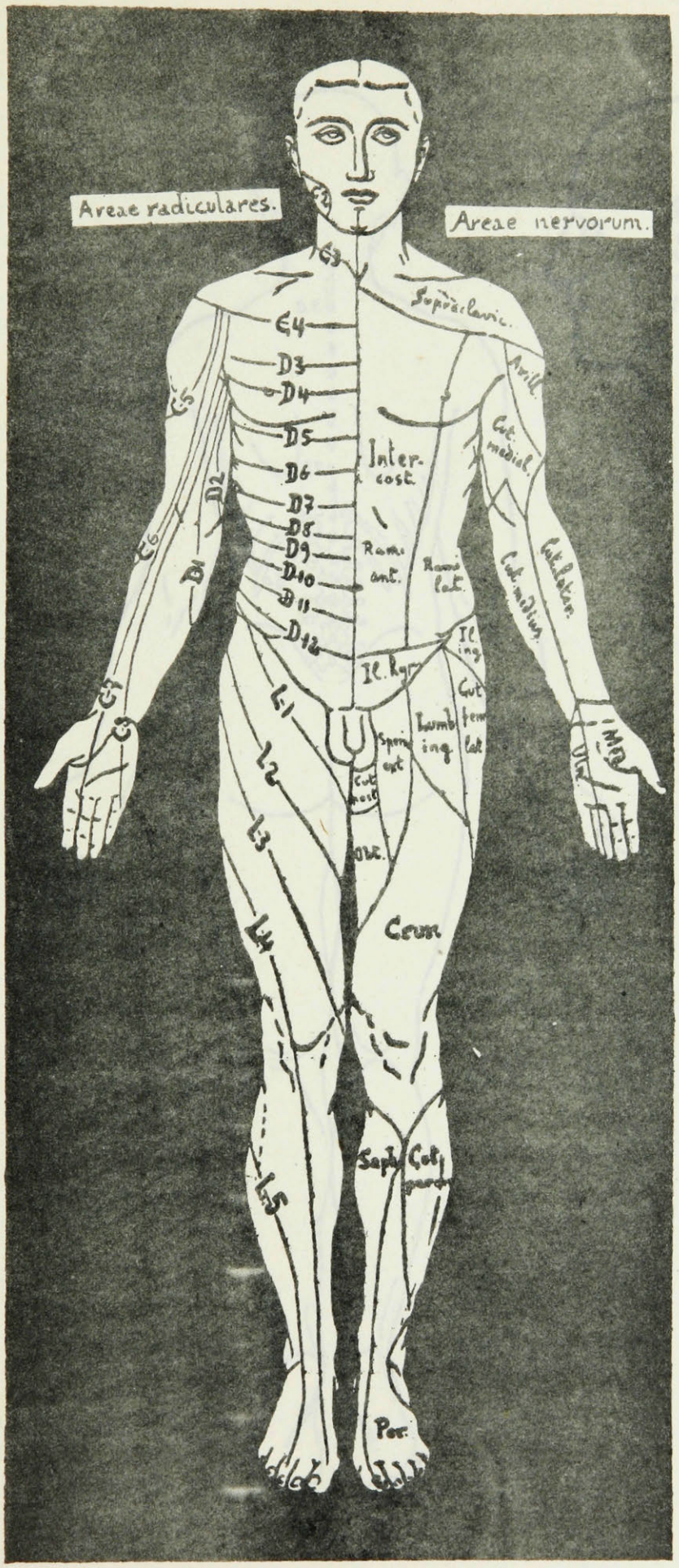
Complete section of the chord below this level is rare, as the nerve fibres branch out. Thus, a lesion at this level, or below, generally leaves the patient with some of the locomotor and/or genito-urinary functions.

Genital Function :- L 2-3

The centers for erection and ejaculation are to be found here.

Sexual Sensation :- S 1, 2, & 3

When the lesion is above this level, no sexual sensation is possible.


Areae radiculares.
Areae nervorum.
C3
C4
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
L1
L2
L3
L4
L5
C5
C6
C7
C8
D1
D2
Supraclavic.
Axill.
Cut. medial.
Cut. radialis.
Cut. medius.
Inter. cost.
Rami ant.
Rami lat.
Il. hyp.
Il. ing.
Cut. fem. lat.
Lumb. ing.
Spin. ant.
Cut. ant.
Ulnr.
Crur.
Saph. Cut.
Per.

chord and the loss of muscular control. Dependent on the case, treatment can bring about some substitution of certain functions.

ii Further Complications

The patient must be relieved of incapacitating spinal reflexes, Paraplegia in flexion, and any accompanying pain. This relief is of further importance, for the ultimate aim in the treatment is some method of ambulation, an impossibility with these complications. Another pressing problem in keeping these patients alive and reasonably well is to combat urinary infections and calculus formation. Constant attention is also necessary to guard against the development of pressure sores (decubitus ulcer) for these greatly prolong treatment and are a source of considerable protein loss.

iii Treatment

Through institution of a tidal drainage apparatus an automatic bladder of good capacity can be established so that all patients can, in time, be expected to void by reflex action. Physiotherapy is necessary to keep the paralyzed muscles from atrophying and to strengthen the upper extremities to be used in crutch walking. (Ambulation is impossible when the lesion is above the second dorsal vertebrae). The exercises used in physiotherapy also help to maintain general body tone. The aid of the surgeon is often needed to cope with urinary complications, pressure sores, inspection of the lesion and so forth. Care must be taken of the diet; a high protein content is required. Occupational therapy is useful, if only to pass the time.

The physical dependence and insecurity brought about by the injury seems responsible for the strong resistance to change found in these patients. They are quick to fight against any new situation or staff member, preferring to cling to the "tried and true". Any alteration to be made in the patient's routine must be carefully considered for its acceptance requires considerable time. The disruption may well outweigh the value to be gained from some proposed change.

The medical staff attending these patients must be permanent. Not only do the patients get used to certain nurses and orderlies, but they in turn come to know their patients' needs, peculiarities and the treatment necessary so that full cooperation and a great saving of time is possible. There should be a purposeful development of the patient-doctor relationship, for this unusually time consuming program, as we shall see later, pays large dividends.

CHAPTER IV

REHABILITATION

i General Plan

Rehabilitation should be a planned method of treatment designed progressively to mobilize all the available resources of the patient with a view to complete adjustment to social and economic needs. He should be administered a program of genuine constructive activity to stimulate the mind and give natural expression to the emotions and aggressive feelings. Care should also be taken to preserve his self-respect. Thus, rehabilitation should be directed to establishing the patient's self-reliance, self-support, and self-respect; ensuring him of an opportunity to earn social acceptance. To be effective, however, the programme must operate on three different levels: on the physical plane by compensating as best as possible for the limitations imposed by debility, on the mental plane by developing latent skills and mental powers, and on the social plane by informing the public completely as to what is being done in rehabilitation. It is hoped that a better understanding of these men and their problems will further their acceptance by the public.

This type of programme requires a thorough psychological study of each individual. We must first know the nature of each individual problem if it is ever to be effectively solved. There are five main areas in the personality pattern that must be explored: 1) the intellectual level of the patient; 2) the varying amounts of aptitudes and special abilities he

possesses; 3) his interests, aims, and ambitions; 4) his attitudes and outlook, the content and extent of his mental life; 5) and the total personality pattern.

ii Factors Implicit in Hospitalization

The factors underlying the hospitalization of each patient must be carefully considered if a scheme for rehabilitation is to have proper orientation. No sooner is a man evacuated as being unsuited for the fighting role than his psychological adjustment is profoundly disturbed. Not only does his physical injury or disease debar him from all service participation, but he loses his mobility, he suffers pain and is suddenly separated from his group relationships. Added to this is the fear of infection which would prolong hospitalization. In place of a steady lifeline of activity which established vectors of stress, strain and responsiveness, he now finds that many of life's motives are thwarted.

iii Value of the Group

Thus, we see that there is vital need for organizing and maintaining the group life of the soldier at all stages of rehabilitation, for this sense of group relationship is a vital factor in maintaining a high level of well-being and purposefulness. The strength and bond of numbers lends a security and confidence to the patient, for in hospital they will see, already there, soldiers like themselves. They are not alone, there are others with whom they can share their problems. The value of the group or large ward extends further in that the patient may gain by the sight of his neighbour's progress. He may participate in discussion and profit out of the experience of the patient who has been hospitalized a long time.

iv Psychological Conflicts

The strain of long periods of dependency, results in social difficulties. Insecurity is a mental and physical threat to the patient and his family. There is a conflict between all the elements of cure -- the instruction which stresses self-preservation, the need for freedom from avoidable worry, the need for mental and physical rest, and the requirements and conflicts of everyday life. Hospitalization is unnatural, unsocial in the strict sense, in that it lacks most of the distinguishing features of a social group, that is, differentiation of function and normal inter-personal relations. Although this period is temporary, it has some of the qualities of permanence - of retirement.

Then too, the patient is the master of a lost art. Seldom will he find local demand for his talents acquired in the aggression of war. Yet, work from which the individual gains personal satisfaction is essential to his readjustment. One of the most important steps toward rehabilitation of the veteran is to keep him occupied in such manner that he will derive this personal satisfaction, and, if possible, promise of future economic security. The social and economic factors cannot be ignored.

Pensions can also be a threat, for a scheme of pensions or disability allowance that is not tied up with treatment, rehabilitation and employment, is not sound and puts a premium on invalidism. There is a temptation to nourish a handicap when it is not to one's financial interest to be rehabilitated.

However, it is believed that if the patient can come to terms with the reality of his illness and settle the problem once and for all, there will be an even greater participation in his attempts at helping himself. The

patient-doctor relationship might be more fully utilized by permitting the patient to unburden himself concerning how he feels about himself in his weakened condition. The value of catharsis cannot be disregarded.

CHAPTER V

SOME PSYCHOLOGICAL ASPECTS OF PARAPLEGIA

To those with a chord lesion the reality of the disability is very obvious. There is the objective fact of being paralyzed, handicapped and failing in the ability to cope with life's situations. They are unable to carry on in many spheres. It is not only an impotence in walking but the realization of a pervasive impotence in the spheres of sex, work, and society. There is the problem of sex. They can see, hear, and feel and yet have no way of expressing the sex urge. That they are greatly frustrated can be seen even by remarks they make.

The patient's fears and doubts are related not only to their inability to walk, but to the whole general picture of helplessness. These doubts and fears are reinforced when they find people staring at them curiously, furtively, and brazenly; conversation dying when they enter a room, and misguided citizens either raising an embarrassing fuss about "our heroes" or merely asking foolish questions. Most of this irritating public behaviour is but the outward manifestation of a deep-seated prejudice. It is the law of the jungle to single out and dispose of weaklings as obvious impediments in the struggle for existence. Centuries of enlightenment have failed to dispel this dislike of the cripple. This idea, passed down through the generations, persists in the subconscious even today, with the result that the man in the street is seldom capable of rational behaviour when he learns that the man he is about to employ or introduce to his friends is the victim of such severe paralysis. Thus, the cripple comes to resent his own weaknesses compensating for his inadequacies by adopting a

variety of special modes of adjustment. Under such conditions it is natural to expect a certain amount of despondency and depression, which are consistent with the reality situation. However, it must be noted that with such a great degree of disability, when neurotic components develop, it is difficult to distinguish the subjective features of a neurosis when the objective aspects of the trauma are so obvious. Then too, these neurotic components are more liable to remain latent, for the sheltered existence of hospital life, requiring less adaptation, puts less strain on the personality.+

+ (Refer to Bell Adjustment, Emotional scale)

PART C

CHAPTER VI

METHOD

The test battery provided the criteria for the measurement and interpretation of the personality changes to be found in the test groups. The actual groups employed and the methods used are described in greater detail below.

i The Norm

The "normal group" to be used as the basis for comparison is the standardized test norms themselves as reported in the literature. Since it is these criteria against which test results are compared and evaluated, it was felt that they would provide a more accurate and reliable norm than any available group of such small size (N=22) for it could well be subject to sampling errors.

ii The Experimental Group - Paraplegia

The experimental group is comprised of twenty-two veterans who were, at the time of testing, undergoing treatment at Ste. Annes Hospital for Paraplegia. The reader is already acquainted with the severity of this injury and with some of the limitations and altered modes of life that it enforces on the hapless victim. The Paraplegic must readjust psychologically. A battery of tests has been used in an effort to determine the manner and degree of this change.

iii The Control Group - Tuberculosis

As we have seen, hospitalization, if for a long period, can of itself bring about certain alterations within the personality. Thus, in order

to determine what is actually related to Paraplegia we must first be able to allow for or discount the effects of hospital life.

A control group of Tubercular patients seemed best to meet requirements of this situation. Thus, a carefully selected group of patients, twenty-two in number, all suffering from pulmonary Tuberculosis were given the same battery of psychological tests.

These men were forced into a life of temporary isolation and prevented from performing much of their usual physical activity, as was the Paraplegic. However, there are several important differences between the two. Tuberculosis, with rest and the proper care, can be cured, allowing the individual to return to a more or less normal, happy life. Not so Paraplegia for it effects a permanent disability. Then too, the T.B. patient though forced to remain relatively idle can rest secure in the knowledge that he still possesses a capacity to function, by and large, comparable to most normal human beings.+ The paraplegic has no such security; he has lost the powers of many a function and is exposed to an untold number of further complications. The fact that the T.B. patient has undergone little, if any, visable mutilation of the human form must not be overlooked for this is another significant difference between the groups.

From this, the greater severity of Paraplegia is evident; it is an injury from which there is little recovery. On the other hand, if the Tuberculosis does not become too advanced, hospitalization, of itself, most probably accounts, in the main, for any changes in the personality of this patient.

+ This cannot be said of all cases of Tuberculosis, to be sure, but holds true for the men in this group, most of whom were well on the road to recovery.

However, there are certain characteristics of Tuberculosis which cannot be overlooked. Though weakness may produce emotional changes or cause tubercular patients to act like children, the mental faculties may become more acute than normal. The toxins of T.B. frequently produce a restlessness which is difficult to control. Some speak of spes phthisicia, but this is probably only the exhilaration from the stimulus of fever rather than an actual euphoria of the disease. Sexual desire, generally, is increased; probably by the forced feeding, returning health and lack of exercise.

iv Rationale

It has been assumed that both groups before injury or disease were relatively normal. This assumption does not seem unwarranted. Since all are enlisted men, they must therefore have been sufficiently stable to pass the psychiatric screening at induction centers. They have all been forced into an unnatural mode of life, hospital life, and for a long period at that, yet the psyche appears sufficiently stable to stand the strain for none has been singled out as a psychiatric case. The Paraplegic was also randomly selected by becoming a particular type of war casualty.

We have seen that factors implicit in hospitalization have an effect on the personality. Thus in order to be able to determine what personality changes are due to Paraplegia, the effects of hospitalization must be controlled. It is to this end that a group of tubercular patients were selected and tested.

Thus the rationale behind the formation of these groups and the conclusions to be drawn concerning Paraplegia can be reduced to a simple formula for interpretation of the results.

Paraplegia - {Tuberculosis / Hospitalization} - Norm = Effects directly related to Paraplegia

(After correction for T.B.)

v Matching of Experimental and Control Groups

Since the number of patients within the Paraplegic group was rather small (N=22), it was imperative that the Experimental and Control groups be highly matched if the conclusions to be drawn from group differences were to be valid.

Intelligence, being one of the main factors in limiting the mental capacities of the individual, was thus the primary concern in selection of the Control group from among members of the T.B. wards. By simply matching these individuals to those of the Experimental group, pair by pair, and thereby equating intelligence between the groups, control of this factor was achieved.

It was also felt that leadership and ability, as measured by army rank, was another important factor to be considered. Following the same method and using as the basis of differentiation, officers as contrasted to all other personnel, the groups were directly matched for this additional factor. However, as there were only four officers among the Paraplegics, there was less control effected by this additional matching. It did, though, serve to further refine the process of selection.

Evolving from the selection of cases was the indirect matching of the groups for several other factors. These served to make the control more exclusive and hence more effective. In view of the fact that the men involved in this study were hospitalized veterans, they are similar in four ways.

First, they are all of the male sex. Their most recent occupation was one of waging war wherein they were under military discipline and shared other aspects of a military life. In the third place, their income was a disability allowance, and finally, they must needs share the dependency and social restrictions implicit in long term hospitalization. The ages of the patients ranged from twenty to thirty-eight, so that they were all, more or less, of middle age.

From the number of factors under control, it should be evident that the groups were highly matched. Indeed, considering only the factors of intelligence and army rank, the groups showed a correlation of + .991 which is most reliable.

CHAPTER VII

THE PRESENTATION OF THE TEST MATERIAL

i WECHSLER-BELLEVUE

Since intelligence was to be the major factor in matching the Experimental and Control groups, the method selected to measure the I.Q. had to be highly reliable.

Indeed, the Wechsler-Bellevue test as well as the others used in the battery had to fulfill, more or less, the requirements of: 1) reliability and validity, 2) the mental capacities to be estimated, 3) intertest variety and time economy, 4) clinical screening capacity, 5) not requiring manual manipulation, 6) being available in both French and English.

An abbreviated scale of the Wechsler-Bellevue was chosen, comprised of the subtests of Similarities, Information, Picture Completion and Digit Span subtests. These four subtests were chosen to the exclusion of the others for they best fulfilled the requirements of this test situation.+ That this abbreviated scale is adequately reliable is shown by a multiple correlation of + .823 between the subtests and the full scale.

Similarities

Since this subtest measures the level of concept formation and a very significant difference was found to exist ($P = \angle .001$) between the groups, it can be assumed that the T.B. patients have less ability to discriminate between the superficial and the essential. This might be due to a less mature and/or impulsive type of personality. (For further amplification of this point see Rorschach, particularly FK).

+ The subtests were chosen from among those of two "Clinically Abbreviated Wechsler-Bellevue Scales", presented by Geil in his work on prisoners.

STATISTICAL ANALYSIS OF THE SUBTESTS

TABLE 1

Comparison of the Experimental and Control groups.

	Mean		Std. Dev		σ_m			
	Para	TB	Para	TB	Para	TB	r	P +
Simil.	12.0	10.8	2.4	2.5	.52	.56	+.825	.001 /
Info.	11.9	11.5	1.9	2.2	.42	.49	+.262	- *
Pic.Co	12.8	13.2	1.7	1.8	.38	.38	+.335	.37
Dig.Sp	8.7	10.7	2.8	2.9	.60	.63	+.549	.002

+ P = a probability ratio, the number of chances in 1.00 that the given differences between the obtained and normal frequencies are attributable to fluctuations of random sampling. The fewer the number of cases, the greater the room for the operation of chance factors. Values of .05 and .01 have been established as indicating "significant" and "very significant" differences respectively. Values approaching these levels may be interpreted as tendencies in the given direction.

* P values higher than .50 are not reported since they do not indicate any reliable difference.

TABLE 2

Correlations of the Subtests with the Full Scale :-

Simil.	+.727	Multiple Correlation = +.823
Info.	+.667	
Pic.Co	+.605	
Dig.Sp	+.509	

TABLE 3

Correlation between I.Q. and less % Mental Deterioration +:-

	r	P
Paraplegia	+.550	.02
Tuberculosis	+.292	.20

+ % Mental Deterioration most probably indicates an impairment of function and not actual brain cell deterioration per se. The net result, however, is that the individual functions below his mental level. (The values reported here have been derived after the method proposed by D. Wechsler.)

Information

Since this subtest has been designed to yield some indication of the intellectual capacity and since the groups have been matched for intelligence, no significant difference was expected and none was found.

Picture Completion

It is not unreasonable to assume that some exhilaration from the fever of tuberculous infection may have rendered the basic perceptual abilities of this group more acute. Some slight tendency to difference was found. (P= .37).

Digit Span

Due to the extreme physical disability and restriction imposed by the Paraplegic state we should well expect to find more anxiety amongst this group. The span of attention, or immediate memory, showed a very significant drop (P= .002), even though this subtest was also the lowest in the Control group. Thus, over and above the effect of hospitalization, the Paraplegic suffers an impairment of attention which can be related to his debility and the anxiety arising therefrom.

It is interesting to note, that in the Experimental group, the one case where the Digit Span equalled or excelled the mean of the other subtests was that of an individual who had readjusted to the extent that he was about to be married.

Level of Mental Deterioration

Long term hospitalization in removing the individual from active competition in society allows of a degree of mental stagnation. The correlations, significant in Paraplegia (P= .02) and indicating a tendency in T.B. (P= .20), demonstrate that the individual of higher intelligence is better able to maintain his mental level without a constant social stimulus. That this relationship is more marked in the Paraplegic group is but a reflection of the fact that the Paraplegic is, and will be, more severely limited in social adjustment. There is too, the possibility that they are resting secure in the presence of a hundred percent pension. This is a point worthy of consideration in the rehabilitation scheme.

ii RORSCHACH

Reputed to be one of the most valuable and accurate tests of personality the Rorschach gives a total-action picture of the personality structure, showing the interdependence and function of the various elements. The individual may project his meanings, significance, and feelings, upon the several cards, just because they are not socially standardized objects or situations to which he must or might give culturally prescribed responses. The characteristic organization of his associative processes will exercise a selective effect over the stimulations emanating from each inkblot.

Though the interpretations will be presented on the basis of separate signs and specific items for reason of clarity, and conclusions drawn which imply an "other things being equal" type of approach, the general picture has been kept in mind and given due consideration. It will

be referred to, however, only when some specific item does not appear to conform to the general pattern. The interpretative approach here used, is, in effect then mainly an objective or quantitative one.

Location

Though the Chi Square shows that the groups tend to differ significantly from one another in manner of approach (P= .19), the deviation from the Gestalt pattern or Norm is not sufficiently extreme to indicate an inadequate mental balance. Tables 5 and 6 indicate what might be expected in a normal record.

W

Organizational capacity and ability to integrate appear adequate with the groups following the expected pattern. Qualitative examination, however, reveals that a number of the W responses are rather crude in nature. This is frequently the result of an evasive attitude on the part of the subject and may be related, in these cases, to the presence of inhibition and anxiety which militate against perceptual organization.

D

That there is sufficient interest in the routine problems of daily life is evidenced from a normal concern with the most obvious and common qualities of the blots. The groups show enough practicality to remain in good contact with reality.

STATISTICAL ANALYSIS OF THE RESPONSE LOCATION

TABLE 4

	Para	TB$\cdot\frac{13}{12}$ +	P	
W	146	176.6	.38	Comparison of the Experimental and Control groups. $X^2 = 4.96$ P = .19
D	278	263.2	-	
d	22	23.8	-	
Dd+S	73	57.4	.44	
dr	13	4.3	.003	
di	15	8.7	.09	

\+ The obtained frequencies for the TB group have been multiplied by 13/12 in order to equate the group values for comparison.

TABLE 5

	Para	Norm	P	
W%	28	28	-	Comparison of the Experimental group with the Norm. +
D%	54	52	-	
d%	4	12	.003	
Dd+S%	14	8	.08	

TABLE 6

	TB	Norm		
W%	34	28	-	Comparison of the Control group with the Norm.
D%	50	52	-	
d%	5	12	.01	
Dd+S%	11	8	.30	

\+ Norm — the results to be expected on the basis of the Gestalt qualities of the inkblots.

d

A very significant difference from the expected exists in both groups, (P= .003 & .01),+ for the capacity of critical evaluation as measured by the d response. Whether this is low due to impairment or because it is a latent factor here, is hard to say. In any case, there was a rather noticeable lack of elaboration throughout most records, a fact which would point in favour of the former conclusion.

Dd+S

Though more pronounced among the Paraplegics, both groups tend to give more than a normal amount of unusual responses. (P= .08 & .30). It is interesting to note that the number of de and S, within the groups, are almost equal, but that the Paraplegics show a significantly higher number of dr and di responses. (P= .003 & .09).

The de response is often seen to be an escape-reaction to anxiety arousing situations and can indicate a subject's distrust of his own ability.

The S responses, in this setting, are largely referrible to oppositional tendencies directed against the self and may be in the form of self-critical or self-destructive tendencies.

We might well expect a relatively equal proportion of these types of location, in that severe debility involving a lengthy hospitalization is quite apt to leave the individual doubting the adequacy of at least his physical capacities and even possibly resenting his weakness.# Self-criticism about what might have been done or about present dependence on others is but another aspect

+ When two P values are given, that of the Paraplegic group will be presented first.

See P. 14, Psych. Aspects of Paraplegia.

of this situation. In the case of the Paraplegic, it would be interesting if it could be determined to what extent these self-critical or self-destructive tendencies existed shortly after injury, when many are reported to end their lives while in a state of dejection over the loss of genito-urinary and locomotor control.

The dr responses, in a setting of anxiety, indicate an attempt to escape situations in the articulation of which the individual is handicapped. He is thereby driven to increased ideational activity. This complies with the overt clinical picture of generalized restlessness.

The di responses in this picture represent a splitting of emotion and intellect, whereby the majority of Paraplegics, rendered impotent by their injury, are trying to dissociate themselves from emotional feeling, preferring to react instead on a purely intellectual and controlled basis. This is seen again in other phases of the Rorschach.

It is interesting to note, that those patients who still possess some sexual capacity, (among the Paraplegic group), - five in number - gave no responses within the unusual locations.

Derivation of the Ideal Protocol (Norm)

Since the average number of responses per Paraplegic was 23.6, and twenty-five has been reported as a normal average, the R for the ideal protocol to be arbitrarily established was tentatively set at twenty-four.

An optimum F% is reported to be 33 1/3% which in this case would result in eight F responses. F=8

Since the group is above average in intelligence, as a whole, we might reasonably expect four M responses. M=4

FM in the mature personality should be less than M. Its value has thus been set at three. FM=3

An optimum color balance is said to exist when the ratio of FC:CF is 4:1. FC=4 CF=1

The well balanced record requires the degree of introspection and tact to equal approximately one half of F, with Fc being slightly larger than FK. An Fc of two and an FK of one seems to meet these requirements best. Fc=2 FK=1

We would not expect to find evidence of conflict or anxiety in an ideal record, hence there is no m, k, or K.

Neither would we expect to find crude sensitivity, depression or uncontrolled emotional outbursts, hence there is no c, C', or C.

By addition, R for the ideal protocol is twenty-three, which is sufficiently close to 23.6 for comparison and will serve as a Norm in this project. R=23

Determinants

Since the determinants are functionally interelated in the personality it becomes quite difficult to say how much of any

STATISTICAL ANALYSIS OF THE RESPONSE DETERMINANTS

TABLE 7

	Para	TB.$\frac{13}{12}$	P	
M	28	46.4	.11	-
FM	80	89.9	-	
m	12	7.6	.16	
k+K	23	26.0	-	
FK	18	4.3	.001 /	
F	257	250.2	-	
Fc+c	45	47.7	-	
C'	7	3.2	-	
FC	33	23.8	.30	
CF+C	16	21.7	.32	
Total	519	520.8	-	-

Comparison of the Experimental and Control groups.

$X^2 = 14.30$ P = .11

TABLE 8

	Para	Ideal	P
M	27	88	.001
FM	78	66	-
m	12	-	doubtful
k+K	22	-	note
FK	18	22	-
F	250	176	.26
Fc+c	44	44	-
C'	7	-	negligible
FC	32	88	.006
CF+C	16	22	.30
Total	506	506	-

Comparison of the Experimental[+] group with an Ideal Protocol.

+ Experimental group has been statistically equated to the Ideal Protocol.

TABLE 9

Comparison of the Control group + with an Ideal Protocol.

	TB	Ideal	P
M	44	88	.04
FM	88	66	.35
m	8	-	negligible
k+K	25	-	note
FK	4	22	.001 /
F	244	176	.29
Fc+c	46	44	-
C'	3	-	negligible
FC	23	88	.001 /
CF+C	21	22	-
Total	506	506	-

+ Statistically equated.

given determinant is normal. However, an "Ideal" record which has been arbitrarily set will be used as the criterion of normality. Care has been taken to ensure that it agrees with the Rorschach theory of a well balanced personality.

A point to be kept in mind during this analysis of the determinants is that the F column of both clinical groups comprises very nearly 50% of the total number of responses. The net result of this is that most other determinants must be correspondingly reduced. This is indeed pointed evidence of the constriction and inhibition present in both groups. Notwithstanding, the Chi Square shows that they tend to differ significantly from one another in the determinants used in response formulation. (P= .11).

M

Since both groups are comprised of individuals of average, or better than average intelligence, it is reasonable to expect eighty-eight M responses (4x22) per group. Both, however, show a significant decrease from the ideal, (P= .001 & .04) the poverty being more pronounced among the Paraplegics. (P= .11)+

Thus we see that the inner frame of reference and adjustment to which these patients can refer their conflicts is impaired. (Experimental group in particular). Such poverty of inner life is found,

+ Some lowering of the number of M responses and some tendency to constriction is not unusual in good soldiers who have accepted army discipline and hence do less of their own thinking, but this would not begin to account for the scarcity of M or the degree of constriction present in both groups. In any case, all these patients had been removed from actual army discipline for at least a year.

generally, in records of inhibition where the creative capacities have been hampered and hence the variability and scope for action narrowed. The M response reflects the amount of inner control and is known to be especially vulnerable to and hence a sensitive indicator of maladjustment.

Comparison with I.Q. ratings shows definitely that the groups are functioning below their mental level, as has been implied.

(The following paragraph refers particularly to the Paraplegic group, sixteen of whom showed little or no inner control). This displays quite accurately the clinical picture seen in the groups. On occasion there is a flare-up of irritability and/or cantankerous behaviour when pent-up emotions demand expression. These periods could be seen from time to time in most of the patients, some more than others, and are, in part, due to the monotony of hospital life, in part to the limitation of expression imposed by the debility. Many of the individuals seemed content to vegetate. Whether this is the result of depressive tendencies, anxiety and feelings of insecurity or knowledge that the government will care for them for the rest of their lives, (Paraplegics are 100% life pensioners, T.B. only have a limited disability allowance), it is hard to say, but it seems probable that both factors are involved.+

It is interesting to note that this vegetation is more common among those patients of lower intelligence, among those patients who have less intellect to fall back on. We have seen corroboration of this fact in the significant correlation of I.Q. with lower percent "deterioration".

Thus, the more mature aspect of the inner life has been submerged, or more probably, these psychic forces have been employed in an effort to allay

+ See P. 12 Psych. Conflicts

conflicts and anxiety arising from the patient's physical limitations. Attempts at compensation are not at all unlikely.+ Hospital life with its routine and long term convalescence is certainly no stimulant to the intellect, to be sure, but neither should it, of itself, disrupt the inner life of the personality to such extent.

FM

That neither group is lacking in the basic physiological or instinctual drives is seen in the quantity of FM responses given. The control group, in fact, tends to show a slight increase above the Norm. (P= .35) This is probably due to the exhilaration of fever and increased sexual desire found in these patients which is peculiar to their disease.

The effect of a normal drive co-existing with a povery of inner life has been described under the section dealing with the M response and is prerequisite to such periodic outbursts. There is one difference though in general group behaviour. The Paraplegic seems less able to accept his own impulses, in fact at times appears to be trying to renounce them, and on such occasions is inclined to project them in such fashion that periods of fault finding and the cursing of orderlies is not uncommon. It would seem that since libidinal gratification is an impossibility, the Ego, in an effort to maintain its equilibrium strives to rid the psyche of these Id strivings by projection when it can no longer tolerate them . Here is evidence of the resentment previously mentioned. This mechanism is not evident in the T.B. patient, for though gratification must be postponed, he can look to the future.

+ See P. 14 Psych. Aspects of Paraplegia.

m

With the basic impulsive or instinctual drives still present and exerting force on the psyche it is reasonable to assume that denial of these, other than the restraint imposed normally on the individual within society, should result in conflict and the production of m responses. Though this factor seems to be of little importance in the Control group, it commences to reach significance among the Paraplegics, the majority of whom are forever forced to deny their sexual urges and much of their aggression. Note that these responses are almost non-existent among thos Paraplegics who still retain some sexual capacity, for the conflict is not so pressing.

This inner tension is susceptible to fluctuations of mood but if the conflict has remained unsolved over a period it is more likely to be evidenced in the form of anxiety.

k+K

A certain degree of evasion is seen in the attempts to "intellectualize" anxiety which is, in the main, related to specific situations and ideas. It is to be understood that these "intellectual" attempts at control and evasion are the result of emotional reactions of an anxious nature. The results show that both groups are somewhat afraid to accept their own sensitivity and/or sensuality, hence the possibility of guilt feelings under such circumstances should not be overlooked. In any case, some underlying feeling of insecurity is present, as indeed, we might expect, when so many of life's activities are thwarted.

FK

At this point, there is a certain difference between the groups,

implicit in their debility, which comes to our attention. This is the factor of permanency. The T.B. patient, can, after a period of hospitalization, look forward to a more or less normal existence for the remainder of his life. Paraplegia has no temporary qualities about it, but remains a permanent motor and sensory paralysis leaving the patient with many critical problems. From this, it is reasonable to assume that the Paraplegic would be more inclined to brood over his state. That this is so, is seen in the significantly greater number of FK responses given by this group. ($P = \angle .001$).

Fortunately, however, this concern of one's inner life and reactions, this introspection, may lead to some insight. We see here a reason why the Paraplegic is better able to differentiate the superficial from the essential and so maintain an adequate level on the Similarities subtest of the Wechsler-Bellevue, even in the face of more pronounced "neurotic mechanisms".

An interesting point is the significantly few FK responses seen in the Control group. ($P= \angle .001$) Such responses seem to be used only by those subjects who need this introspective function as an outpost or shock absorber in their relationship to their own inner life. Since the position of the T.B. patient is not so insecure, and since his inner life is of a higher level with less conflict, this function of supplementing the adjustment to the outer reality by smoothing out the relationship to one's self comes to be of less importance for the very reason that it is not so necessary.

F

In our culture, formal characteristics and their relationships become our guide in life, not our affective reactions to things about us. In a word, we are trained from childhood on to be "objective". Form responses

refer to the processes of formal reasoning and stand for the autonomy of the perceptual and thought processes - Ego processes - from encroachments by unconscious factors. They imply a capacity for delay of discharge of impulses -- a delay of gratification of instinctual needs and their derivatives and are thus a keystone between the intellectual and emotional aspects of the personality structure.

In reflecting the subject's way of dealing intellectually with his life situations on the one hand, and the role which intellectual or conscious control plays in the total emotional balance of his personality on the other, the subject's interest in the purely "formal" seems to indicate the degree to which he is inclined to repress or control the more personal or spontaneous reactions. A healthy balance between control and spontaneity is lost when more than half the responses are of such formal nature, for inhibition, with its implied renunciation of impulse discharge, tends to increase the area of this autonomous segment of the Ego functions. Both groups show a very definite tendency to constriction (P= .26 & .29) in that neither has an F% less than 48. In effect, the result is a lack of personal spontaneity, but even more important is the means by which this control has been achieved.

It is interesting to note that the average response times differ significantly from the Norm. (P= .01 & .04) in being of considerably greater duration. From this, it should follow that the form level is accordingly high. Such is not the case. Considering the intelligence level of the groups, there was a definite lack of elaboration, that is, of F+ responses, (see also Location, d) in fact, there was a fluctuation of the form level. This inconsistency shows that the control is not refined, or on a compulsive basis, but rather, is of an evasive and anxious nature.

When the inner (M) and outer (FC) controls are not sufficient to guarantee rational behaviour, when there is fear of not being able to control emotional impulses, the individual resorts to an attempt to repress the spontaneity of his reactions. Since introspection and tact play little part in this control, it is evident that it is of a somewhat crude nature and indicates a certain degree of impoverishment of the personality.

Since the emphasis is on the D response (see location) and the levels of stereotypy (A%) are fairly high (not less than 43%) in both groups, this tendency to constriction is of the type often seen in unintelligent, healthy subjects. But as a group, these men are above average in intelligence. The intellect has not ceased to function! Rather it has been employed in the struggle for control, its proper operation impaired by anxiety. This is further evidence that both groups are functioning below their mental level.

Fc+c

The use of this determinant signifies awareness and this implies an adequate contact with reality. Since these are not psychiatric cases, we should expect this factor to be relatively intact. That neither group differs significantly from the Norm bears out our anticipation.

However, because there are signs of constriction and a predominance of (Fc+c+C') over the sum of all bright color responses, these texture responses are serving the purpose of acting as shock absorbers for too strong emotional stimuli from without, a function which becomes necessary when there are feelings of insecurity. The all-powerful need of these individuals to control their emotions, again, is seen to hamper their existing potentialities.

C'

This type of response usually represents an artistic elaboration or a depression of mood but was seldom given in either group.

FC

We have seen in other phases of the Rorschach how the groups were hindered in establishing a satisfactory adjustment.

That the capacity for affective rapport and emotional adaptation is also hindered is shown by the very significant difference of both groups from the Ideal. (P= .006 & $\frac{1}{-}$ .001) This shows that the impulses are often suppressed, that the adaptation to reality is largely limited to cold reasoning, (high F%), though to be sure, it can at times occur in an appropriate affective manner. The presence of caution in emotional contacts is further shown by the fact that the total of acromatic responses exceeds the total of bright color responses.

Because there is insufficient smoothly controlled emotional expression, the normal discharge of tension is, in a large measure, withheld either to cause anxiety (k+K) and internal strain (m) or, from time to time to burst forth impulsively (CF+C). An adequate outer control could hardly be expected for, as we have seen, there is little stability of inner life (M), which is required both as a prerequisite and as a support.

Notwithstanding the fact that as a group, the Paraplegic has less inner control, they do show a light tendency to exceed the T.B. group in degree of outer control. (P= .30). This relationship appears in part the result of exhilaration peculiar to Tuberculosis and in part to some measure of insight, among the Paraplegics, gained from introspection. (See under FK).

CF+C

The groups show but a slight tendency to differ from one another in this respect (P= .32), with only the Paraplegics showing some decrease from the norm. (P= .30).

Colors have an impact upon the associative processes similar to that of affects in everyday life and it is interesting to note that this more

spontaneous and impulsive type of emotional response, that is, less controlled, is still fairly well retained in spite of all efforts for control. When present in a well balanced personality, it lends a spontaneity to the emotional expression and is indicative of a close warm approach to others. Such is not the case here. In view of the general coarctation existing within the groups, it is good evidence that the repressive measures are not entirely effective. The more impoverished the variability of affective experience becomes, the more gross and violent the affective expressions will be when they do break through. This lack of adequate balance points to instability in human relations and implies in its cruder reaction a heightened awareness of the self.

Since the Paraplegic is the one in more dire straits, it is natural to assume that he might be more inclined to the spasmodic and explosive type of affective display. Actually, the opposite is seen to be the case. Investigation of the particular debilities lends some explanation to this reversal. The T.B. patient is suffering from the restlessness of a toxic effect and an increased libido and is, therefore, less able to control himself.+ On the other hand, the Paraplegic with roughly half his body paralyzed, is inclined to have a lowered basal metabolic rate and therefore the affect is less easily aroused.# Another contributing item to this phenomenon is the fact that insight enables the Paraplegic to achieve a higher degree of smoothly controlled emotional expression and, therefore, the tension striving for release is less.

+ Certainly this is a somewhat different mechanism than the mere elation generally ascribed to the T.B. patient.

A more detailed discussion is given under, An Experiment.

CONTENT

A%

Since the animal responses are the most easily seen, the A% thus indicates the extent to which the subject is no longer actively digging into the inkblot, but is rather responding only to its grossest articulation.

Stereotypy thus means that the personal, self-expressive material is no longer being delivered by the subject; he is dependent upon the most obvious conventionalities or platitudes in any situation. Confinement to the obvious thus indicates a narrow range of interests.

This tendency is evident in both groups for neither has an A% less than 43. Generally it is accompanied, in settings of inhibition, by constriction. Referral to the F% shows that this holds true here.

At

The presence of some anatomy responses is probably related to two factors. They may be the result of generalized anxiety for they are among the most obviously vague responses, and then too, bodily preoccupation may have some effect.

POPULAR

Since both groups average four to five of these responses per individual there is indication that they possess the capacity, and interest, in thinking along the lines similar to others in sufficient degree. This compliance with the thinking of the community indicates a degree of common sense (see also Location, D), and implies an adequate contact with reality.

STATISTICAL ANALYSIS OF THE RESPONSE CONTENT

TABLE 10

	Para	TB	P
A%	43.0	43.7	-
P%	21.0	20.4	-
0%	15.0	17.6	-
8910%	34.5	35.3	-
At	25.0	18.4	.31

Comparison of the Experimental and Control groups.

TABLE 11

Failures :-

	Obtained	Expected	P
Para	26	8	.001
T.B.	22	8	.005

Comparison of both groups with the Expected number of failures.

ORIGINAL

For the intellectual level of the group the production here is somewhat low, further evidence that inhibition has invaded the thinking of the patient thus limiting his creative capacities and individuality.

FAILURE

Failure on a card is often found among subjects who cannot tolerate conscious anxiety. From the foregoing discussion we might well expect to find a greater number of failures than normal. Expectations are borne out by very significant differences from the Norm (P= .001 & .005).

It is interesting to note that cards VI and VII, symbolically representing the male and female sex organs, give rise to a proportionately higher number of failures.

8910%

In that approximately one third of the responses in both groups are given to the last three cards, we have indication that they are responsive to stimuli from without. The point to note here, is that both groups respond to emotional stimuli but not in the normal manner. Less than one third of these responses involve the use of color, or affect. Again, we see that an over control is hindering affective responsiveness for there is indication of a conflict between natural inclinations and conscious attitudes. The many conflicts engendered by hospitalization are seen to have a disturbing effect on the personality.+

+ See P. 11 Factors Implicit in Hospitalization

Group Tendency to Neuroticism

Using an objective or sigh approach it is not hard to show that both groups are somewhat neurotic, viz:-

1) M seldom more than 1

2) FM generally larger than M

3) FC usually not more than 1

4) Increased resistance to the use of color

5) Tendency to constriction

6) " " stereotypy

7) Rejection of cards, particularly VI and VII.

In certain cases, this "neuroticism" is seen to be of an hysterical nature with a mixture of infantilism (FM>M), and breakdown of control (CF >FC). Signs of anxieties and unsuccessful inhibition (K, m), augment this picture.

The presence of FK and FC and an adequate Fc is indication that the groups would probably benefit from psychotherapy.

General Conclusions

Since the physical impairments involved differ markedly between the groups and yet we note that the majority of deviations from normality are common to each, it would appear that tendencies to maladjustment are, in the main, related to factors implicit in hospitalization. Reference to the chapter on Rehabilitation yields some indication why this is so.

With hospitalization, a certain degree of anxiety can well be expected, but not to the extent that the personality is altered, its proper functioning becoming impaired. A lack of spontaneity is the result of an "intellectual" control of an evasive and anxious nature. (High F%).

Associated with this is a degree of bodily preoccupation (At) with some distrust of personal ability (de), self-criticism (S), and a lack of confidence arising from feelings of insecurity (k+K). This striving for "intellectual" control gives rise to inadequate emotional adaptation and hence insufficient normally controlled tension discharge resulting in spasmodic affective outburst (CF>FC). The crude nature of this control and its extent are such that a state of inhibition exists (high F%). There is a lack of individuality (low O%), a narrowing of the range of interests (high A%) and curbing of creative capacities (low M) whereby there results a lessening of critical powers (low d, few F+ responses) with some impairment of perceptual organization (many poor W). From this it can readily be seen that these individuals are functioning below their mental level, they are no longer able to use their full intelligence since a considerable force is continually needed to maintain defense mechanisms. These men are caught in the midst of a conflict between their natural inclinations and conscious attitudes (many acromatic responses to colored cards) such that they cannot tolerate conscious anxiety. This becomes particularly acute in the sexual sphere (failures on cards VI & VII). Small wonder that both groups manifest a certain instability in human relations.

The Rorschach presents a good picture of reaction to new situations, and indeed, there is a strong resemblance between these results and the actual group behaviour to change+. If an analogy can be drawn, we can liken the shut-in existence of the groups to the all prevailing inhibition found in the Rorschach protocols. The insecurity and dependence of the patient's physical state has developed into a state of psychological dependence replete with insecurity and

+ See P. 9 Treatment.

anxiety. This crude control seen in the test records is the strong force behind their clinging to familiar situations and balking in the face of new ones.

It would seem that there is sufficient indication of maladjustment to warrant psychotherapy, and indeed, these patients feel the need of some shock absorber (Fc) for too strong emotional stimuli from without.

Though the inhibited, rationalistic thought and feeling-life characteristic of a lack of inner control (low M) is found in both groups, it is more pronounced among the Paraplegics whose anxiety is more severe, whose striving for evasion is greater, whose tension and conflicts are more pressing. This state has given rise to a need for a shock absorber to inner life (FK), and though there is some dissociation of emotion, the resulting introspection has fortunately, yielded some insight.

Characteristics peculiar to Tuberculosis are seen to have their effect on the personality. The exhilaration of fever is seen in the more frequent explosive emotional displays (CF>FC); the increased sexual desire as a heightened physiological drive (more FM).

iii BERNREUTER PERSONALITY INVENTORY

Since the T.B. patient is required to take long periods of rest -- without disturbance -- and the Paraplegic receives medical treatment or exercises, etc., at varied and unpredictable hours, tests requiring individual administration were often an inconvenience to the patient and a source of much lost time in waiting to the examiner. Thus the "paper and pencil" tests have

the advantage, of considerable note in this case, that the patient is able to fill them out at his leisure. (These tests had to be given orally to the two quadriplegics).

The Bernreuter was selected since it purported to measure several different aspects of personality at one time and also have a high reliability.

BI - N Neurotic Tendency

The Paraplegics show a slight tendency to be more unstable emotionally than the T.B. group. (P= .35). This -- and more -- is to be expected from the greater severity of their handicap. It is to be noted, however, that deviations from the Norm are not significant.

B2 - S Self-Sufficiency

In the sense of capacity to fend for oneself, neither group is self sufficient since they require hospitalization, thus some difference from the Norm might well be expected. But, the self-sufficiency measured seems more in the nature of what might be termed a "social self-sufficiency". Since all the individuals are members of a small and close group, they thus have a sense of identification and resulting unity whereby they are socially self-sufficient, more or less, while in hospital.

In the light of this, it is understandable that no differences, of any import, between the groups or Norm were obtained.

STATISTICAL ANALYSIS OF THE SCALES

TABLE 12

	Mean		Std. Dev		σ_m		
	Para	TB	Para	TB	Para	TB	P
Bl-N	-48.0	-70.3	94.9	99.9	20.7	21.8	.35
2-S	+33.1	+37.9	49.9	60.1	10.9	13.1	-
3-I	-36.9	-51.2	51.1	49.4	11.2	10.8	.31
4-D	+49.1	+68.1	69.2	62.8	15.1	13.7	.29
Fl-C	-36.9	-76.6	95.2	95.3	20.8	20.8	.11
2-S	-17.0	-18.6	47.2	35.8	10.3	7.8	-

Comparison of the Experimental and Control groups.

TABLE 13

	P	
	Norm-Para	Norm-TB
Bl-N	.46	-
2-S	-	-
3-I	-	.07
4-D	-	.31
Fl-C	.43	.29
2-S	.13	.03

Comparison of the Experimental and Control groups with the Norm.

B 3 - 1 Introversion - Extroversion

It is possible that some exhilaration from the fever of Tuberculosis might account for their slight tendency to be the more extroverted. (P= .35). The Paraplegic group does not differ noticeably from the Norm.

B 4 - D Dominance - Submission

Being somewhat more extroverted we should expect to find the T.B. patient a more dominant individual. Such is the case, the results tending to show a difference with both the Paraplegic group (P= .29), and the Norm (P= .31). Again, the Experimental group shows no particular difference from the Norm.

FI - C Confidence in Oneself

The T.B. patient being somewhat elated, tends to be over-confident. The Paraplegic on the other hand, suffering from severe physical limitation, has good reason to feel self-conscious and inferior. Results show a notable difference between the groups in the expected fashion, (P= .11) with the Norm falling in between.

F2 - S Sociability

The individuals of both groups are in close contact within their group and as such a feeling of unity prevails involving identification and group morale. In these respects both groups are alike and results show

little difference. However, they differ significantly from the Norm. (P= .13 & .03). This would imply that the patients within each group are more sociable and gregarious. This is in contradiction to results obtained from the Rorschach which shows that there is a lack of normal social adaptation (low FC)+. The explanation of the disagreement is to be found in factors implicit in hospitalization. Normal social adaptation is impossible during hospitalization (low FC), yet on the ward a strong group identification develops which fosters sociability among patients.

General Conclusions

Thus we see effects peculiar to three states, namely, hospitalization, paraplegia, and Tuberculosis.

Hospitalization in bringing individuals close together with a common illness stimulates sociability. It must be noted though that this sociability is more in the nature of group identification.

Paraplegia renders the individual inferior physically thus undermining his self-confidence and making him less stable emotionally.

Tuberculosis with its accompanying fever effects a measure of overconfidence, extroversion and accompanying dominance.

Criticism

In view of the extent to which these men must undergo personal restriction and physical limitations, particularly the Paraplegics, it is rather surprising to find the deviations from the Norms so small. One is led to be suspicious either of the sensitivity of the test or the possibility of individuals, either consciously or unconsciously, trying to place themselves in a more favorable light.

+ See P. 40 FC.

iv BELL ADJUSTMENT INVENTORY

What has previously been said concerning the questionnaire type of test applies here too.

To live successfully -- indeed to live at all -- organisms must effect some measure of adjustment. This inventory provides indications of personal and social adjustment and thus yields further insight into the personality.

Home

Since normality before disease and injury has been assumed, no significant difference between groups or with the Norm is to be expected in this sphere of adjustment. None was found.

Health

Both groups are physically below par, especially the Paraplegics, thus a significant difference of both groups from the Norm is not surprising. (P= .01 & .03). In keeping with his disability, the Paraplegic shows a tendency to the poorer health adjustment. (P= .27).

Social

In keeping with previous findings both groups show a tendency to differ in respect to their social adjustment. (P= .20). The Paraplegic is somewhat more retiring and submissive and though both groups fall within an "average", they both show a tendency to be less aggressive socially than the Norm. (P= .10 & .25).

STATISTICAL ANALYSIS OF THE SCALES

TABLE 14

	Mean		Std. Dev		σ_m		
	Para	TB	Para	TB	Para	TB	P
Ho	4.7	3.7	4.6	3.8	1.0	.8	-
He	12.7	11.1	3.7	4.6	.8	1.0	.27
Soc	14.4	12.0	6.8	7.5	1.5	1.6	.20
Em	8.2	6.4	5.6	5.8	1.2	1.3	.30
Tot	40.0	33.2	14.7	17.2	3.2	3.8	.18

Comparison of the Experimental and Control groups.

TABLE 15

	P	
	Norm-Para	Norm-TB
Ho	-	.48
He	.01	.03
Soc	.10	.25
Em	-	.40
Tot	.20	.48

Comparison of the Experimental and Control groups with the Norm +=

\+ This is the "Well - Adjusted" group as reported in the literature.

These results are not in keeping with those found on scale B4-D of the Bernreuter for the T.B. group. It follows that there is probably a difference between social dominance and aggression, that is, that the two need not co-exist. Indeed, though a person may be socially dominant, hospital discipline and routine will certainly work to limit the aggressiveness of his social adjustment. Then too, social adjustment in hospital is based largely on necessity and identification due to common illnesses and so forth, rather than aggressive sociability.

Emotional

Though the Paraplegic group seems slightly more unstable emotionally (P= .30), neither group shows a significant difference from the Norm. Again, we must differentiate between emotional instability and actual adjustment. Since hospital life requires something more in the nature of patient waiting rather than the emotional adjustment to an active competitive life in an economic society, it is understandable that emotional instability -- unless unduly severe -- will not be as manifest in this more limited and sheltered existence.+

Total

In total over-all adjustment, the two groups tend to differ, the Paraplegics having the poorer adjustment as might be expected. (P= .18). When compared with the Norm it is seen that only the Experimental group shows a tendency to reliable difference. (P= .20).

General Conclusions

Hospitalization in restricting the activities of an individual does not allow him a normal amount of aggressive social adjustment but forces

him to accept a more passive mode of existence. At the same time this type of life, not requiring as much of the individual, does not bring emotional instability to the fore but rather leaves it in a somewhat latent state.

Even in his present adjustment, the emotional instability and more submissive or retiring nature of the Paraplegic can still be noticed. When the effects of hospitalization have been accounted for, this group still shows the poorer adjustment, poorer because they are so limited physically.

The exhilaration peculiar to Tuberculosis is not so readily discernible as a factor in adjustment.

v GOODENOUGH - DRAW A PICTURE OF A MAN

This test was originally included in the battery with the idea of screening for homosexualism. It was felt that the Paraplegic, having lost his sexual capacities as a man, might unconsciously come to regard himself as a woman and thus become homosexual.

Refusal

Refusal to draw the man is certainly related to negativism and/or evasion and is but further evidence of the anxiety and inhibition present in the Paraplegic group. There were no refusals among the T.B. patients.

Distortion + Refusal+

As the form level drops and distortion of the human form increases, the indication of maladjustment becomes more pronounced.

+ These two categories have been added together to give an over-all picture of the maladjustment present.

STATISTICAL ANALYSIS OF THE DRAWINGS

TABLE 16

		Para		TB	P	
Refusal		6		0	.001 /	Comparison of the Experimental and Control groups.
Emotional Trouble or Distortion + Refusal	(6 + 4)	10	(0 + 6)	6	.10	
"Normal"		10		16	.13	
Total		20+		22		

+ Since it was impossible for the two quadriplegic patients to perform this test, N dropped to twenty for the Experimental group.

Though both groups are possessed of maladjustment, this tends to be more severe amongst the Experimental group. (P= .10). That some of this disturbance is related to the individual's removal from an active life in society there can be little doubt, but above and beyond this -- which should be approximately equal in both groups -- there is the disruption of debility, severest in the Paraplegic group. No wonder that this group shows not only more, but also more pronounced maladjustment.

Homosexualism

Only one drawing in each group indicated homosexualism and in each case could be labeled as no more than latent. This is not any more severe than one would expect to find in a sampling of normal population.

That one does not find an increase of homosexualism in the Paraplegic group with the loss of male sexual capacity seems to indicate that this state is more basic. The results appear to be in agreement with Campbell's theory of a "true constitutional homosexual", wherein he states that, "there is no such thing as acquired homosexualism -- the bisexual theory presumes a varying degree of homosexualism in every individual".

vi STUDY OF VALUES

The aim of this test is to measure six of the basic interests or motives in personality, that is, the relative prominence of evaluative attitudes.

Since both groups are hospitalized it was felt that they would have many interests in common, and, therefore, would not show any significant differences one from the other, but rather form the Norms.

Criticism

When compared with the Norms, the only suspicion of a difference is found on the aesthetic scale. It seems safe to conclude, especially in view of other results, that though significant differences exist, this scale is not sufficiently sensitive to pick them out; probably because it is based on general philosophical concepts.

PART D

CHAPTER VIII

PRACTICAL APPLICATION OF THE RESULTS

i Better Appreciation of Clinical Symptoms

As has previously been pointed out, when neurotic components develop, it is often difficult to distinguish these subjective features because the objective aspects of a Paraplegic condition are so obvious. Tendencies to maladjustment may well go unnoticed since the sheltered existence led by the patient in hospital life does not require much social adjustment or competitive activity, situations in which these tendencies would be more readily displayed.

That such neurotic traits do exist among these patients, is evident from a review of the test results, for many have been pointed out, some repeatedly as they occurred time and again. An attempt has been made to explain their underlying bases and although not entirely successful, it is hoped that the clinician has become more aware of their presence. Knowledge of what to look for is only the first of several steps to be taken in dealing adequately with these cases. More is required than the mere recognition of symptoms, for any treatment which neglects these features must thereby lose some measure of its effectiveness.

ii Patient-Doctor Relationship

There should be a purposeful fostering of this relationship, for though time consuming, the resultant benefits are of much value in treatment and are not to be derived in any other manner. As the relationship

grows closer the patient will learn to have more confidence in the skill of his doctor and thus feel more secure. The doctor too comes to know and understand his patient more fully and is thereby better able to administer to his individual needs as well as to those of the group. This closer contact enables a greater appreciation, on the part of the doctor, of the existing conditions. Thus, we see that a fostering of this relationship is mutually beneficial.

This aspect of treatment should be closely tied in with psychotherapy, wherein practical use can be made of the findings of this study. The keener appreciation of the underlying psychological factors can be put to constructive use; by aiding the patient in his readjustment, by enabling him to regain his self-confidence, by fostering those skills and aptitudes which may be of use in rendering him self-supporting, and, in short, by lending greater efficiency and effectiveness to the process of rehabilitation. The patient must be brought to the full realization of the consequences of his Paraplegic state and come not only to accept his limitations but to develop his remaining capacities. During this phase, the value of catharsis alone cannot be overlooked.

Paraplegia brings to the patient many problems, conflicts and frustrations. No treatment can be successful which overlooks these factors for they are as much a part of the injury as the paralysis itself. Thus, we see the importance of developing this patient-doctor relationship for it is largely through this medium that the patient will come to find solutions for the many problems forced upon him. When defense mechanisms are no longer necessary, the development of neurotic components will be stopped and the individual will be better able to adjust himself to a new, even though

handicapped, mode of life. Granted, some personality change must result, but not a pathological one.

iii Psychotherapy

The presence of neurotic components has been shown to impair the proper functioning of the personality. This should at once suggest the need of some psychotherapy, especially before such mechanisms could become too well organized or deeply rooted. Indeed, there is evidence that benefit would be derived from this form of treatment.+ It is of vital importance that the patient be able to use effectively those capacities which still remain. Paraplegia leaves more than enough of a physical handicap without the need of any additional burden to hamper readjustment.

The presence of inhibition together with signs of spasmodic affective outbursts# shows that these patients need to develop sufficient means of normally controlled emotional expression. Inhibition implies a delay of gratification of the instinctual needs and hence engenders pent-up emotions which, when strong enough, burst the bonds of control. From this, we see that there is a lack of adequate balance between the emotions and the intellect. For the better part, this inhibition -- evasion of an anxious nature -- has been shown to result from prevailing insecurity and conflict situations, mental as well as physical, existing in the lives of these men. Psychotherapy could do much toward the alleviation of these conflict situations, the development of security, and the replacement of a pathological control with a more normal means of expression from which the patient could derive satisfaction.

The self-criticism and resentment with accompanying attempts at compensation is another mechanism which deserves attention. When the patient

+ See P. 45 Group Tendency to Neuroticism.

can be brought to accept himself in his paralyzed condition, when he is given the proper chance for emotional expression, and when he is occupied in such fashion that he gains from it a personal satisfaction, then this mechanism will be dropped for it will no longer be necessary.

As an adjunct to psychotherapy and to render the patient more receptive and better able to function, that is, those with a low BMR, a mild thyroid therapy might be tried. (This is discussed at greater length under An Experiment.

iv Rehabilitation

Though the major aspects of rehabilitation have already been discussed at some length, there remains several points worthy of mention.

Vocational guidance should be integrated with any scheme of rehabilitation. Through interviews and the use of proper psychological tests a program of education and training can be given which best meets the needs and capacities of each patient. It is particularly important that these men, so handicapped, be trained to function to the limit of their ability.

Paraplegia prohibits the individual from participation in many of life's activities and thereby engenders a feeling of isolation, insecurity and anxiety. There develops from this a great need for group participation and identification, a need which brings strong response toward activities and can thus, if properly fostered, be of much use in rehabilitation.

Suspicion has arisen that some of these men, not caring or trying particularly in any way to rehabilitate themselves, are content to vegetate, secure in the knowledge that their pension will care for their financial needs.

There is indication of such stagnation in the test results.+ Such a state of affairs is deplorable,and, indeed, is diametrically opposed to the purpose of the pendion. Care must be exercised to insure that the pension will not be the basis of a retreat, but rather a security in time of stress and a stimulus to the patient to readjust, to take his rightful place as a productive member of society.

v A Paraplegic Center

Investigation has shown that there are more than five hundred Paraplegics widely scattered throughout the province of Quebec, Local facilities, generally, are not equipped to provide them with adequate care.

The need of a Paraplegic center to carry on with the treatment and rehabilitation of these patients is pressing, pressing in view of the many advantages to be obtained from such an institution, pressing in view of the number of patients to be cared for.

We have seen that certain factors implicit in long term hospitalization have a dire effect on the personality, sometimes more so than the cause for hospitalization itself. If such is the case then it behoves us to endeavour to eliminate them, if at all possible. The foundation of a center, a separate institution for the treatment of these cases, seems the best answer to the problem. Since it would be separate it would also be independent of general hospital discipline and routine. It would then be possible to organize a plan of treatment specifically designed to meet the needs of these patients without disrupting other wards, for there would be none other than Paraplegic wards. The significance of this point is perhaps not so evident to those who have not tried to maintain a highly specialized center within a general hospital

+ See P. 34 M.

wherein routines and procedures unavoidably clash. Apart from the psychological value to be derived from such an institution, there is the undeniable fact that it would lend greater efficiency to the medical aspect of treatment.

Since these patients are under medical care for some time, the ward is then in effect, their home. They must sleep there, eat there, work, play and be treated there, in short, the ward is where they live. Why not then give it the atmosphere of a home? Such is not possible within the bounds of a general hospital, but would be at a separate center. Here, some of the flavor of the home environment could be introduced. The institution would be a symbol of their group, providing greater unity and hence a greater feeling of security.

Some of these men, fully rehabilitated, could be put on staff and would serve as a constant example and source of hope to those patients undergoing treatment. The patient could profit well from the experience of these other readjusted men.

Though a separate center is advocated, this does not imply an isolation from the community. On the contrary, the establishment of such a center within a large community would make the public more aware of Paraplegia, more willing to accept these men as they come to know more of them. The Paraplegic too, must be kept within the community for ultimately it is hoped that he will come to have his role, his rightful place in society, to which he must adjust.

PART E

CHAPTER IX

EN EXPERIMENT

Since approximately half of the Paraplegic's body is paralyzed there is considerable musculature which must remain in a state of rest. One effect of such a state would be to lower the basal metabolic rate. Metabolism checks showed this to be so in the majority of cases. The BMR and the activity of the thyroid gland, however, are closely related and influence the functioning of the organism. Thus it was felt that administration of thyroxin to raise the BMR to the normal level would in turn allow these patients to function more efficiently by reducing fatigue and enabling greater mental activity.

Dr. G. Gingras is to be given credit for the theory behind this experiment.

Three cases were selected whose average BMR was -23. After receiving thyroid therapy -- one-half grain twice daily -- for three and one half weeks, the average BMR rose to -9, which is within the normal range of ± 10. To determine what changes might have been brought about in the personality these patients were retested with the Rorschach.

The results were indeed encouraging. The total number of responses showed an average increase of 256%, a very definite improvement. Perception and the associative processes had been facilitated. Not only the quantity but also the quality of production rose, even in view of a decreased reaction time and time per response. There was a decrease in the F% and the

A% while the number of original responses showed a decided increase.

Though there were only three cases involved in this experiment, the results are certainly worth attention. There is indication that maintenance of the BMR at a normal level is of vital importance to the personality. Vital, in that it allows the mental capacities to function more efficiently and more effectively.

In passing, this experiment might be pointed to as an example of one of the many instances where psychology can be of considerable value in medical research.

PART F

CHAPTER X

PURPOSE

The purpose of this research was to yield some insight into the characteristic reactions of the Paraplegic to his debility. It was hoped that as a result of this investigation, some recommendations could be made with respect to a programme for treatment and rehabilitation as well as devising methods which would screen for symptoms of mental pathology.

METHOD

Two groups, both consisting of twenty-two patients, were the subjects of this study. The experimental group at the time of testing, was undergoing treatment for Paraplegia. The control group was selected from a ward of patients suffering from pulmonary tuberculosis, but well on the road to recovery. As another comparison group, the norms as reported in the test literature were used.

In order to control the possible effects of hospitalization, it became necessary to match the control and experimental groups. Intelligence, army rank and various incidental factors such as sex, etc., served as the basis for this matching of groups.

In an effort to detect the various personality changes and characteristics of both groups, they were administered the same battery of psychological tests. This test battery consisted of the:

1) Wechsler-Bellevue Intelligence Test,
2) Rorschach Method of Personality Diagnosis,
3) Bernreuter Personality Inventory,
4) Bell Adjustment Inventory,
5) Goodenough - Draw a Man, and the
6) Study of Values

Since the questionnaire tests, with the exception of the Bell, were found to yield little test information of diagnostic significance, the main body of the results was drawn from the Rorschach test, a projective technique.

RESULTS

i Hospitalization

Certain findings are to be expected on the basis of long-term hospitalization and are therefore common to both groups.

1) Implicit in hospitalization are the restrictions it imposes on the patient which result in a conflict between his natural inclinations and conscious attitudes. The many acromatic responses to colored cards seen in the Rorschach is clinical evidence of this fact.

2) The isolation from the community and separation from group relationships leaves the patient with a lack of adequate and normal means of expression. This is reflected in the Rorschach as a low FC.

3) The dependence imposed on the patient by his severe debility breeds a feeling of helplessness replete with insecurity and anxiety. In the Rorschach, this is evidenced as, k+K.

4) A lack of confidence in personal ability may well be due to physical insecurity arising from the trauma. The presence of de responses in the Rorschach tends to corroborate this point.

5) Physical affliction may well leave the patient resenting his weakness. Such inverted aggression is seen in the S responses found in the Rorschach.

6) When deprived of a normal means of sexual expression, the patient is apt to become frustrated, manifesting some anxiety. The frequency of failures to cards VI and VII of the Rorschach is an indication that this is so.

7) With any severe illness or injury, a certain degree of bodily preoccupation can well be expected. The At responses to the Rorschach cards are to be noted in this respect.

8) During hospitalization, the patient's main concern is his health. Thus, he has less time and energy free to devote to constructive and creative works and therefore does not function to the level of his mental capacity. This is seen in the test results as a discrepancy between the results of the Wechsler-Bellevue and the Rorschach, i.e., the obtained I.Q. as contrasted with a low M and many poor W responses. The Wechsler-Bellevue brings to light the interesting fact that relatively the more intelligent the patient, the better able is he to maintain his mental level. (See under % Mental Deterioration). There are further reasons for this impairment of intellect. Hospitalization provides little social stimulus to activate the individual; he may feel content to rest on his laurels. Not to be overlooked is the fact, seen repeatedly throughout the test results, that much of the patient's psychic energy is expended in the maintenance of defense mechanisms.

9) Related to the last point is the fact that the patient has too many problems, physical and personal, to give attention to details outside of this immediate concern. This is evident from the few F+ responses and low d% found in the Rorschach.

10) We have seen that defense mechanisms are being used, at least in part, as an attempt to compensate for inadequacies, with the result that the patients are inhibited. This over-control effects a lack of spontaneity. The high F% in the Rorschach is to be noted.

11) Through common illnesses and ward life a group identification is fostered. In the results, this fact is most evident in scale F2-S of the

Bernreuter which shows clearly the heightened sociability within the groups.

12) Hospital discipline and routine cannot help but submerge individuality to an extent. Consequently, there is a lack of individuality among patients and a narrowing of the range of their interests. The low 0% and high A% in the Rorschach point also to this conclusion.

13) It is somewhat paradoxical that hospitalization in engendering such a variety of neurotic components at the same time enables them to remain latent unless unduly severe. This is so because the sheltered existence of hospital life requires less adaptation. Thus, emotional instability may well remain hidden from view. The Emotional scale of the Bell bears evidence of this fact, most scores of the group bring average. When the objective aspects of trauma are so obvious, the subjective features of a neurosis are not so readily distinguished.

ii Tuberculosis

There are certain characteristics peculiar to Tuberculosis which are seen to exert an effect on the personality of its victims.

1) The increased sexual urge, expressed as an increased physiological drive is seen in the high FM of the Rorschach.

2) The spasmodic affective outbursts observable in these patients are due to the exhilaration of fever. Clinical evidence of this is found in the unbalanced CF of the Rorschach.

iii Paraplegia

Considering the severity of the physical limitations imposed on the Paraplegic it is not surprising to find that there results from this, certain

personality changes which can be directly related to the trauma.

1) Being impotent, participation in emotional situations is apt to be unpleasant, if not painful, to the Paraplegic. To overcome this, these patients have made some attempts to dissociate emotion from the intellect. This is seen in the Rorschach as the di response.

2) These men have ample reason to brood over their plight. Fortunately, this concern seems to have led to the development of some insight. The FK responses in the Rorschach and the good performance in the Similarities subtest (measuring concept formation and discrimination) of the Wechsler-Bellevue lend weight to this conclusion.

3) Their anxiety being more pronounced, the paraplegics find greater need of evading anxiety arousing situations. This requires greater ideational activity, expressed in dr responses in the Rorschach.

4) The more pronounced insecurity and anxiety found among Paraplegics is indication of their more severe maladjustment. The paucity of M responses in the Rorschach corroborates this.

5) In view of the many conflict situations that the Paraplegic is faced with, it is reasonable that a degree of tension be present. Some m responses were given in the Rorschach.

6) The test results show that the Paraplegic tends to function further below his mental level than could be expected on the basis of hospitalization alone. A lowered BMR, greater bodily preoccupation, and the security of a 100% pension are the factors causing this more severe impairment of the intellect. This is reflected in the % Mental Deterioration as measured by the Wechsler-Bellevue.

7) Considering the total picture, the test battery as a whole reflects

the greater maladjustment found in the Paraplegic.

RECOMMENDATIONS

The results of this investigation show that to enhance the welfare of the Paraplegic, certain changes in present methods of treatment and rehabilitation are necessary.

1) A reorganization and integration of vocational guidance, disability allowance and the various therapeutic measures with a medical treatment orientated to the psychological needs of the patient as well as to his physical health, is imperative.

2) The patients should be given appropriate activities to provide a normal means of emotional expression thereby providing adequate relief for affective tensions.

3) In view of the presence of neurotic components, seen to hinder the proper functioning of the personality, psychotherapy is to be recommended.

4) A more efficient method of dealing with Paraplegia is dependent upon the foundation of a Paraplegic center.

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