SHORT TITLE:

Jilek, THE RESIDUAL DIMENSION

THE RESIDUAL DIMENSION:

A Study of Residual Syndromes in Veterans with Chronic Psychiatric Illness

by

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RESEARCH THEME AND PURPOSE OF THE INVESTIGATION

A review of psychiatric classifications in use throughout the world (STENGEL, 1960) reveals that only four out of 38 diagnostic systems provide a classifying label for a condition as familiar to clinicians as the schizophrenic residual, or "defect", state. +) The Diagnostic and Statistical Manual of the A.M.A. (1952) reserves the term Schizophrenic reaction, residual type, for "those patients who, after a definite psychotic, schizophrenic reaction, have improved sufficiently to be able to get along in the community, but who continue to show recognizable residual disturbance of thinking, affectivity, and/or behavior."

Nowhere in the nomenclatures do we find analogic subcategories of manic-depressive and psychoneurotic disease. Yet cases equivalent to residual types have been observed after affective and neurotic disorders. Some authors are impressed by the similarity of these types of disease outcome with schizophrenic residual states; others defend the specificity of the schizophrenic "defect". The question of the generality or specificity of residual states is of relevance to the theory of schizophrenia and to our understanding of the "process-reaction" problem of mental disease.

+) The 4 systems are: The International Classification of Diseases of the WHO., the Standard Classification of Mental Disorders of the A.M.A., the classification proposed for official use in Norway, and JUNG's modification of the Wurzburg scheme of the Deutscher Verein fuer Psychiatrie.

Are the specific marks of our well-established diagnostic entities obliterated in the common end path of a "general residual psycho-syndrome" (ERNST, 1962) or are essential differentiating criteria retained beyond the phase of active symptom formation? In pursuance of this question I chose as research subject the residual syndromes+) in schizophrenic, manic-depressive and neurotic illness.

The purpose of this study is (1) to investigate the existence of non-schizophrenic residual syndromes, (2) to define their symptomatology, (3) to compare conditions characterized by active symptom formation with residual syndromes, and schizophrenic with non-schizophrenic residual syndromes by evaluation of mental and social functioning, (4) to derive from the data a hypothesis on the dynamics of residual syndrome formation which might provide a basis for further research.

+) The synonymous use by various authors of the terms "state" and "type" when describing pictures of residuality in the context of schizophrenic illness, creates a semantic problem. It is of interest that "residual state" or "defect state" is favoured by Continental workers while "residual type" has been adopted by the American Psychiatric Association. To avoid the adynamic implications of the term "state" (from Latin, 'stare', to stand still) this author in general prefers the use of the neutral expression "syndrome" which denotes an association of symptoms with or without specific aetiology. The term "residual dimension" is introduced later to signify the common properties of residual syndromes differing in other aspects.

THE RESIDUAL STATE IN PSYCHIATRIC LITERATURE

In his early writings KRAEPELIN (1893,1902) stressed the entirely unfavourable prognosis of dementia praecox: Some kind of mental invalidity, an incurable mental defect would always remain. To KRAEPELIN, this indicated the pathologic-anatomic basis of the disease (KRAEPELIN, 1893). Ever since, leading European authors have looked upon the schizophrenic "defect" as an outcome specific to schizophrenia and signifying the fundamentally somatic nature of the disease process. Thus CONRAD (1958) considers as "the most serious argument against the psychogenesis of schizophrenic psychoses the fact that they do not heal completely but leave a residuum". Later editions of KRAEPELIN's textbook give a detailed description of "healing with a defect" which remains valid to this day:

> "In a great series of cases all conspicuous disease manifestations may disappear while less significant changes in the psychic personality remain" (KRAEPELIN, 1913)

KRAEPELIN describes a feeblemindedness which affects emotional and volitional functions. Insight is lacking, judgement weakened, thought impoverished, attention blunted. The entire emotional life is characterized by a lack of deeper feelings, by indifference and absence of strivings. Capacity to work is usually diminished and productivity reduced (KRAEPELIN, 1913).

E. BLEULER accepts KRAEPELIN's concept of schizophrenic end states. His more dynamic orientation is reflected by a statement on the "dull,

apathetic deterioration", the terminal schizophrenic condition most frequently encountered (E.BLEULER, 1911):

> "Many of these people have merely lowered the levels of aspiration with regard to their accomplishments and claims to the world".

BERZE (1929) distinguishes between "active process schizophrenia" characterized by the production of active clinical symptoms, and "defect schizophrenia" or "inactive process schizophrenia", the clinical picture of which consists mainly of deficit symptoms. These conditions are not viewed by BERZE as permanent and static. Inactive process schizophrenia may be reactivated even after a standstill of several decades. Defect symptoms, however, are clearly distinct from process symptoms:

> "The actual personality is frozen (erstarrt)...the schizophrenic appears weakened affectively. Mainly because of this inability to modulate the actual personality, -manifested in the one-sidedness of intellectual interests, in the narrowing of horizons, and in a lack of sympathy - does the schizophrenic appear dull (versimpelt)...It is exactly the capacity to actualize potentials which is more or less seriously impaired by the schizophrenic process."

This BERZE calls the "actualization defect" of the post-processual schizophrenic.

MAUZ (1930) warns against regarding the schizophrenic defect as something constant. The defect state may be decompensated by a new psychotic episode, and the decompensated defect state may again become compensated. MAUZ lists as compensating factors time, effects of psycho-therapy, and favourable "external constellations".

VON BAEYER (1951) differentiates the response to electroconvulsive treatments according to the productive or defective quality of schizophrenic symptoms: electroshock fails to have an effect upon symptoms of defective quality. Schizophrenics with defective symptomatology are characterized as "odd, without initiative, frozen", they display "weakness of cognitive intention and comprehension" (Schwaeche der Denkintention und Sinnerfassung).

Residual symptoms in remitted schizophrenic patients are depicted by MAYER-GROSS (1932) as residual thought disturbances like vagueness and woolliness of thinking; impairment of activity; fatiguability; lack of avocational interests and reduced spontaneity which may lead to social decline; and finally, as the well-known affective changes resulting in indifference and impassivity. Furthermore, residuary hallucinations, delusions, or psychomotor symptoms may stay with the patient like a bad habit and are often of little concern to him. In his English textbook, the same author (1960) introduces the term Residual State for schizophrenics

> "in whom characteristic forms of behaviour and ideation have taken root and are kept up, apparently for an indefinite time... Negative symptoms, thought disorder, passivity, catatonic mannerisms and flattening of affect rule the picture...There is a robotlike fixity and petrification of attitude and reactions which are not only due to poverty of ideas, but also to a very small choice of modes of behaviour. The patient has lost all flexibility, he has no future and his interest in present and past are narrowed and restricted."

MAYER-GROSS tends to consider ageing an insufficient explanation for this "second turning point" in the natural history of schizophrenia.

Already FLECK (1928) had shown the normal psychic changes of old age to have an ameliorating effect upon the "defect schizophrenic", allowing him to make a better social adjustment.

To EY (1963) the course of schizophrenic illness is leading towards an abolition of psychic existence; a kind of "suicide de l'être-dans-le-monde". M.BLEULER (1960), however, recognizes that character changes after active schizophrenic symptom formation may be of a rather light degree such as to suggest a normal psychological reaction in response to grave inner experiences. He cites as typical personality changes those "in the sense of a schizoid psychopathy exhibiting odd ways (sonderlinghaftes Wesen) lack of warmth and activity in interpersonal relationships, and restriction of the former range of interests."

Another conclusion is drawn by AVENARIUS (1960) who rejects the view that post-psychotic changes in schizophrenics can be interpreted as the result of a normal psychological process of "digestion" of morbid experiences. He postulates instead a basic defect consequential upon the disease, a loss of psychic elasticity which is causally related to the development of the total defect state (ganzheitlicher Defektzustand).

CONRAD's monograph (1958) brought a fundamental reappraisal of schizophrenic psychopathology. The essential feature of CONRAD's "schizophrenic residuum" is the reduction of energy potential which is non-existing in normals but may also be seen in frontal lobe lesions. This "broken spring syndrome" is quite different from the clinical picture of active psychosis. It is manifested by loss of vigour (Verlust der Spannkraft), lack of inner drive and determination,

deficiency of energy and interest. CONRAD uses the image of the energy transformation of a piece of coal in the process of combustion. Likewise, the residual state is understood as the end result of the schizophrenic process and as a permanent structural change of the patient's personality.

Recently, JANZARIK (1963) observed similarities between the unspecific "dynamic depletion" (dynamische Entleerung) of post-psychotic schizophrenics, and the mental make-up of aged, but not senile, subjects. JANZARIK perceives an asynchronously progressing psychic pre-aging (asynchron voranschreitende seelische Voralterung) as the core of schizophrenic residual states. In the aged schizophrenic, "physiologic aging of the whole organism has caught up with the asynchronously advancing adynamism." Thus the demonstrable losses are often found to be negligible when the old schizophrenic is compared with a normal age mate, and what impressed as a permanent defect might in reality reflect a reversible constellation.

SHAKOW, in 35 years of research, has been able to shed some light on the nature of the psychological deficit in schizophrenia:

> "In schizophrenia one sees a distinct weakening of the control center that serves the integrating and organizing function and provides for the establishment of what I have called 'generalized' or 'major sets'. Accompanying this weakening is a tendency for the 'segmented' patterns to come to the fore and become inordinately important." (SHAKOW, 1963)

Examples of this segmentalization were found in the evidence of high spontaneous activity of both central and autonomic nervous system in response to irrelevant stimuli, and in the evidence of low directed and adaptive activity called for by relevant stimuli.

However, there are certain conditions which exert a normalizing effect, i.e. they tend to reduce the differences in performance of experimental tests between chronic schizophrenic and normal subjects. "Normalizing" factors are, among others, mere passage of time and positive social influence on the patient: these variables may improve the chronic schizophrenic's performance. (SHAKOW,1958).

Schizophrenic residual states have to be differentiated from simple schizophrenia. This entity was introduced as Dementia simplex by DIEM (1903) and defined by KRAEPELIN (1913) as "insidiously developing simple dementia...consisting of an impoverishment and desolation of the entire psychic life (Verarmung und Veroedung des gesamten Seelenlebens) which takes place imperceptibly."

E. BLEULER (1911) stressed the distinctiveness of this subgroup in which only the fundamental symptoms of schizophrenia are present while accessory symptoms cannot be elicited. MAYER-GROSS in his contribution to the "Handbuch" (1932) denied the need for a separate category of simple schizophrenia. Later-on, however, he devoted to this syndrome one of the best descriptions available today:

> "Shallowness of emotional response, indifference or callousness combined with absence of will and drive are the principal symptoms. Catatonia, delusions, and hallucinations are not found. Thought disorder may occur, but is often hard to detect and never prominent...The Clinical picture usually develops insidiously without the symptoms of the more florid types..."
>
> (MAYER-GROSS, 1960)

EY (1963) speaks of simple schizophrenia as of "une sorte de sclerose de la vie affective et sociale".

One could also define simple schizophrenia as a schizophrenic residual state developing without active psychosis. It is not surprising that some

of the most typical schizophrenic residual states in our group had been classified as "simple schizophrenia" by later observers who had failed to inquire into the earlier history. They had missed the reports on the initial psychotic phase with active symptom formation which clearly differentiated the cases in question from simple schizophrenia. CONRAD (1958), however, assumes that in dementia simplex the active psychotic phase took an abortive course and passed unnoticed, but nevertheless caused a considerable reduction of the psychic potential and resulted in the formation of a residual state.

While schizophrenic residual states have found official recognition, relatively little is known about residual syndromes in the course of affective psychosis and psychoneurotic illness. As to manic-depressive disease, we may again quote KRAEPELIN who did not at all deny the existence of lasting untoward personality changes in this condition. He notices that some patients become "obtuse, indifferent, and will-less" (KRAEPELIN, 1893). In DEFENDORF's American edition of KRAEPELIN's textbook (1902) we hear more of these defects. The patients are "indifferent and irritable and very susceptible to alcohol, and may be deficient in judgement." At the same time KRAEPELIN emphasizes the infrequency and moderate degree of mental deterioration in manic-depressives.

A lasting contribution to the study of affective psychoses was made by STRANSKY (1911). He also described manic-depressive patients exhibiting "a degree of defect such...that they gradually approach the limits of psychic invalidity even in the intervals". STRANSKY finds instances of such "psychic shrinking" also in non-institutionalized patients. In some cases he

discovers a permanent defect, manifested by blunting of affects, lack of initiative and spontaneity; unconcernedness and limitation of interests. Other Continental authors have tended to account for "impure" cases like these in terms of heterogenous influences by heredity and body type acting in favour of a schizophrenic outcome (MUELLER, 1936). In the tradition of the old concept of "démence vésanique" of French Psychiatry, EY (1963) accepts a possible evolution of manic-depressive psychosis towards "démence secondaire" with a certain degree of "affaiblissement intellectuel".

The findings of some follow-up studies are of relevance here. About one third of the 141 cases of POORT (1945) were "more or less socially disabled" and about 10% had developed schizophrenia after many years of manic-depressive illness. KINKELIN, (1954) concludes on the basis of her catamnestic investigation that 15% of 146 patients had shown schizophrenic symptoms as their affective psychosis was progressing, and 4.8% had finally become chronic schizophrenics. This side of the atlantic, RENNIE (1942) traced four in a series of 208 cases whose originally "typical manic-depressive reaction" had changed its character so as to point definitely in the direction of ultimate schizophrenia. The much lower incidence of a schizophrenic development in manic depressive disease in the American study may well reflect different diagnostic practices such as the use of a schizo-affective label.

Turning finally to psychoneurotic conditions we are at once confronted with a deplorable scarcity of long term follow-up research. Accordingly, prognostic rules have been much less clearly ascertained than in schizophrenic and affective psychoses. Evaluating the data of well known psychiatric treatment centers in the United States, Britain and Germany,

RENNIE (1953) states that "by common consensus, some 60% of the psychoneurotic patients can be expected to show considerable improvement or recovery at intervals of from 3 to 20 years after treatment". In his own longitudinal study of 240 hospital treated psychoneurotics, 68.8% of all the patients were rated as recovered or improved twenty years after first hospitalization. The corresponding figure for anxiety neurotics was 76% (RENNIE, 1953). The outcome was more favourable in the hysteria group, an observation later confirmed by LJUNGBERG (1957).

ERNST's monograph on the prognostics of psycho-neuroses contains an extensive review of relevant international literature (1959). The overall picture is that of moderate optimism, assuming a relatively favourable outcome in neurotic conditions. ERNST himself introduces the concept of the neurotic residual state corresponding in essential aspects to the so-called schizophrenic defect. These neurotic residual states were encountered in about 50% of 120 former clinic patients (ERNST, 1959) and in about 30% of 70 formerly hospitalized neurotics reviewed 20 to 27 years after their first admissions (ERNST, 1965). The tendency to develop a residual syndrome was more prominent in dull and untalented than in intellectually endowed personalities; it was also more often associated with the course of hysteria and depressive reaction than with other neurotic diseases. ERNST (1962) compares neurotic and "endogenous" residual states. Both appear to have basic symptoms in common. ERNST holds that they are

> "qualitatively indistinguishable with respect to their loss of energy potential (energetischer Potentialverlust) and impoverishment of interests, of general vigour(Spannkraft) and interpersonal relatedness (mitmenschliche Beziehungsfaehigkeit). Precisely this central and meaningful characteristic which many scholars have taken to be specific of schizophrenic residual formation proved to be most general and unspecific when compared with late intervals in manic-depressive illness and with neurotic residual states."

ERNST (1962) goes on to postulate a "general residual psycho-syndrome" characterized by "reduction of the personality's potential and by general interference with drive!' The general residual psycho-syndrome is conceived in psychopathological and not in etiological terms. It may be the outcome pattern not only of schizophrenic, neurotic, and manic-depressive illness, but also of an unfavourable personality development, e.g. after severly traumatizing experiences in extreme situations of human existence.

A recent publication seems to confirm this aspect of ERNST's hypothesis: NATHAN, EITINGER and WINNIK (1964) report a syndrome in concentration camp survivors which is "closely akin to the clinical picture of the residual stage in a disintegrative psychotic process". Milder cases of localized brain syndrome, especially frontal lobe lesions, may present a very similar clinical symptomatology. (M.BLEULER, 1960). To unite so-called "psychogenic" and "organic" conditions in one syndrome, as ERNST does, might seem strange; less so today, however, if we consider the research conducted by CHAPMAN and co-workers (1960). Summarizing their findings they state:

> "It was found that persons with no evidence of gross anatomic disease of the brain but who, for long periods had achieved no effective adaptation and had experienced long-standing anxiety and other disturbances in behavior and mood...exhibited severe thinking and adaptive difficulties. Indeed, they performed in their usual lives and laboratory test procedures as though moderate and sometimes massive amounts of brain had been damaged or removed."

By suggesting that "disturbed psychic integration" (seelische Integrationsstoerungen) and localized brain lesions might alter cerebral function in a similar way, ERNST also approaches fundamental ideas of the Viennese school; concepts reformulated by GERSTMANN (1958):

"1. The concept of an intricate interaction between the organic and the psychic apparatus;

2. The concept of a possibility of alteration of cerebral physiological mechanisms under the direct influence of psychological agents or psychogenic processes and, conversely, of the production of psychogenic-like or functional manifestations through cerebral lesions, in the early phases of their development;

3. The concept that there was no basic difference or real gap between the functional and the organic;

4. The concept regarding the nature of interrelation of brain function and brain pathology to psychology and psychopathology;

5. The concept of correlative physiodynamics and psychodynamics in the fields of neurology and psychiatry."

We may conclude this survey by noting that the authors agree on the existence of a schizophrenic residual state while mention of residual conditions in manic-depressive illness is rather scarce, and the concept of a neurotic residual syndrome was introduced only recently. We also observe that most workers define the residual state in terms of a lack of "energy" (drive, initiative, interests, strivings, spontaneity) and in terms of an impairment of emotional and behavioural flexibility. In addition to these intrapsychic deficits, three contemporary authors point to restriction in the areas of social functioning and interpersonal relations. The agreement on characteristics of the schizophrenic residual state is not reflected in the authors' views on etiology.

Here the spectrum reaches from "organic" hypotheses (KRAEPELIN, CONRAD, AVENARIUS) of permanent defects as specific sequelae of the schizophrenic process to "dynamic" orientations (E.& M. BLEULER, ERNST) assuming the possibility of unspecific socio-psychologic reactions to the disease experience. Some representatives of "organic" schools (BERZE, MAUZ) take a more flexible approach in denying the static and permanent nature of "schizophrenic defects", or in developing the biologic concept of an asynchronously progressing psychic pre-aging (JANZARIK).

THE CONCEPTUAL MODEL

Initially, the following working hypothesis was formulated: "Repeated periods of active psychiatric symptom formation over many years, as encountered in schizophrenic, manic-depressive, and psychoneurotic illness may lead to changes of the personality which are uniform to such an extent that clear differentiation according to the previous diagnoses is impossible upon cross-sectional examination of the patients at least two years after the active symptoms have subsided."

In order to arrive at a tentative definition of the conceptual model(General Residual Syndrome), the pertinent descriptions of schizophrenic, neurotic, and manic-depressive residual, or "defect", states were reviewed. The main characteristics given by the authors permitted logical grouping into four symptom clusters.

Symptom cluster I:

Reduced ability to work and to enjoy a full life (MAYER-GROSS)
Social decline as a result of reduced work capability (ERNST)

Symptom cluster II:

Deficiency of energy, loss of vigour, lack of inner drive and determination (CONRAD)
Loss of energetic potential, general interference with drive (ERNST)
Without initiative (VON BAEYER)
Lack of initiative, unconcernedness (STRANSKY)
Indifference and impassivity (KRAEPELIN, MAYER-GROSS)
Limitation of interests (STRANSKY)
Lack of interest in the future, narrowed interest in past and present (MAYER-GROSS)
Narrowing and impoverishment of ideas and interests, loss of horizon (BERZE, CONRAD, ERNST, JANZARIK)
Lowering of the levels of aspiration (E. BLEULER)
Loss of goal-directedness of strivings, lack of tenacity (JANZARIK)
Lack of spontaneity (STRANSKY, MAYER-GROSS, JANZARIK)
Affaiblissement intellectuel (EY)

Symptom cluster III:

Loss of psychic elasticity (AVENARIUS)
Frozen personality (BERZE, VON BAEYER)
Fixity and petrification of attitudes, rigidity and small choice of modes of behaviour (MAYER-GROSS)
Rigid inaccessibility or indifferent willingness (E. BLEULER)
Inappropriate affect, parathymic reactions especially with regard to specific conflict themes, mannerisms (ERNST)
Impaired capacity of emotional modulation (JANZARIK)
Affective weakening (BERZE, VON BAEYER)

Symptom cluster IV:

Lack of warmth and activity in interpersonal relationships (M. BLEULER)
Deteriorated and impoverished interpersonal relations, impaired ability to form new interpersonal relations (ERNST)

These symptom clusters suggested a tentative definition of the hypothesized General Residual Syndrome in terms of characteristic properties:

(I) Reduced ability to work gainfully

(II) General reduction of drive and interests

(III) Impaired emotional modulation, rigid or indifferent attitudes

(IV) Impoverished interpersonal relations, impaired ability to communicate with others and to form new social contacts.

Full acceptance of the working hypothesis depended on an affirmative answer to these questions:

(1) Does a residual syndrome as defined above exist after manic-depressive and psychoneurotic illness?

(2) Can psychiatric evaluation show this residual syndrome to be indistinguishable in terms of current mental and social functioning from the schizophrenic residual state while the respective active illnesses are clearly distinguishable from each other?

(3) Is it possible to demonstrate this at a deeper level by appropriate test procedures? Can basic traits common to residual states irrespective of their former diagnostic classification be elicited by testing?

Having found an answer to these questions the intention was to look for relevant data in the case histories which could reveal discernible factors associated with, and possibly contributing to, the development of residual states.

SELECTION OF THE SUBJECTS

Preliminary investigations at the Queen Mary Veterans Hospital, Montreal, suggested resort to two main sources of subjects in search of the General Residual Syndrome: namely, beneficiaries of the War Veterans Allowance, popularly known as the "burnt-out pension", and pensioners of the Canadian Pension Commission pensioned on psychiatric grounds. Belonging to the Montreal District of the Department of Veterans Affairs, persons in these groups had at one time been patients of the psychiatric departments at St.Anne's Hospital, or/and Queen Mary Veterans Hospital. Of the cases assessed by the War Veterans Allowance Assessment and Rehabilitation Board, Montreal, in the years 1958 to 1964, the files of 1028 veterans classified by the board as "materially handicapped or permanently unemployable on psychiatric-psychologic grounds, or predominantly on psychiatric grounds" were reviewed. These were found to have the following diagnostic distribution:

Schizophrenic reaction	184
schizo-affective	3
manic-depressive reaction	11
psychotic depressive reaction	5
psychoneurotic, depressive reaction	128
Psychoneurotic reaction, other (mainly anxiety reaction)	426
personality disorder	210
mental deficiency	61

Although the patients were categorized as handicapped on psychiatric or predominantly on psychiatric grounds, many were given additional physical diagnoses. This was most prominent in the psychoneurotic groups and might indicate a certain readiness to grant a physical label in some

neurotic cases. Somatic conditions frequently diagnosed in combination with psychoneurotic and personality disorders were:

pulmonary emphysema, chronic bronchitis, bronchial asthma, sinusitis; varicose veins, hypertension, obesity, gastritis, functional dyspepsia, chronic duodenal ulcer; lumbosacral strain/ spasm, osteo-arthritis of the spine, rheumatic arthritis, hypertrophic spondylitis, lumbo-sacral disc disease; pes planus.

These diagnostic combinations were of importance when candidates for the neurotic residual group were selected.

Other conditions had also to be considered and to be ruled out before a case could qualify as "residual":

(1) Chronic psychosis or neurosis with ongoing symptom formation. Cases of this type were termed "active".

(2) Natural ageing process. An age limit of 60 years was set.

(3) Temporary asthenic-apathetic states after active psychiatric illness. Known to occur not infrequently, this condition may come close to a depressive reaction, and usually lasts a few weeks. It was required, therefore, that an interval of at least two years time must have elapsed since active symptom formation came to an end.

(4) Mental deficiency. Subjects with an I.Q. of less than 90 on the Revised Beta Examination were rejected.

(5) Personality disorder with characteristics similar to those of the residual syndrome but existing before the onset of manifest psychiatric illness, such as "inadequate personality".

Only those cases were considered as candidates for the project whose basic diagnosis of schizophrenic, manic-depressive, or psychoneurotic reaction had been established and repeatedly confirmed by different re-examiners during

a clinical observation period of at least ten years. The major diagnostic classification had to be constant. However, changeover from one diagnostic sub-group to another, both in the schizophrenic and in the neurotic patients, was encountered so often in the population at our disposal that it had to be accepted in several candidates. This is mentioned as a finding which incidentally is in line with recent statements of CONRAD (1958) who conceives of the schizophrenic subtypes as "quantitative variants" and not as qualitative differentiations.

Selection of the manic-depressive cases.

The question of a manic-depressive residual state appeared to be the most controversial; this step was, therefore, tackled first. From the available sources, War Veterans Allowance and Canadian Pension Commission clientele, Montreal district, only 24 cases below the age of 60 years could be collected who met the requirement of an undisputed and confirmed diagnosis of manic-depressive reaction. Cases with inconstant of combined psychiatric diagnoses were excluded. Of these 24 manic-depressive patients, one only seemed to correspond to our criteria of the residual syndrome on the basis of clinical reports. Further interviews, however, elicited schizophrenic symptoms.

Because of lack of candidates for a residual group, the manic-depressive category was not included in the further study. Considering the fact that it was not possible to find more than 24 unquestionable manic-depressives in a sample of 1122 government-supported psychiatric patients below the

age of 60 (i.e. 2.14%), one has to conclude that this diagnostic category is underrepresented in our patient population.+)

Two hypothetical explanations can be offered which are by no means mutually exclusive: (1) Manic-depressive illness may, as suggested by LANDIS & PAGE (1938) and by ARIETI (1959), have a sociological and ecological distribution and association which would lead to its being underrepresented in a predominantly urban population of lower socio-economic status origin; (2) Manic-depressive illness may be less incapacitating in the long run, thus being underrepresented in a population rated as "materially handicapped".

Selection of the psychoneurotic cases.

For the selection of neurotic residual states, the War Veterans Allowance population was resorted to and 426 cases classified as "Psychoneurotic, other than depressive reaction" were reviewed. Only 126 of these cases were without accompanying somatic condition of such kind as might possibly be construed as contributing to the patient's incapacitation. Perusal of the records and interviews with likely

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+) Prevalence estimates of manic-depressive illness in males in this country; based on the census of in-patients "on the books" of all psychiatric hospital facilities in Canada on December, 31st:

in 1960, 4.69% of all male in-patients age 20 to 59 were manic-depressives;
4.89% of all male in-patients of all ages were man.-depressives;
in 1961, 4.39% of all male in-patients age 20 to 59 were man.-depressives;
4.63% of all male in-patients of all ages were man.-depressives;
in 1962, 4.35% of all male in-patients age 20 to 59 were man.-depressives;
4.31% of all male in-patients of all ages were man.-depressives;

(calculated from data of "Mental Health Statistics", Dominion Bureau of Statistics, Ottawa, 1960, 1961, 1962)

candidates finally elicited 14 cases who met the criteria laid down for the hypothesized General Residual Syndrome. Another group of 14 patients with ongoing neurotic symptom formation was then selected from the remaining 112 War Veterans Allowance cases; matched to the residual neurotic subjects in good approximation on these parameters: age; age at onset and year of onset of illness; service history; marital status; symptomatologic classification.

Selection of the schizophrenic cases.

Two groups of each 14 schizophrenics were chosen from the present and former patients of St.Anne's Hospital, respectively. One group was characterized by ongoing psychiatric hospital treatment and active psychotic symptom formation, especially by florid delusions and hallucinations; the other group by the "deficit" symptoms denotative of the schizophrenic residual state. The two groups corresponded roughly to the analogous neurotic groups in: age; age at onset and year of onset of illness; duration of active illness; service history. (App.i, ii)

The total number of subjects finally selected for the project was, therefore, 56.

While the predominant diagnostic classification of the schizophrenic subjects was Schizophrenic reaction, paranoid type, and in the psychoneurotic cases Psychoneurotic, chronic anxiety reaction or chronic anxiety state, various other subtype labels were attached to the patients during the course of their illness. An attempt was made in selecting the subjects to arrive at a similar distribution of psychopathologic classifications:

Group 1, chronic schizophrenic with active symptom formation

Schizophrenic reaction, paranoid (only)	5
, paranoid and undifferentiated	1
, paranoid and catatonic	2
, paranoid, catatonic, and undifferentiated	3
, paranoid and hebephrenic	1
, paranoid, hebephrenic, and undifferentiated	1
, paranoid, hebephrenic, catatonic and undifferentiated	1

n = 14

Group 2, schizophrenic residual state

Schizophrenic reaction, paranoid (only)	2
, paranoid and "simple"	5
, paranoid and catatonic	2
, paranoid, catatonic and "simple"	3
, paranoid, catatonic, hebephrenic, undiffer.	1
, paranoid, catatonic, hebephrenic, "simple"	1

n = 14

Group 3, chronic neurotic with active symptom formation

Chronic anxiety reaction (only)	1
Chronic anxiety reaction with somatization	5
Chronic anxiety reaction, and obsessive-compulsive reaction	1
, and phobic reaction	1
, phobic reaction and conversion reaction	1
, conversion reaction and "asthenia"	1
, following shell shock	2
, following shell shock and dissociative reaction	1
, and hysteria	1

n = 14

Group 4, neurotic residual state

Chronic anxiety reaction (only)	1
Chronic anxiety reaction, with somatization	7
Chronic anxiety reaction, and obsessive-compulsive reaction	1
, and phobic reaction	2
, and conversion reaction	1
, following shell shock	1
, following shell shock, hysteria, and phobic reaction	1

n = 14

DATA COLLECTION

Organized information was obtained (1) from the documents available, (2) through structured interviews permitting rating on nominal scales, (3) through test procedures.

(1): Thorough perusal of the service documents and of the Dept. of Veterans Administration district files allowed the extraction of relevant data on pre-morbid adjustment, service performance, onset and course of illness, treatment and rehabilitative efforts. The periodical social service reports revealed important features of the subjects' social and family situation, and illuminated both the patients' and their home environments' attitudes to questions of discharge, social rehabilitation, and financial compensation.

(2): All subjects were seen on two occasions by the investigator. In the initial session of about two hours duration a structured psychiatric interview was performed. If possible, relatives of the patients were also seen. The subjects were subsequently rated on ten "Mental Health and Social Functioning" items which were expected to provide indicants of the properties attributed to the hypothesized General Residual Syndrome. (App.iv). Ratings were based on the structured interview and on the documented evidence. The ratings were discussed with Dr. F.LUNDELL, psychiatric research adviser, Queen Mary Veterans Hospital, who interviewed and co-rated some of the cases.

(3): After consultation with Dr. G. FERGUSON, Professor and Chairman, Dept. of Psychology, McGill University, a battery of twelve tests was compiled and applied to the subjects in appointments scheduled three to

four months after the initial interviews. To avoid mutual influencing of test procedures and interview impressions, the data were kept separately until after evaluation. All but two tests were given by the investigator, who received instruction in their administration and gained some methodological experience by testing psychiatric patients who were not participating in the project.

Revised Beta Examination (KELLOGG & MORTON, 1935; manual, 1957)

This instrument was designed to measure general intellectual ability mainly in army personnel and was later restandardized to yield a Wechsler-type Intelligence Quotient (LINDNER & GURVITZ, 1946).

Comprehension Test of the Wechsler Adult Intelligence Scale, for English speaking subjects (WECHSLER, 1958; manual, 1955)

'Jugement' Test of the Epreuve Individuelle d'Intelligence Générale, for French speaking subjects (BARBEAU & PINARD, 1951)

Verbal Fluency Test

In this procedure the subject is asked (a) to name as many animals as he can in one minute; (b) to say as many words -not whole sentences- as he can in one minute. Repetitions are not counted. The method was first devised by EYSENCK (1952) for a comparative experimental study of schizophrenic, depressive and normal subjects. In its present form the test was used by CHAIKELSON (1965) in a study exploring the pattern of changes in psychological test performance with aging in schizophrenic patients.

Verdun Association List (SIGAL, 1956; SIGAL & DORKEN, 1966)

An objective word association test designed to measure the "normality" of associations, of reaction time in two presentations of the stimulus word, and the stability of associations. The test was originally designed to discriminate between working and non-working mental hospital patients. POSER (1966) found the instrument sensitive to patient change in a recent investigation into the outcome of group therapy for chronic schizophrenics.

McGill Picture Anomaly Series M (HEBB & MORTON, 1943; directions, HEBB, 1943)

This non-verbal test was designed by HEBB and MORTON as part of the McGill Adult Comprehension Examination, in order to "broaden as much as possible the range of abilities sampled by intelligence tests." The

intentionally cartoon-like pictures of the Anomaly Series represent examples of human behaviour characterized by poor judgement or social errors. The subject has to show what is funny, out of place, or not as it should be, in the improbable situations depicted. Norms were obtained from predominantly urban Canadian populations in Quebec and Ontario.

Conjunctive Class Concept Formation in logical puzzles and similarity questions (App. xvi).

Test items were mainly taken from a larger test battery used by TRUNNELL (1964) who concluded that "one could describe the underlying mechanism in the disturbed thinking of schizophrenics as a relative failure in the ability to form conjunctive classes."

Maudsley Personality Inventory(EYSENCK, 1947; 1952b; 1957; manual, 1959; CLARIDGE, 1960)

Speed of Tapping Test (CSANK, 1955; LEHMANN & CSANK, 1958; LEBLANC, 1959; apparatus as described by CHAMBERS, 1965)

Slower tapping rates and higher variation in schizophrenic subjects have been reported by SHAKOW & HUSTON (1936), also by KING (1954).

Body Sway Test (HULL, 1933)

A widely used measure of suggestibility (EYSENCK, 1943; 1947; 1952b; CLARIDGE, 1960). Method as described by CLARIDGE (1960) with phonograph recorded instructions according to EYSENCK (1952b). Apparatus similar to that of EDWARDS (1939).

Critical Flicker Fusion Frequency +) (CSANK, method, 1955; CSANK & LEHMANN, 1958)

As clinical and experimental studies have shown, "the ultimate crucial point of determination of critical flicker fusion appears to be in the cortex" (BARTLEY, 1959) Investigators seem to agree that an association exists between the lowering of the critical flicker fusion threshold and cerebral lesions, especially of occipital and frontal localization, or cerebral anoxia (BATTERSBY, 1951; BATTERSBY, BENDER & TEUBER, 1951; GELLHORN & HALLMANN, cit. LANDIS, 1953; CSANK, 1955).

+) Critical Flicker Fusion Test and Modified Objective Rorschach Test(p.27) were administered by J.Z. CSANK, M.A., Chief, Dept. of Psychology, St.Anne's Veterans Hospital; who has worked for years in this field. (CSANK, 1955; CSANK & LEHMANN, 1958; CSANK, 1959). Mr CSANK also performed the statistical analysis of the flicker fusion and Rorschach data.

Evidence of an association with non-organic psychotic and neurotic conditions remains inconclusive (LANDIS, 1953; CSANK, 1955). EYSENCK et al. (1957) examined normals, psychotics and neurotics, without being able to demonstrate significant intergroup differences on this variable.

Modified Objective Rorschach Test (CSANK, 1959)

This is a multiple choice Rorschach test scored according to the principles of the "Objective Rorschach" of O'REILLY (1956). CSANK's main modification of the "Objective Rorschach Test" consisted of elimination of some of the weak items of O'REILLY's original test and incorporation of some important items from the Multiple Choice Rorschach of HARROWER & STEINER (1951). As a guide in the selection of responses the statistical study of HARROWER & STEINER (1951; "Card Pool") was followed.

HANDLING OF THE DATA

The ratings based on information obtained in the structured interviews and from the documents had to be considered as nominal variables for the most part. The appropriate statistical procedure, therefore, appeared to be Chi-square tests of independence.

Other statistical analyses were performed with the data obtained from the tests, and with some important biographical data like years of formal education. Firstly, a preliminary evaluation was made by Chi-square tests, corrected for small expected frequencies. For this procedure, the scores on each test were ranked from lowest to highest, then divided at the median into two halves. Secondly, means and standard deviations of the scores were calculated for each of the four experimental groups. The significance of the difference between the means, and the significance of the difference between the variances was then tested by t- ratio and F- ratio procedures, respectively. Thirdly, the data were subjected to an analysis of variance with two-way classification. The results of these statistical operations which were performed according to FERGUSON's (1959) text, are presented in the appendix.

RESULTS OF THE STATISTICAL ANALYSES

Ratings on Mental Health and Social Functioning Variables +)

Inter-group Comparison on Chi-square tests of Independence.

	schizo. active vs schizo. residual	schizo. active vs neurot. active	neurot. active vs neurot. residual	schizo. residual vs neurot. residual
(1) Verbal contact.....	+	-	+ +	-
(2) Thought content & preoccup..	+ +	+ +	+ +	?
(3) Perceptual disorders				
a) Hallucinations.....	+ +	+ +	-	-
b) "Somatizations".....	-	+ +	-	+
(4) Personal feelings.....	+ +	+	+ +	?
(5) Appropriateness of affect...	-	+ +	+	-
(6) Motor activity.....	+	+	+ +	-
(7) General orientation & field of interest.....	-	?	-	-
(8) Attitude to psychiat. treat..	?	+ +	+ +	-
(9) Social participation.....	+	+ +	+	-
(10) Interpersonal relations.....	?	+	+	-

Legend: Differences + + = highly significant, ...$p \leq .001$
+ = significant, $.001 < p < .05$
? = doubtful significance, "trend" $.05 < p < .10$
- = not significant..... $.10 < p$

+) For the ratings see App.iv

(1) Verbal contact (App.v)

Main group characteristics:

active schizophrenics - self directed comments or restricted verbal contact;
active neurotics - self directed comments;
residual schizophrenics - restricted verbal contact;
residual neurotics - restricted verbal contact.

(2) Thought contents and preoccupation (App.v)

Main group characteristics:

active schizophrenics - delusional thought contents;
active neurotics - preoccupation with neurotic complaints;
residual schizophrenics - realistic, also "eccentric";
residual neurotics - realistic.

Samples of patients' statements:

residual schizophrenics
"Sometimes I'm thinking of the past, its like daydreaming of strange things, but nothing of importance"
"I feel lonely but am not worried, don't let anything worry me"
"At times I still have doubts re father's death (old delusion) but it no longer upsets me like it did before"
"I permit myself no worries any more"
"I am not thinking much at all these days" (pt. shrugging his shoulders)
"I am not worried but if I had more money I'd be more satisfied"
"I am giving some thought to winter, can you tell me who invented winter?"

residual neurotics
"I stopped worrying and bothering altogether"
"Occasionally I'm thinking back in anger but I forget it quickly, I take life as it is"
"I don't get nervous anymore except if the cheque isn't in the mail"
"I don't expect anything of anyone except some (financial) help from the Department"
"Before I used to get upset about whatever some intern said, now I would no longer"
"I stopped worrying about my health (physical condition), what's the use? I closed the door over the past, the water's gone under the bridge"

(3) Perceptual disorders (App.vi)

(a) Psychotic type- Hallucinations
(b) Neurotic, non-psychotic type - "Somatizations"

Main group characteristics:

active schizophrenics - hallucinations present without insight;
active neurotics - "somatizations" present without insight;
residual schizophrenics - hallucinations absent, "somatizations" infrequent;
residual neurotics - "somatizations" present with insight.

(4) Personal feelings (App.vi)

Main group characteristics:

active schizophrenics - mostly discontented, frequent mood shifts;
active neurotics - mostly discontented, frequent mood shifts;
residual schizophrenics - indifferent;
residual neurotics - indifferent, or usually satisfied but at times irritable, tense or depressed.
Nearly all residual neurotics and several active neurotics expressed concern over financial compensation which they felt they merited because of service-connected ill health. In about two thirds of the residual neurotic patients this concern was very prominent. The medical and social service records also testified to this "compensation-neurotic trend" which was completely absent in the schizophrenic subjects.

Samples of patients' statements:

residual schizophrenics
"I guess I should worry about something but I just don't bother"
"I often feel tired but that's no reason to worry"
"Usually I am ok. but get aggravated easily"
"I feel perfectly well because I don't care for anything"
"I didn't get nothing out of this life so I lost interest, I'm not concerned anymore about nothing"

residual neurotics
"The strain on the nerves was too much, now I can't afford worrying anymore"
"I am ok., I only get upset if my wife talks too loud"
"Only rarely get I depressed if I think of my younger years but I put it out of my mind"
"I was terribly anxious always but now that I have some (financial) assistance I feel relaxed"
"I'm very quiet now, only if I feel pushed around (by his wife) then I get irritable and am easily fed up"
"When my wife takes too long for shopping that's the only time that I feel my nerves nowadays"
"I couldn't stand the strain of work, I'd shake badly"

"No use worrying. I take it easy now that I get the cheque (financial assistance)
"I resigned, I gave up to ask the doctors"
"Feel alright and would rather accept this burnt-out pension (allowance) than have trouble at the job again, my system couldn't take it anymore"
"Nothing bothers me except that I can't see an accident, it's too hard for my nerves"
"My system is down, I don't care for anything anymore, I just let go"

(5) Appropriateness of affect (App.vii)

Main group characteristics:

active schizophrenics - affect moderately or occasionally inappropriate;
active neurotics - affect appropriate;
residual schizophrenics - affect moderately or occasionally inappropriate;
residual neurotics - affect moderately or occasionally inappropriate.

(6) Motor activity (App.vii)

Main group characteristics:

active schizophrenics - hyperactive, also hypoactive;
active neurotics - hyperactive;
residual schizophrenics - hypoactive;
residual neurotics - hypoactive;

Samples of patients' statements:

residual schizophrenics
"I am often tired and easily exhausted"
"No energy anymore, run down"
"I am tired of moving around, have to lie down"
"I am mostly resting, walk only slowly"
"My legs tire easily now, so I sit and rest"

residual neurotics
"I have become rather slow in general, I'm mostly doing nothing"
"I am easily tired, so I avoid strain"
"I often stay in bed if I don't feel like getting up"
"I have to rest a lot in order to spare my nerves"
"Sometimes I stay in bed as I have nothing else to do"

(7) General orientation and field of interest (App.vii)

All four groups are characterized by restriction of interest.

(8) Attitude to psychiatric treatment (App.viii)

Main group characteristics:

active schizophrenics - predominantly indifferent with passive acceptance if treatment is ordered;
active neurotics - asking for treatment;
residual schizophrenics - indifferent with passive acceptance if treatment is ordered;
residual neurotics - indifferent with passive acceptance if treatment is ordered.

Samples of patients' statements:

residual schizophrenics
"I think it would not hurt me to get some medicine for strength"
"I'd come to the clinic whenever you want me to"
"I'd like to be in the hospital but not for treatments, just have no place to go"
"I don't think I need treatment but I don't really care"
"I don't feel I need it, I don't need anything from the Department, especially no junk like pills, but if they insist I wouldn't bother to make trouble and would take it"
"I can't see the use of it but would follow suit if they want me to take treatments"
"I don't know what psychiatric treatments is good for but it's alright to take it from the doctor"

residual neurotics
"My physical and mental capacity is gone so psychiatry can't help much"
"I don't think its necessary but if told so I'd certainly take treatments"
"They should have done more for my heart trouble (palpitations) before"
"Well, I'd need medical attention for my sore feet"
"I don't think psychiatric treatment would do much good but I go along with whatever you suggest"
"Can't see why I should need that but I'll do what the doctor says, he's the boss"
"These pills don't make the difference but I'd take them if that's what you want me to do"
"I guess, them treatments (psychiatric tr.) were for my stomach, now I don't need it anymore"
"They labelled me 'mental' instead of giving me treatments for my back, now I don't care for it, but I am ready to take the advise of a specialist, don't want to be handled by interns anymore"

(9) Social participation (App.viii)

Main group characteristics:

active schizophrenics - social isolates;
active neurotics - going out to family and/or social functions;
residual schizophrenics - going out to family functions only;
residual neurotics - going out to family functions only.

(10) Interpersonal relations (App. viii)

Main group characteristics:

active schizophrenics - no friendships reported, negative attitude to social contacts may be expressed;
active neurotics - friendships reported;
residual schizophrenics - no friendships reported, negative attitude towards social contacts is not expressed;
residual neurotics - no friendships reported, negative attitude towards social contacts is not expressed.

Test Data

Measures of intellectual capacity

Group means of the Wechsler-type Intelligence Quotients as measured by the Revised Beta Examination were clearly within normal range:

active schizophrenics	- 98.2	active neurotics	- 102.9
residual schizophrenics	-101.4	residual neurotics	- 98.4

(App.ix)

Analysis of variance and t-tests showed that a significant difference did not exist between the groups. Analysis of the WAIS-Comprehension, and BARBEAU-PINARD - Jugement subtest scores yielded the same results (App.ix). Group means on the McGill Picture Anomaly Series M compare favourably with the norms published by HEBB & MORTON (1943). Significant differences between the four groups did not turn out upon statistical analysis (App.xii). We may safely assume, therefore, that current

intellectual ability is a controlled variable in this study, even though the formal educational background of the two residual groups in terms of completed school grades is different; the difference being in favour of the residual schizophrenic group (App.iii).

Potential indicators of "organicity" +)

Critical flicker fusion frequency readings gave group means which correspond to the normative values for the age range established in a "normal" population by CSANK (1955). Intergroup differences on this variable are not significant (App.ix).

Reference was already made to the relatively good performance on the McGill Picture Anomaly Series. Impairment on this test has been demonstrated by MILNER in cerebral pathology interfering with perceptual skills and cognitive capacity. This was most clearly shown in patients with epileptogenic lesions of the non-dominant temporal lobe affecting the "comprehension of pictorially expressed ideas," (MILNER, 1958; 1963). In our study, the over-all qualitative and quantitative performance was very similar in neurotics and schizophrenics, actives and residuals. Current mental examination and evaluation of memory functions failed to elicit mnesic defects. Signs of organic brain lesions have never been found in our subjects; hence the possibility that the residual patients were mis-diagnosed "organic" cases can safely be excluded.

+) In order to avoid misinterpretations it is stated here that the terms "organicity", "organic cerebral lesion" etc. are used in a conventional anatomical sense only. In every other respect this author subscribes to the concepts of GERSTMANN (1958), quoted earlier, which are a scientific formulation of the simple truth that, in the last analysis, psychic function and brain function can never be separated.

Test data contributive to the research objective

(1) Verdun Association List (App.xiv; xv)

Analysis of variance of the T_2 - scores, a measure of reaction time upon second reading of the stimulus words in this objective association test, demonstrated that the combined neurotic groups did significantly better than the combined schizophrenic groups. No significant inter-group differences were found. Analysis of variance of the S - scores, a measure of stability of associations upon repeated presentation of the same stimulus word, showed the combined residual groups to have greater associative stability than the combined active groups; a similar association obtained for the combined neurotic groups versus the combined schizophrenic groups. Intergroup differences were in the same direction but failed to reach statistical significance. Chi-square tests of independence elicited a significant association of 'residuality' with higher stability scores, and of active symptom formation with lower stability scores, when the combined active groups were compared with the combined residual groups.

(2) Maudsley Personality Inventory, N - Score (App.xi)

Analysis of variance and t- tests revealed significant differences on this measure of 'Neuroticism' between active and residual schizophrenics, active and residual neurotics, but also between active schizophrenics and active neurotics, and between residual schizophrenics and residual neurotics. Differences were significant at a higher level in the active - residual, than in the schizophrenic-neurotic dichotomy. Chi-square independence tests verified this: 'Neuroticism' appeared to be associated both with 'activity' and with the diagnostic classification 'neurotic'.

Comparison with established norms:

Experimental group means	Norms +)
active schizophrenics - 23.8	schizophrenics - 31.56 (CLARIDGE, 1960)
residual schizophrenics- 12.36	"dysthymics" - 38.18
active neurotics - 32.71	hysterics - 30.82 (EYSENCK, 1959)
residual neurotics - 20.64	"dysthymics" - 38.00
normals - 19.89 (EYSENCK, 1959)	hysterics - 32.62 (CLARIDGE, 1960)
normals - 20.88 (CLARIDGE, 1960)	

(3) Body Sway Test (App.xii)

This indicator of 'Primary Suggestibility' was found to differentiate significantly between active and residual schizophrenics as well as between active and residual neurotics, also between the combined active and the combined residual groups. The association of 'High body sway' with active symptom formation, and of 'Low body sway' with residuality was confirmed by Chi-square procedures. This variable proved to be highly relevant to our concept of an Active-Residual dichotomy. It was neither associated with, nor did it differentiate between, the schizophrenics and neurotics without specification of 'active' or 'residual'.

Comparison with established norms:

Experimental group means	Norms
active schizophrenics - 2.32	schizophrenics - 2.34
residual schizophrenics - .75	"dysthymics" - 2.77
active neurotics - 2.71	normals - 2.05
residual neurotics - .86	(CLARIDGE, 1960)

+) "Dysthymics" correspond largely to our anxiety neurotics. According to the M.P.I. manual (EYSENCK, 1959), 'Neuroticism' declines with age. The marked difference in age between CLARIDGE's sample and ours presumably accounts for the difference in scoring (mean age of his schizophrenics 23.4 years, of his dysthymics 26.6 years; versus 46.9 and 48.1 years, respectively, in this study).

(4) Modified Objective Rorschach Test (App.xx)

This test was administered and evaluated by J.Z. CSANK, M.A., who reports on the results:

"To analyse group differences first a frequency count was made of all the responses, establishing the relative level of 'popularity' of the 150 items (15 suggested answers per Rorschach card) within each group. The items were then classified as type 1, type 2, or type 3, according to O'REILLY's principles of scoring:
Type 1 responses represent Rorschach responses of accurate form level and of high level of popularity, both as to contents and determinants, in normal subjects. Type 2 responses represent less accurate, less differentiated Rorschach responses chosen from the records of neurotic subjects. Type 3 responses represent partly O'REILLY's (1956) and partly HARROWER's (1951) type of 'pathological' Rorschach responses.
To these basic data two separate tests of statistical significance were applied:
(i) Analysis of Results by Chi-square test
The between group comparison of characteristic response types (type 1, type 2, type 3 responses) were first analysed by Chi-square test. In this comparison, only those items were considered on which the groups differed in their frequency of chosing the items by more than five percent.
Table I (App.xx) shows significant Chi-squares between the combined schizophrenic and the combined neurotic groups ($p<.01$); and also between the active schizophrenic and the active neurotic group ($p<.05$). A tendency to significance was noted between the residual schizophrenic and the residual neurotic group ($p<.10$).
(ii) Analysis of Results by Wilcoxon's Signed-ranks test
Table II (App.xx) shows the Mean Differences (in percentages) in type 1, type 2, and type 3 responses over the ten Rorschach cards. The significance of group differences was assessed by Wilcoxon's Signed-ranks test using as 'pairs' the card by card performance (in percentages of type 1, type 2, type 3 responses) of the two groups under consideration.
Significant differences were found (a) between the combined neurotic and the combined schizophrenic groups in respect to type 1 and type 3 responses; (b) between the active neurotic and the active schizophrenic group in respect to type 1 and type 2 responses; and also (c) between the residual neurotic and the residual schizophrenic group in respect to type 3 responses. A tendency to significance was noted between the active and the residual neurotic group in respect to type 2 responses; between the active neurotic and the active schizophrenic group in respect to type 3 responses; and between the residual neurotic and the residual schizophrenic group in respect to type 1 responses".

Test data not contributive to the research objective

Data gathered by these test procedures were not contributive to either the schizophrenic - neurotic or the active - residual differentiation upon intergroup comparison in statistical analyses:

Verbal Fluency Test (App. xiii)
Tapping Speed (App. xiii)
Conjunctive Concept Classification (App. xvii)

Main group characteristics according to the test data:

Active schizophrenics:	lower stability of associations; higher neuroticism; higher primary suggestibility.
Residual schizophrenics:	higher stability of associations; lower neuroticism; lower primary suggestibility.
Active neurotics:	lower stability of associations; higher neuroticism; higher primary suggestibility.
Residual neurotics:	higher stability of associations; lower neuroticism; lower primary suggestibility.

Comparison of the standard deviations on scores of twenty tests and subtests showed that active groups provided the highest standard deviation in 16 instances and residual groups the lowest standard deviation in 17 instances. The active schizophrenic group holds the biggest share of the highest scattering groups (55%), while the residual neurotic group occupies the first place among the lowest scattering groups (60%).

DISCUSSION

An interpretation of the research findings will be attempted with reference to the conceptual model, the General Residual Syndrome. Did psychiatric evaluation point to useful indicators of the residual syndrome properties initially proposed?

Proposed property (1) "Reduced ability to work gainfully"

The subjects of the residual groups had been classified by medical and social service authorities as materially handicapped and permanently unemployable, or as unable to compete on the labour market. So had been nearly all of the 'active' patients, too. This property, therefore, has no differentiating value in the present study, other than that it is present in the residual groups even though active symptom formation has ceased.

Proposed property (2) "General reduction of drive and interests"

General orientation and field of interest was restricted in all experimental groups. This variable, therefore, has to be discarded as a differentiating criterion.

Motor hypoactivity is a common characteristic of the residual groups, differentiating them from the actives; it may be considered as a valid indicator of general reduction of drive.

Proposed property (3) "Impaired emotional modulation; rigid and indifferent attitudes"

An exclusively indifferent and passive attitude towards psychiatric treatment is typical only for the residual subjects and differentiates them from the active groups. The residual groups are identical relative to their inappropriateness of affect; in this respect they are very similar to the

active schizophrenic group. Personal feelings of indifference seem to mark the residual schizophrenics, while other feelings are equally represented in the residual neurotic group where concern for material security and financial compensation is prominent. When accepting this property for our residual syndrome, restricting qualifications have to be made for the neurotic residual group as its "indifference" aspect is less all-pervasive and more specific than in the residual schizophrenic group.

Proposed property (4) "Impoverished interpersonal relations; impaired ability to communicate with others and to form new social contacts"

This property may be accepted as a valid criterion of "residuality" on the basis of three indicants; namely, restricted verbal contact, limited social participation (in family functions only), and shrunk interpersonal relations (no friends). In this form, the property is observed as one of the main characteristics of the residual groups.

General reduction of drive, impaired emotional modulation and impoverished interpersonal relations appear to have been confirmed by the findings as properties common to both the schizophrenic and neurotic residual group. Differences exist regarding the indifferent attitude of the neurotic and the schizophrenic residual group. Other important differences prevail when perceptual disorders and thought content are examined. Hallucinations, quite predominant in the active schizophrenics, are nearly absent in the residual schizophrenic group, while somatization is very much present in both neurotic groups. Eccentric thinking reminiscent of former delusions is found to some extent in the residual schizophrenic group, and thought content is more realistic in the residual neurotics.

In what direction do the significant test data point?

Reaction time as measured in the association experiment is longest in the active schizophrenic group; the residual schizophrenic approaches the neurotics' level. Stability of associations is highest in the neurotic residual group. It implies perseveration and a certain limitation of imagination. Stability of performance on test tasks is revealed as a property of the neurotic residual group by the fact that it shows the lowest scattering on a majority of test scores. The reverse holds true for the active schizophrenic group. The degree of 'Neuroticism' on the Maudsley Personality Inventory emerged as a variable on which schizophrenics differ from neurotics and actives from residuals. A continuum of 'Neuroticism' is suggested:

'Neuroticism' increasing - ->

residual schizophrenics	residual neurotics	active schizophrenics	active neurotics
minimum 'N'			maximum 'N'

M.P.I. Neuroticism can be interpreted as a measure of anxiety, or of symptomatic anxiety (CLARIDGE, 1960). For our purposes, anxiety may be defined as a dysphoric state manifested by central and vegetative nervous system symptoms, precipitated by the anticipation of frustration or by a threatening situation which may symbolize unconscious conflicts. In this context, the association of indicants of anxiety with active neurotic and active schizophrenic symptom formation is not surprising, especially in a test situation.

In HULL's Body Sway test we have a tool which differentiated actives from residuals irrespective of their psychotic or neurotic genesis.

This measure of 'Primary Suggestibility' of the ideo-motor kind (EYSENCK, 1943) is relatively independent of intelligence, age (above thirty) and past physical health (EYSENCK, 1947). Earlier findings of EYSENCK seemed to suggest a close association of suggestibility with neuroticism and neurotic disorders; recent investigations of his school, however, were unable to substantiate significant differences between schizophrenics and neurotics on this test (CLARIDGE, 1960). CLARIDGE's subjects were selected from a military hospital population according to current symptoms; i.e. they were cases belonging to the active category. Cases of this category, however, were not differentiated by body sway in our study either. EYSENCK (1947) had already observed that

> "the items concerned with bad work history, hypochondriasis, abnormal sex activities, lack of energy, and narrow interests show less correlation with suggestibility than do items concerned with somatic anxiety, tremor, effort intolerance, irritability, depression and dyspepsia".

These item clusters remind us of the distinction between active and residual neurotics, to which EYSENCK does not refer here.

It is of interest to note that the Body Sway means in the present study indicate a primary suggestibility below normal range in both the residual schizophrenic and residual neurotic groups. The hypothesis is advanced here that this low suggestibility is indicative of a low social awareness; a lack of reaction to outside stimuli, which is in line with the reduced social participation and the impoverished interpersonal relations of the residual patients. This reduced social awareness might be due to a primary deficit, or it could be the result of a development. We have no earlier test data on which to base a decision. However, in the course

of their illness behavioural and attitudinal changes have taken place in the residual subjects and are documented by the service records, supporting the assumption of a development towards social withdrawal and imperviousness to stimulation from outside. This change is even more marked in the residual neurotic group than in the residual schizophrenic group.

Returning to our research objective we can now try to answer the questions asked at the beginning.

(1) A residual syndrome after psychoneurotic illness exists.

In our patient population it is prevalent with a frequency of 11.1%, patients with somatic pathology excluded.

(2) Global psychiatric evaluation showed the neurotic residual syndrome to be indistinguishable from the schizophrenic residual state, yet distinguishable from active psychoneurosis, in terms of current functioning in the areas of

Verbal contact
Appropriateness of affect
Motor activity
Attitude to psychiatric treatment
Social participation
Interpersonal relations;

The neurotic residual syndrome differs from the schizophrenic residual state in the areas of

Thought content
Perceptual disorders
Personal feelings
Concern for material security and financial compensation.

(3) Test procedures appropriate to the research objective are mainly

(a) EYSENCK's M.P.I. N-Scale, which proved to be an instrument capable of intergroup differentiation in both experimental dichotomies;

(b) HULL's Body Sway test, which permitted intergroup differentiation of actives and residuals irrespective of diagnostic classification.

(c) CSANK's Modified Objective Rorschach, which supported differentiation in the schizophrenic - neurotic dichotomy. Clear intergroup differences were found between the active schizophrenics and the active neurotics; intergroup differences became less distinct between the residual schizophrenics and the residual neurotics.

Basic traits common to both the neurotic and schizophrenic residual syndromes and delimiting them from the active conditions were objectivated by test procedures:

Low 'Neuroticism'	High stability of association
Low 'Primary Suggestibility'	High stability of test performance

The areas in which the residual schizophrenics differ clinically from the residual neurotics call for further consideration.

Differences in thought content, though not quite reaching statistical significance in a rigorous test such as the corrected Chi-square method, appear to be of relevance. Six out of fourteen residual schizophrenic subjects verbalized eccentric, if not bizarre, ideas; and the personalities of most of the patients in the residual schizophrenic group left the interviewer with the impression of a schizoid flavour. Differences in perceptual disorders were more concrete. On this variable, residual neurotics could be differentiated statistically from residual schizophrenics, but not from active neurotics. The residual neurotic group was here characterized mainly by somatization with insight, while insight was lacking in the majority of the actives. Hallucinations which were very prominent in the active psychotic group were found only in two of the residual schizophrenic cases. These residual hallucinations, much as the "eccentric"

thoughts, had become colourless and were no longer taken seriously by the patient himself but stayed with him like bad habits (MAYER-GROSS, 1932; 1960). In a similar way the somatizations of the residual neurotic group which in several cases could be traced back to disease onset, may be interpreted as left-over habits from earlier active phases of the illness. Certainly they are not products of the residual stage.

The two residual groups are distinct from each other on personal feelings in so far as indifference rules the residual schizophrenics while half of the residual neurotic patients at times still show irritability, tension, and/or depression.

Attitudes towards financial compensation markedly differentiated the neurotics from the psychotics. The concern expressed over compensation by the neurotic subjects may, however, be related to past experience vis-a-vis authority. One has to remember that schizophrenic cases usually meet with sympathy by pension commissions. Application for compensation was often made for them by others, and in most schizophrenic patients of our study the application was recommended or approved by medical authorities. Neurotics, on the other hand, are as a rule not considered pensionable unless for accompanying service-connected physical disabilities. The alternative War Veterans Allowance, too, seems to be more readily awarded if at least some somatic pathology can be demonstrated. This, of course, is only a reflection of the popular and plausible view which in modern times recognizes the psychotic patient as "really ill" while the neurotic is placed somewhere in between health and disease. The neurotic patient who was fighting for compensation perhaps had to do so in order to be accepted as "really ill".

We may assume a long-lasting conditioning process in which the neurotic learns that persistent somatizing behaviour will lead to his acceptance as a "real" patient by authority figures, including doctors, and by his peers. This allows the neurotic patient to maintain the tolerable self-image of an honourably disabled person, a status which is finally attested to him by the compensation award.

Regarding the behavioural characteristics wherein the residual neurotics are distinguished from the residual schizophrenics, we suggest that the majority of these properties can be inferred to be no more than habitual reactions deriving from the patients' former life and from active phases of their illness. The residual schizophrenic's hallucinations, if present at all, have lost influence on the patient's behaviour, and the eccentric ideas and puns he may come out with are like a faint reflection of his former delusions.

The concern of the residual neurotic with compensation and his tendency to somatize may be called responses to a real life situation rather than essential expressions of his neurosis. However, the contrast between the all-pervading indifference of the residual schizophrenic patients and the reactive flare-ups of tension and anxiety in residual neurotics cannot easily be explained by habit formation nor can they be attributed to current life situation. These differences in personal feelings appear to be of a more profound nature.

THE RESIDUAL DIMENSION

On the basis of the findings presented here the hypothesis of a General Residual Syndrome in the formulation that residual states of different diagnostic background are currently undistinguishable upon clinical and test evaluation, has to be rejected. However, the existence of a neurotic residual syndrome has to be accepted. The neurotic residual syndrome, first perceived by ERNST (1959), has important properties in common with the schizophrenic residual state. These properties constitute what we wish to call the Residual Dimension:

(1) General reduction of drive
(2) Impaired emotional modulation
(3) Indifferent attitude towards treatment
(4) Impaired ability to communicate with others
(5) Impoverished interpersonal relations
(6) Lack of reaction to outside stimuli and low social awareness
(7) Perseveration of associations
(8) Lack of variation in task performance
(9) Low symptomatic anxiety

The residual dimension is in the foreground of the clinical picture of both the neurotic and the schizophrenic residual syndrome regardless of the fact that they differ in important aspects. Clinicians and social workers have long ago recognized the residual dimension in their clients and have dubbed them "burnt out" cases.

How can we account for the fact that after years of active illness some patients manifest predominantly this residual dimension while others continue to produce active symptoms? Three hypothetical explanations can be offered and will be examined briefly. First hypothesis:

> "The residual dimension is a manifestation of a progressing organic brain disease, leading to some degree of dementia"

In the present study there are no findings in support of this statement, on the contrary, there are cogent reasons to refute it for our cases. Clinical signs of organic brain disease have never been recorded in repeated physical and psychiatric examinations of the subjects. Mental examination in the research interview did not disclose signs of memory defect. Data obtained on the critical flicker fusion threshold were not indicative of organic lesions; nor were the scores on the McGill Picture Anomaly test. Current examination elicited intelligence levels within normal range in spite of rather limited formal education, and comparison of present test performance with that of World War II failed to provide any evidence of "deterioration".+)

Second hypothesis:

> "The residual dimension has always been a personality trait of the residual patient, or it has developed on the basis of inherent defects recognizable throughout the patient's life".

The residual subjects in our research groups certainly were not "inadequate personalities" according to the definition given in the A.P.A. Standard Nomenclature. In fact, personalities of this type were excluded from the project (s.Selection of the subjects). With the exception of one student, all subjects were self-supporting in a variety of occupations before World War II (App.iii), and several of them underwent additional

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+) Wechsler-Bellevue I.Q. equivalents of total 'M' scores obtained during World War II were compared with the Wechsler-type I.Q.s on the Revised Beta Examination administered in 1964. The Beta I.Q. group means were somewhat higher than the group means based on the 'M' tests taken twenty years ago. Intergroup comparison by t-ratios, using the mean difference between 'M' test and Beta test I.Q.s failed to confirm statistically significant associations (App.x).
(List of Percentile Equivalent Total 'M' Scores and Full Scale Wechsler-Bellevue and WAIS I.Q.s, Dept. of National Defense, Canadian Forces Headquarters, Ottawa. The correlation between total 'M' score and Wechsler-I.Q. is given as plus .833; courtesy Col. W.R.N. BLAIR)

vocational training in the services with good qualifications. It should be admitted, however, that any disease outcome is co-determined by "constitutional" factors in interaction with external variables.

Third hypothesis:

> "The residual dimension is not a defect state, nor is it some sort of dementia; rather it represents an integration at a lower level of psychic and social functioning+, and as such is a solution which is more adaptive than ongoing active symptom formation. The solution is a dynamic one and not of unchangeable or irreversible character. It retains the alternative possibilities of further improvement towards full social remission, or of relapse into active symptom formation".

The full acceptance of this hypothesis would depend on whether the residual syndrome can be shown to be reversable or not, a question which is outside the scope of this thesis and which would require a different approach to test. However, if it were true, one would expect the development of the residual dimension to be related to the treatment which the patient experiences from his social environment. This can be explored with the present material, and in the next chapter we will show that the hypothesis is supported. Since rehabilitation reports pointing to a preserved recovery potential in residual schizophrenic patients will also be cited, it is suggested that this hypothesis be provisionally accepted.

+) ARIETI's (1959) thesis of Progressive Teleologic Regression in schizophrenia suggests that the schizophrenic "will regress to, but not integrate at, a lower level: he will remain disorganized...The process repeats itself in a vicious circle that can lead to complete dilapidation". One could further theorize that this holds true for active symptom formation while in the residual syndrome the process is arrested and integration, at a lower level, is finally achieved.

How does such an hypothesis agree with the clinical picture? We have specified above the nine properties of the residual dimension according to the evidence accrued from psychiatric evaluations and test procedures. Re-examining these properties we recognize that eight of them are conceivable as pre-requisites of the ninth and most important, the reduction of symptomatic anxiety.+) In other words, the residual dimension may be seen as a general restriction of the personality by which the abatement, or even cessation, of noxious anxiety is achieved.

The residual patients are aware of the connection between this restriction and the highly valued alleviation of anxiety. They "can no longer afford worrying"; "don't let anything bother them"; "permit themselves no worries any more"; they "feel well because they do not care for anything nowadays", etc. These patients, however, have not lost their emotions. It is their self-protection against "getting involved" which conveys the impression of indifference and incongruity of affect. Some admit their awareness of vulnerability to frustration; they "get aggravated easily", "upset if the wife talks loud", "fed up quickly", etc.

Residual neurotics in particular seem to be wary of the frustrations to which the resumption of an active life might expose them. In general they prefer a very modest social existence to one which might entail the risk of anxiety-provoking situations. Sensitive to anything which might threaten the peaceful state they have achieved, they have learned to guard it by avoiding conflicts, e.g. by giving in readily to relatives

or doctors. This attitude of compliance and passive acceptance is frequently in sharp contrast to aggressive behaviour manifested at previous stages of illness, and is reflected in the "cooperative indifference" shown towards psychiatric treatment. These patients "cannot see the use of treatment" but "would take what the doctor orders". The residual patients' cooperation during the test procedures was remarkable, and there was nothing of the initial suspicion and resistance to testing encountered in several of the active schizophrenics and neurotics. When called in for their second interview, some residual patients anxiously inquired whether there had been any "trouble". For them, "trouble" signified untoward anxiety - arousing experiences - mainly with authority figures - encountered during their active illness. Indeed, avoidance of "trouble" had become the leitmotif of their behaviour. Exposure to "trouble" is greatly reduced, however, if one confines one's interpersonal relations to routine family functions and avoids new encounters.

While the danger of relapse into active symptom formation is ever present, the emotional peace the patient has found in his residual condition may allow him to gradually and cautiously resume certain rewarding activities if a favourably inclined environment provides support and encouragement.

In the residual schizophrenic group (14 subjects), 13 patients are helping with household chores. Of these, 5 in recent years tried working again, at sporadic or part-time jobs, and 4 have made some effort to obtain employment within the past two years. In the residual neurotic group (14 subjects), 11 patients have resumed home activities;3 of these restarted sporadic or part-time work in recent years, and 2 have taken steps towards securing part-time employment.

In most of these cases, the encouraging attitude of relatives towards the residual patients' participation in home activities could be ascertained. Milieu attitudes towards the question of full employment appear to be different, however, if this implies loss of compensation privileges. We shall deal with these aspects in the next chapter; here we merely want to suggest (1) that the difference between social remission and residual syndrome is not of a fundamental kind but is given by the degree and extent of personality restriction which of necessity impairs social functioning; (2) that positive rewarding of normative behaviour without withdrawal of acceptance and support could bring about full social remission in residual patients.

The residual dimension is interpreted here not so much as a state of understimulation than as one of avoidance of stimulation. The residual patient has learnt to protect the brittle equilibrium of his psyche against anxiety-arousing frustrations. He tries to avoid adverse experiences by avoiding experiences altogether, and thus is restricting his life. In doing so his behaviour may resemble that of patients suffering from organic brain disease who, as GOLDSTEIN (1939; 1942) has described it, use similar mechanisms of retreat and restriction to evade "catastrophic reactions".

The development of the residual dimension is one of the possible responses to chronic illness, resulting from the organism's efforts to avoid noxious experiences. One could expect patients with different types of ongoing psychiatric disease to assume similar protective modes of life; in the same way that patients suffering from different diseases

of the spine assume a similar gait. The observer is presented with this uniform aspect, and only upon closer examination are differentiating features revealed.

SOCIAL AND FAMILY ASPECTS

We proposed to regard the development of the residual dimension as a solution which is more adaptive than ongoing active symptom formation. A solution of this kind can only be reached if certain basic dependency needs are acknowledged. Settling down in a state of relative contentment requires the cooperation of people and/or institutions ready to satisfy these dependency needs. Here the attitude of significant environmental figures towards the patient should become important especially at crucial moments in the course of his illness. The attitude of social institutions concerned with the patient and capable of providing a certain material basis for the development of the residual dimension should also be of relevance. The patient cannot retire to a residual state of existence, and enjoy some degree of security at the same time, if active symptom formation is considered as a conditio sine qua non of compensation. Nor can the patient enjoy the relative comfort of "residuality"- relative comfort with regard to the discomfort of active illness - if those near to him refuse to accept his dependency on them. Acceptance inspite of reduced functioning would afford the emotional security the patient is seeking, without infringing upon his self-esteem. Thwarting of his search for security would result in frustration, remobilization of anxiety and, consequently, active symptom formation. +)

+) Frustration is best defined as the dysphoria which results from thwarting of seeking reactions, or from forcing of avoidance reactions. (SCHLESINGER, 1962)

Medical and social service records used in our study document that the patients were seeking acceptance of their dependency needs by significant family figures, and that there was a feed-back effect of positive and negative family attitudes upon the patients.

Recent research focused on social factors influencing, or even determining, the length of hospital stay and post hospitalization adjustment of schizophrenic patients seems to confirm the statement of HOLLINGSHEAD & REDLICH (1958) that

> "the attitudes of the family toward its psychotic member are responsible, to a significant degree, for the determination of who goes to a hospital, who stays home, who improves in hospital, who 'deteriorates' and eventually stagnates in a chronic ward. This generalization is applicable particularly in a disease like schizophrenia".

GORDON & GROTH (1961), inquiring into the reasons for delayed discharge from the mental hospital inferred the patients' poor relationships with people in their home community to be the primary cause in many instances. An association was found by BROWN (1959) of the tendency of schizophrenic first admissions to become chronic, with Social Isolation defined by absence of visitors during the early hospital stay. TYBRING & KUSUDA (1959) in a follow-up study of 127 psychotic and neurotic patients released from the hospital on psychotropic medication, reported that the social and emotional climate of the home environment was of greater relevance to succesful adjustment than was the drug therapy. WESSLER & KAHN (1963) were impressed by the finding that supportive interest in the patient by his family remained a decisive factor in the succesful rehabilitation of chronic schizophrenics even if community assistance was adequate. Tolerance shown for the ex-mental

patient and full acceptance by his environment are cited as variables of the highest import in the determination of success or failure of the discharged chronic schizophrenic's reintegration into his community (DEYKIN, 1961; SCOTT, 1965).

Further specifications of the optimal environmental constellation add other details to this picture. Ambivalent attitudes with covert rejection proved to be more harmful than clear-cut separation; relationships with siblings more rewarding than those with parents; and schizophrenic men more than women in need of a warm homelike atmosphere (BROOKS et al.,1963). A significant relative closely attached to the patient is seen as the key figure preventing rehospitalization, in addition to the factor of good domestic organization (GILLIS & KEET, 1965). In a well controlled study BROWN, MONCK, CARSTAIRS & WING (1962) observed that schizophrenic patients living with relatives showing high emotional involvement as indicated by "expressed emotion", hostility, and dominance, deteriorated more frequently than those living with relatives of low emotional involvement.

In the present study, the attitude of key family members toward their patients, as described in the social service reports, differed from case to case so that it could not have been overlooked.

Sample quotations from case reports may serve to illustrate the situation:

Group I, active schizophrenics

"Patient is rejected by his family"..."Mother on vacation in Bermuda states she is in no condition to take the pt. Pt. tore up a cheque of $ 5 sent by her". "Pt.'s rejection by his family may account for his non-discharge from the hospital. He is more irritable and impatient".

"Mother and brother objecting to the discharge of pt. unless they were given a written statement that he was permanently cured from mental illness". "Mother states if he is not readmitted she herself will break down. Pt. appears quite glad to be back in hospital". "Pt. rejected at Christmas leave, now more aggressive and bizarre".

"Pt is genuinely interested in his rehabilitation but realizes that his family's interest in him appears limited". "Pt. shows an increase of paranoid ideas...family plotting against him"

"Pt's mother is very ill and the other family members are out of question to take him though they would be in a position to do so".

"Pt. wants to visit his parents but they dislike him residing there. They would like to be assured that he...will be willing to go back to the hospital after the holidays". "Pt. postpones his visit... he became again tense, incoherent, delusional, and suffers from insomnia". "Pt. still expresses only the wish to return to his parents".

"Brother does not want to be bothered". "Pt. states that if his sister was still here she would have taken him but now the hospital has become his real home". "Markedly deteriorated since discharge plans failed".

"Persecutory delusions re family". "Wife apprehensive re return of pt." "Wife moved away, pt. lost contact with her...now more delusional".

Group II, residual schizophrenics

"Pt. living with an older lady who takes good care of him".

"Parents are quite anxious to have their son return and live with them".

"Mother selling papers to support pt...secured work for him". "Mother now severely ill but still keeps contact, sends small gifts".

"Pt. getting along fine, his sister still has a good influence on him". "Pt. under constant supervision of his sister"

"Stepmother and sister afraid that pt would have to be rehospitalized, want him at home". "Very well protected by stepmother and sister".

"Family has changed so as to adjust to the sick member's way of life. Even the pt. has changed and has become more respectful and considerate of the others' needs". "They must probably accept more from the pt. than strangers would but the pt's sister states this is normal in a loving family".

"The family is a very united unit". "Attachment to his mother prevented pt. from suicide".

"Pt. brightens up with the frequent visits he has from his relatives"
"Pt. lives a quiet existence under the protection of his parents"

"Father and brother look well after our pt." "Pt. living harmoniously"

"Living with brother; sister also very concerned, takes care of his problems"

"Pt. quit his shack, is now sleeping in the neighbours' home offered to him in cold weather"

Group III, active neurotics

"Wife has hysterical fits". "For a long time now both could not talk to each other without shouting and arguing"

"It is the impression of this worker that the wife's punitive attitude and lack of understanding and her constant pressure on the pt. is severely aggravating his condition". "Destructive home life". "Wife bickering and nagging...Pt. has fearful dreams"

"A terrific tension developed in this family". "Wife left pt., may have extramarital relations". "Pt's daughter left him...his symptoms are worse"

"Stress in the pt's marriage". "Wife not able to satisfy pt's needs"

"Wife described as acting out hysteric". "Wife's neurotic illness aggravated pt's symptoms". "Wife left him and got a court order so pt. has to leave the common abode"

"Wife is sick everywhere and refuses to do the housework". "Wife talks of the need for future hospitalizations of pt."

"Disorganization of the family". "In this couple each is unable to provide the understanding and emotional support the other needs"

"Pt. left by his fiancee". "Wife is nervous and thin, uncapable to do the household". "As soon as pt. gets better something goes wrong at his home"

Group IV, residual neurotics

"Living with and supported by 10 years older common law wife"

"Depends on wife like a child". "Family functioning well"

"Wife cheerful and warm person, showing kindness and understanding toward pt.". "Pt. getting quite a bit of help from his brother and receiving financial support from his family"

"Wife works to maintain the family, bought an old car for the pt."

"Supported by his father". "Now supported by and residing with sister"

"Protective attitude of pt's married sister". "Pt. living with married sister who demands treatment and compensation for him"

"Since his separation pt. has found free room and board with a friend". "Pt. gets support from his friend"

"Good family relations". "Wife caring well for pt. and her 5 children".

The association of positive attitude of environment with "residuality" and of negative attitude of environment with "active symptom formation" was statistically significant on Chi-square tests (App.xix), and the following picture emerged:

Group I, active schizophrenics

Predominant attitude of significant environmental figures: negative.
The rejecting environmental figures were parents (1 case),
parents & siblings (3),
siblings (2)
spouses (2)
Accepting attitude was shown by parents (2 cases);
No record in 4 cases.

Group II, residual schizophrenics

Predominant attitude of significant environmental figures: positive.
The accepting environmental figures were parents (4 cases),
parents & siblings (5),
siblings (3),
friends (1).
Rejecting attitudes were shown by parents and siblings in 1 case.

Group III, active neurotics

Predominant attitude of significant environmental figures: negative.
The rejecting environmental figures were spouses (11 cases);
Accepting attitudes were shown by parents (1 case) and friends (1 case).
No record in 1 case.

Group IV, residual neurotics

Predominant attitude of significant environmental figures: positive.
The accepting environmental figures were parents & siblings (2 cases),
siblings (1),
spouses (8);
Rejecting attitude was shown by spouse in 1 case.
No record in 2 cases.

The schizophrenic subjects differ from the neurotic subjects on marital status (App.1) which explains the shift of focus from parents and siblings in the schizophrenic groups to spouses in the neurotic groups.

In most cases the attitudes of relatives were surprisingly consistent throughout the course of illness according to the notes made by social workers and treating physicians.

Behavioural changes for the worse subsequent to experiences of rejection were repeatedly recorded and became evident especially when discharge and rehabilitation plans had been jeopardized by the negative attitude of relatives. To be sure, this rejecting attitude may be a reaction to the patient's behaviour. However, there is ample support for the assumption that our residual subjects had been equally difficult in previous years; yet relatives often went out of their way to make them feel accepted.

It appears from the records that an accepting and protective environment was provided by relatives or friends for the great majority of the "residuals" even when they were active. A benevolent milieu allowed these patients to have their dpendency needs satisfied, thus granting them the emotional security they were seeking. If this seeking

reaction of the psychiatric patient is thwarted by rejection, the ensuing frustration should give rise to anxiety and to a reactivation of productive psychopathology. Exposures to experiences of overt or covert rejection by important family figures at a crucial time during the patient's illness have indeed coincided with the recurrence of symptoms. This seems to indicate that some chronic patients, still actively ill after many years, have no alternative possibility of existence than to stay ill and to look for security only in continued treatment and hospitalization.

With the neurotic groups, a new aspect is introduced by the striving for compensation +) which is most prominent among the residual neurotics. In seven cases this compensation-neurotic trend could be traced back close to the onset of manifest disorder, and the impression is given that striving for compensation was the motor that kept the symptoms "running" over a long period of time. This compensation seeking behaviour may be interpreted as an expression of the better reality testing of the neurotic as compared to the psychotic subjects on the basis of its utilitarian rationale. However, the fulfillment of a compensation demand for supposedly service-connected suffering has a symbolic significance which transcends its monetary value by far. It is not only providing a minimum of material security but also affording dependency without shame.

+) The term "compensation" is used here although the War Veterans Allowance does not represent a compensation in the legal sense, because it is conceived by the veteran as a deservedly earned if not always adequate compensation for supposedly service-connected suffering.

As DANCEY & SARWER-FONER (1959) put it:

> "The status of being the recipient of a pension or compensation, as an honourable excuse for illness or poor social functioning, is ever present. Compensation in these terms is visible evidence for a socially acceptable state of dependency. For a pensioner has official social sanction for an impairment which was honestly acquired and 'is not my fault'. Used in this sense, the care is a justification for, and protection against, unconscious feelings of inadequacy and personal inferiority".

By avoiding anxiety-arousing frustration, the award of compensation may help to abate the florid symptoms if they are not activated by other factors, such as a hostile attitude of relevant environmental figures. In the residual neurotic group an association of compensation award and full development of the "residual dimension" was found irrespective of presence or absence of compensation-neurotic trends. (App.xviii) Of the eleven chronic neurotics who became residual within three years after compensation had been granted, nine lived with people very favourably inclined to them.

Neurotic patients receiving financial compensation are known to react to any imagined or real threat to their pension or allowance with an exacerbation of symptomatic anxiety. In our investigation, most of the residual neurotics showed apprehension and concern about their compensation when they were summoned for a control examination. Some of them openly complained that the anxious feelings and the worries of old returned when they had received the Department's letter inviting them to undergo an extra-routine examination. Remarkable was the calming effect upon these patients of an initially given assurance that their pension or allowance status would not be changed. None of the residual schizophrenic subjects reacted similarly, the topic of compensation was never touched upon by the schizophrenic patients.

In our patient population, compensation per se does not constitute a variable, as nearly all subjects have been awarded compensation (App.xviii). In the two neurotic groups only one (active neurotic) patient is without compensation. Active and residual neurotic group do not differ on year of compensation award (group means 1958.1 ± 4.5 vs. 1958.9 ± 2.2). A definite compensation-neurotic trend was ascertained in approximately one third of the active and two thirds of the residual neurotic cases; yet these proportions are not significantly independent on Chi-square tests (App. xix).

Two findings, however, appear to be of importance:

(1) Most of the patients of the residual neurotic group, with a long history of active symptom formation, developed a residual syndrome within three years after compensation award.

(2) Of these residual neurotic patients most had enjoyed full acceptance by key family members; unlike most of the active neurotics who received the same allowance at the same time but who had been exposed to unfriendly attitudes of key relatives.+)

To sum up: In our schizophrenic and neurotic cases we find evidence of concomitant variation of "positive milieu attitude" with residual syndrome development, and of "negative milieu attitude" with ongoing symptom formation. In addition, we find evidence in our neurotic subjects of an apparent facilitating effect of compensation on residual syndrome development where a positive attitude of significant family figures toward the patients prevailed. It is suggested, therefore, that a positive

+) Key relatives of our neurotic subjects are mainly spouses.

attitude toward the chronic patient of significant figures in his environment is a contributory condition of the development of the residual dimension in both schizophrenics and neurotics. Further it is proposed that this positive milieu factor represents a contingent condition of the symptom-abating effect which compensation awards may have on chronic neurotic patients.

Continued payment of a compensation usually implies that the recipient's performance remains reduced; permitting it to normalize only to a certain degree beyond which the patient would lose this privilege. Compensation rules which impose restrictions on the patient's performance may, therefore, stand in the way of his full social remission. Likewise, the granting of dependency needs by an overly sympathetic, tolerant and permissive environment might not be conducive to the further social rehabilitation of the residual patient. FREEMAN & SIMMONS (1963) have gained insight into the complexities of the problem through their research with families of 714 psychotic patients. They maintain that the patients'"success or failure in community tenure and performance levels are two relatively independent issues". Instrumental performance of the discharged patients was associated with the value orientation of their families and with social class, and was predictable from the relatives' responses on scales measuring an underlying dimension of Social Potency, i.e. competence in the manipulation of interpersonal relationships. The authors conclude that "the performance of patients is congruent with the demands by family members".

We may now attempt to answer a question which will be asked particularly with regard to the residual neurotic patients: Why did they become residual instead of being wholly restored to normal functioning?

(1) Current compensation regulations (Dept. Vet. Affaires, 1961) of relevance to this group of subjects exclude the possibility of paid employment for recipients below the age of 60 years. Considering their advanced age (group mean 51 years) and their relatively limited social skill and education, most of the residual neurotics could not hope to be much better off in terms of income when, as normally functioning individuals, they had to compete on the open labour market. Social and occupational risks would in most cases weigh heavily against giving up a compensation which may be modest but has its fringe benefits (lump sums and medical expenses for the whole family, housing assistance, etc.).

(2) Compensation is not easily relinquished if, as indicated above, it has become a sort of status symbol; an official acknowledgement of ill health due to patriotic service, and a recognition of the neurotic veteran as someone whose suffering in the past was real and not "imagined".

(3) Considerable influence is often exerted on the patients by relatives, especially by spouses, encouraging them to maintain their social dependency on the compensation, mainly for reasons of security and stability. Probably for the same reasons spouses had in some cases been more active than the patients in demanding compensation.

(4) Mindful of past unrest during the active stage of the patient's illness, the family might welcome his dependency and occupational inactivity, and be overly permissive toward his poor performance and restricted social functioning rather than risk "trouble" again. Not only on reality grounds may members of his family encourage the residual patient to act in a particular "dependent" fashion. They may actually need and demand his dependency. In this case, the residual neurotic is not able to climb the summit of full recovery because his regression caters to the needs of a significant family figure. One might well call this a regression in the service of somebody else's Ego.

(5) Finally we have no reason to conceal the fact that the residual neurotics compare unfavourably with the active neurotic group on formal education (school grades reached: group mean 5.1 vs. 6.6) and that their intelligence level appears to be below that of the active neurotic patients (Beta I.Q. group means 98.4 vs. 102.9). Even though these differences lack statistical significance, they may be quoted here in support of ERNST's (1959) observation that residualization is more frequent in intellectually dull and untalented neurotics. We wish to emphasize that the residual neurotics in our study were neither mentally deficient nor inadequate personalities. Nevertheless, their relatively limited educational and intellectual resources might constitute a personality factor contributory to the development of the neurotic residual syndrome, in addition to the milieu factors already mentioned.

Our considerations above in no way suggest that we are dealing with malingerers. The differential diagnosis between compensation neurosis and

conscious simulation of illness has long been established, mainly by Continental authors who had ample opportunity to gain experience in these matters. We may refer here to HOFF & BRUN (1956) who refute the idea that the nervous symptoms of compensation neurotic patients originate in conscious wishes. These authors stress the fact that compensation neurotics are "really ill" and not pretending or simulating; they are neurotic patients, not malingerers. In our patient population we cannot, however, speak of compensation neuroses, only of compensation-neurotic trends.

We have argued that sociotherapeutic endeavours, positive rewarding of normative behaviour without withdrawal of acceptance and support, could lead to social remission in residual cases. In recent years several papers with an undertone of optimism have been published on the rehabilitation of hospitalized chronic schizophrenics. HOWARD's (1960) report reviews the earlier literature. He found that chronic schizophrenic patients hospitalized ten to fifteen years can be "most receptive to the rehabilitative procedures employed, irrespective of earlier social, educational, and vocational achievements." In his study, these patients had a 63.8% chance of being employable. Comparable results were achieved in the Vermont Project of BROOKS (1960) and co-workers. Most rehabilitative endeavours are concerned with hospitalized schizophrenic long-term patients of the active symptom formation type. However, in one of the rehabilitation experiments of WING (1960) a group of chronic schizophrenics rated as moderately ill attended an Industrial Rehabilitation Unit course with

considerable better results than the control group which consisted of chronic patients with florid symptomatology. The clinical picture of WING's moderately ill patients resembled our residual syndrome.+)

The Bleulerian School over more than 60 years has gathered experience on the prognosis of the schizophrenias, and FREYHAN's (1958) comprehensive survey of schizophrenics admitted to the Delaware State Hospital from 1900 to 1950 fully corroborated the prognostic estimates E. BLEULER (1911) made at the turn of the century. The over-all picture of final outcome in patients hospitalized with the diagnosis of schizophrenia at the Burghölzli Hospital is this:

> "A good quarter end in severe schizophrenic deterioration; about one half end in more or less severe schizophrenic defect states, and about one quarter reattain a condition which, at least in its social aspects, can be rated as a cure with restoration of working capability in the former occupation ". (M. BLEULER, 1960)

Thus there exists a large patient population of schizophrenic "defect states", the less severe of which are undoubtedly cases with a predominance of the residual dimension as we defined it. A further appraisal of the rehabilitation potential of this psychiatric population would be of considerable interest; but rehabilitative efforts should also be directed towards neurotic residual patients on which information has hitherto been lacking.

We do not infer that all residual patients equally share a full potential for normal function. The relevance of well established prognostic factors+)+) has to be taken into consideration.

+) WING, personal communication.

+)+) The literature on prognosis in schizophrenia was recently reviewed by ASTRUP, FOSSUM & HOLMBOE, (1962) and by VAILLANT (1962; 1964). Their studies and the research of STEPHENS, ASTRUP & MANGRUM (1966) essentially confirm the clinical experience of older authors. ERNST (1959) identified criteria for the outcome of neurotic reactions and has drawn attention to the identity of important prognostic rules in neuroses and schizophrenias.

It has to be recognized also that attempts at reinvolvement of the patient in society might induce active symptom formation again. However, there are indications that selective efforts at social rehabilitation can be succesful in cases of predominant residual symptomatology. It is for these efforts that the hypothesis of a possible social remission of the residual patient attains its heuristic value.

SUMMARY

In this study, psychiatric, psychologic, and social aspects of residual syndromes in veterans with chronic psychiatric illness are explored. From a content analysis of psychiatric literature on residual states in schizophrenic, manic-depressive, and neurotic illness, symptom-clusters were derived which suggested a tentative definition of a hypothesized General Residual Syndrome, as well as its delimitation. Subjects corresponding to this conceptual model were selected from a veteran population; selection procedures are described. Four experimental groups of 14 subjects each were formed: active schizophrenics, residual schizophrenics, active neurotics, and residual neurotics. Data were collected from documents, through structured interviews, and by test procedures; and handled in various statistical analyses. On the basis of the findings, the hypothesis of a General Residual Syndrome - indistinguishable as to previous diagnostic category upon current clinical and test evaluation - had to be rejected in view of the behavioural characteristics wherein the residual neurotics are differing from the residual schizophrenics. The relative significance of these differences (concerning thought content, perceptual disorders, personal feelings, and attitudes towards compensation) is discussed. The distinctiveness of the neurotic residual syndrome (ERNST, 1959) was confirmed by the findings. Both the neurotic and the schizophrenic residual syndrome have properties in common which constitute the Residual Dimension, namely (1) general reduction of drive;
(2) impaired emotional modulation;
(3) indifferent attitude toward treatment;
(4) impaired ability to communicate with others;

(5) impoverished interpersonal relations;
(6) lack of reaction to outside stimuli and low social awareness;
(7) perseveration of associations;
(8) lack of variation in task performance;
(9) low symptomatic anxiety.

Hypothetical explanations regarding the genesis of the residual dimension are considered in the light of the evidence accrued from the inquiry. It is suggested that the residual dimension does not represent a defect state or some sort of dementia, but rather an integration at a lower level of psychic and social functioning. Review of case histories elicited the association of positive attitudes of the environment with "residuality", and of negative environmental attitudes with ongoing active symptom formation in both schizophrenic and neurotic patients. Acceptance of the chronic patient by significant figures in his environment appeared to be a contributory condition of the development of the residual dimension. The implications of family attitudes and of the whole "compensation complex" for residual syndrome formation and also for the patient's restoration to normal functioning are examined. Development of the residual dimension is seen as one response to chronic psychiatric illness, resulting from the organism's efforts towards avoiding noxious experiences; a protective mode of life through which an important achievement is attained: the reduction of symptomatic anxiety. With reference to recent rehabilitation experiments it is argued that residual syndromes are not irreversible and static conditions, and that sociotherapeutic endeavours could lead to social remission in residual cases.

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+) Abbreviations according to listings in "INDEX MEDICUS"

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GUIDE TO THE APPENDIX TABLES

Presentation of Analysis of Variance and t-Test Results:

VARIABLE:

	Active	Residual	t-ratio	F-ratio (Fixed model)
SCHIZOPHRENICS	Group Mean ± St.Dev. n = 14	Group Mean ± St.Dev. n = 14	t(Schizo. act./ Schizo. res;) d.f. = 26	F(SCHIZO./ NEUROT.) d.f. = 1
NEUROTICS	Group Mean ± St.Dev. n = 14	Group Mean ± St.Dev. n = 14	t(Neurot. act./ Neurot. res.) d.f. = 26	
t- ratio	t(Schizo. act./ Neurot. act.) d.f. = 26	t(Schizo.res./ Neurot.res.) d.f. = 26		F(Interaction) d.f. = 1
F- ratio (Fixed Model)	F(Actives/ Residuals) d.f. = 1			

Presentation of Chi-Square Test Results:

MENTAL HEALTH & SOCIAL FUNCTIONING ITEM:

	RATING "A"		RATING "B"		RATING "C"		Chi^2 Values
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZOPHRENICS	% rated "A"	%	% rated "B"	%	% rated "C"	%	Chi^2 (Schizophrenics)
NEUROTICS	% rated "A"	%	% rated "B"	%	% rated "C"	%	Chi^2 (Neurotics)
Chi^2 Values	Chi^2 (Actives)		Chi^2 (Residuals)				100% = 14 d.f. = 2

AGE:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	46.9 ±4.3	48.1 ±6.2	.62(n.s.)	
				2.15 (n.s.)
NEURO.	48.1 ±5.4	50.9 ±3.8	1.60(n.s.)	
t- ratio	.64(n.s.)	1.41(n.s.)		
F- ratio	2.30(n.s.)			.35(n.s.)

MARITAL STATUS:

	Gr.I (S.A.)	Gr.II (S.R.)	Gr.III (N.A.)	Gr.IV (N.R.)
Single, no common law relation...	9	13	2	4
married and living with wife or living with comm.law rel.....	5	-	8	9
divorced, legally separated, or not living with spouse more than 5 yrs.....	-	1	3	1
widowed.....	-	-	1	-

S.A. = active schizophrenics
S.R. = residual schizophrenics
N.A. = active neurotics
N.R. = residual neurotics

AGE AT ONSET OF ILLNESS:

	Active	Residual	t- ratio
SCHIZOPHRENICS	28.5 ±5.4	27.4 ±6.2	.50 (n.s.)
NEUROTICS	28.3 ±5.0	30.7 ±4.9	1.25 (n.s.)
t- ratio	.11(n.s.)	1.53(n.s.)	

YEAR OF ONSET OF ILLNESS:

	Active	Residual
SCHIZOPHRENICS	1945.6 ± 3.4	1943.2 ± 2.7
NEUROTICS	1944.2 ± 1.6	1943.7 ± 3.0

DURATION OF ACTIVE SYMPTOM FORMATION (YEARS):

	Active	Residual	t- ratio
SCHIZOPHRENICS	18.4 ±3.4	13.3 ±4.8	3.12 (.001<p ≤.01)
NEUROTICS	19.8 ±1.6	15.7 ±4.0	4.63 (p<.001)
t- ratio	1.39(n.s.)	1.40(n.s.)	

EDUCATION (SCHOOL GRADES COMPLETED):

	Active	Residual	t- ratio	F- ratio
SCHIZOPHRENICS	8.4 ±3.0	8.4 ±1.8	.07(n.s)	14.55(p<.001)
NEUROTICS	6.6 ±2.3	5.1 ±2.3	1.60(n.s)	
t- ratio	1.70(n.s.)	4.03(p<.001)		
F- ratio	1.04(n.s.)			1.27(n.s)

PRE SERVICE (WORLD WAR II) OCCUPATIONS

Residual schizophrenic group (group 2)

Subject
1) stevedore, farm worker
2) garage mechanic, electrician
3) college student (Catholic French College)
4) electrician and radio serviceman
5) factory and construction worker
6) aircraft fitter, toolmaker; Army: qualif. wireless gunner
7) metal worker, salesman
8) packer, violin teacher
9) painter
10) musician in hotel bands
11) office clerk, mine worker, longshoreman
12) grocery clerk, farm worker, construction worker; Army: nursing orderly
13) farm worker
14) blacksmith and plumber, self-employed

Residual neurotic group (group 4)

Subject
1) waiter, bartender; Army: mess stewart
2) labourer, lumberjack; Army: gun repairman
3) gardener, electrician
4) painter, interior decorator; Army: cement concretor
5) hospital orderly, R.C.M.P. guard
6) plasterer, contractor; Army: advanced artillery training
7) office clerk; Army: qualified clerk
8) truck driver, farm supervisor
9) leader of dance bands; Army: leader of hospital orchestra
10) painter, employed by a big company
11) garage mechanic; Army: qualified motor mechanic
12) quarry labourer, truck driver; Army: Cook grade A
13) road construction worker; Army: mobile laundry serviceman
14) restaurant owner, glas etcher; Army: mess waiter & driver

MENTAL HEALTH & SOCIAL FUNCTIONING

Item No.	Rating (nominal scale)
I : Verbal contact	A : making self-directed comments spontaneously, sometimes ignoring questions B : other verbal behaviour (mainly: restricted verbal contact)
II: Thought content and preoccupation	A : realistic B : neurotic complaints or eccentric ideas C : delusional
III: Perceptual disorders a: psychotic (hallucinations) b: non-psychotic ("somatizations")	A : absent B : present with insight C : present without insight
IV: Personal feelings (self-reported)	A : usually satisfied but at times irritable, tense, or depressed B : mostly discontented, frequent mood shifts C : indifferent
V : Appropriateness of affect (observed)	A : appropriate B : moderately or occasionally inappropriate
VI: Motor activity (reported and self-reported)	A : hypoactive B : normal motor activity C : hyperactive
VII: General orientation & field of interest, as compared with the average non-psychiatric veteran pt.	A : compares well B : somewhat restricted C : extremely restricted
VIII: Attitude to psychiatric treatment	A : asks for treatment B : indifferent, but would accept treatment if ordered C : rejects treatment
IX : Social participation	A : goes out to social functions B : goes out to family functions only C : neither (social isolate)
X : Interpersonal relations	A : friendships reported B : no friendships reported C : no friendships reported, expresses a negative attitude to social contacts

I VERBAL CONTACT:

	Self-directed comments		other(mainly restricted)		Chi^2
	Active	Residual	Active	Residual	
SCHIZOPHRENICS	50%	7%	50%	93%	6.30(.02<p<.05)
NEUROTICS	86%	7%	14%	93%	17.37(p<.001)
Chi^2	4.09 (n.s.)	0 (n.s.)			

II THOUGHT CONTENT & PREOCCUPATION:

	realistic		neurotic/eccentric		delusional		Chi^2
	Active	Residual	Active	Residual	Active	Residual	
SCHIZOPHRENICS	0	57%	0	43%	100%	0	28.00 (p<.001)
NEUROTICS	7%	93%	93%	7%	0	0	205.71 (p<.001)
Chi^2	28.00 (p<.001)	4.76 (n.s.05<p<.10)					

III a) HALLUCINATIONS:

	absent		present w.insight		present without insight		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	7%	86%	14%	14%	79%	0	20.24($p<.001$)
NEUROT.	100%	100%	0	0	0	0	0 (n.s.)
Chi^2	24.22 ($p<.001$)	2.13 (n.s.)					

III b) "SOMATIZATIONS":

	absent		present w.insight		present without insight		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	100%	86%	0	7%	0	7%	2.13 (n.s.)
NEUROT.	0	21%	43%	50%	57%	29%	4.41 (n.s.)
Chi^2	27.97 ($p<.001$)	11.65 ($.001<p<.01$)					

IV PERSONAL FEELINGS:

	usually satisfied but at times irritable etc.		mostly discontented frequent mood shifts		indifferent		Chi^2
	Active	Residual	Active	Residual	Act.	Res.	
SCHIZO.	0	14%	64%	0	36%	86%	13.88($p<.001$)
NEUROT.	7%	50%	93%	0	0	50%	24.50($p<.001$)
Chi^2	6.73 ($.02<p<.05$)	4.69 (n.s. $.05<p<.10$)					

V APPROPRIATENESS OF AFFECT:

	appropriate		moderately or occasionally inappropriate		Chi^2
	Act.	Res.	Act.	Res.	
SCHIZO.	0	7%	100%	93%	1.04 (n.s.)
NEUROT.	79%	7%	21%	93%	13.58(.001<p<.01)
Chi^2	18.12 (p<.001)	0 (n.s.)			

VI MOTOR ACTIVITY:

	hypoactive		normal motor activity		hyperactive		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	36%	86%	14%	7%	50%	7%	7.67(.02<p<.05)
NEUROT.	7%	100%	0	0	93%	0	24.25(p<.001)
Chi^2	6.41 (.02<p<.05)	2.13 (n.s.)					

VII GENERAL ORIENTATION & FIELD OF INTEREST AS COMPARED WITH THE AVERAGE NON-PSYCHIATRIC VETERAN PT:

	compares well		somewhat restricted		extremely restricted		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	7%	7%	14%	43%	79%	50%	2.89 (n.s.)
NEUROT.	7%	0	57%	29%	36%	71%	4.00 (n.s.)
Chi^2	5.85 (n.s.05<p<.10)	1.93(n.s.)					

VIII ATTITUDE TO PSYCHIATRIC TREATMENT:

	asks for treatment		indifferent but would accept if ordered		rejects treatment		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	22%	0	71%	100%	7%	0	4.67(n.s.05<p<.10)
NEUROT.	86%	0	0	93%	14%	7%	25.33(p<.001)
Chi^2	15.73 (p<.001)	1.04 (n.s.)					

IX SOCIAL PARTICIPATION:

	goes out to social functions		goes out to family functions only		neither(social isolate)		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	22%	14%	7%	64%	71%	22%	10.56(.001<p<.01)
NEUROT.	50%	0	50%	86%	0	14%	10.32(.001<p<.01)
Chi^2	16.10 (p<.001)	2.63 (n.s.)					

X INTERPERSONAL RELATIONS:

	friendships reported		no friendships reported		no friendships reported, expresses negative attitude to social contacts		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	14%	7%	58%	93%	28%	0	5.52(n.s.05<p<.10)
NEUROT.	64%	14%	29%	86%	7%	0	9.45(.001<p<.01)
Chi^2	7.59 (.02<p<.05)	.37 (n.s.)					

REVISED BETA EXAMINATION (WECHSLER-TYPE I.Q.):

	Active	Residual	t- ratio	F- ratio
SCHIZO.	98.1 ±8.5	101.4 ± 7.8	1.01(n.s.)	
				.18(n.s.)
NEUROT.	102.9 ±7.9	98.4 ±4.4	1.80(n.s., .05<p<.10)	
t- ratio	1.47(n.s.)	1.21 (n.s.)		
F- ratio	.10(n.s.)			3.61(n.s.)

COMPREHENSION (WAIS) JUGEMENT (BARBEAU-PINARD):

	Active	Residual	t- ratio	F- ratio
SCHIZO.	16.1 ±4.3	16.5 ±2.7	.31(n.s.)	
				.10(n.s.)
NEUROT.	16.2 ±3.1	16.9 ±2.7	.63(n.s.)	
t- ratio	.10(n.s.)	.41(n.s.)		
F- ratio	.40(n.s.)			.03(n.s.)

CRITICAL FLICKER-FUSION FREQUENCY READINGS (CYCLES PER SEC.):

	Active	Residual	t- ratio
SCHIZO.	39.2 ±3.9	39.3 ±1.8	.07(n.s.)
NEUROT.	38.7 ±2.2	37.9 ±4.3	.60(n.s.)
t- ratio	.42(n.s)	1.08(n.s.)	

WECHSLER-BELLEVUE EQUIVALENTS OF WORLD WAR II "M" SCORES AND BETA-I.Qs IN 1964:

	Active		Residual	
	"M" Test W.W. II	Beta Exam. 1964	"M" Test W.W. II	Beta Exam. 1964
SCHIZOPHRENICS	94.2 ±10.9 (n = 6)	99.0 ±8.6	96.4 ±7.8 (n = 10)	101.8 ±8.6
NEUROTICS	89.4 ±11.9 (n = 5)	105.8 ±7.8	91.6 ±6.3 (n = 7)	99.9 ±4.3

MEAN DIFFERENCES BETWEEN WECHSLER-BELLEVUE EQUIVALENTS OF WORLD WAR II "M" SCORES AND BETA-I.Qs IN 1964:

	Active	Residual	t- ratio
SCHIZOPHRENICS	+ 4.8 ± 6.9	+ 5.4 ± 7.4	.14 (n.s.) df = 14
NEUROTICS	+16.4 ±11.9	+ 8.3 ± 8.1	1.28 (n.s.) df = 10
t- ratio	1.81(n.s.) df= 9	.72(n.s.) df= 15	

M.P.I. EXTRAVERSION:

	Active	Residual	t-ratio	F- ratio
SCHIZO.	21.8 ±7.9	27.3 ±6.4	1.96(n.s.,.05<p<.10)	
NEUROT.	21.8 ±10.1	25.2 ±8.1	.96(n.s.)	.21(n.s.)
t- ratio	.00(n.s.)	.72(n.s.)		
F- ratio	3.84(n.s.)			.21(n.s.)

M.P.I. NEUROTICISM:

	Active	Residual	t-ratio	F- ratio
SCHIZO.	23.7 ±12.7	12.4 ±7.0	2.83(.001<p<.01)	9.80(p<.005)
NEUROT.	32.7 ±9.0	20.6 ±10.3	3.18(.001<p<.01)	
t- ratio	2.09(.02<p<.05)	2.40(.02<p<.05)		
F- ratio	18.01(p<.001)			.02(n.s.)

M.P.I. NEUROTICISM:

	N-Scores 00-20		N-Scores 22-48		Chi^2
	Act.	Res.	Act.	Res.	
SCHIZO.	36%	93%	64%	7%	7.62(.001<p<.01)
NEUROT.	7%	50%	93%	50%	4.38(.02<p<.05)
Chi^2	1.91(n.s.)	4.38 (.02<p<.05)			

BODY SWAY TEST:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	2.3 ±1.5	.7 ±.5	3.59(.001<p<.01)	
NEUROT.	2.7 ±2.1	.9 ±.5	3.07(.001<p<.01)	.45(n.s.)
t- ratio	.55(n.s.)	.54(n.s.)		
F- ratio	21.05(p<.001)			.15(n.s.)

BODY SWAY TEST:

	Body Sway Scores 00-.75	1.00-7.00		Body Sway Scores 00-.75	1.00-7.00
SCHIZO. (n= 28)	40%	60%	Actives (n= 28)	28%	72%
NEUROT. (n= 28)	50%	50%	Residuals (n= 28)	60%	40%
Chi^2 = .29(n.s.)			Chi^2 = 5.40(.02<p<.05)		

Mc GILL PICTURE ANOMALY SERIES "M":

	Active	Residual	t- ratio	F- ratio
SCHIZO.	19.1 ±6.8	19.5 ±3.8	.17(n.s.)	
NEUROT.	21.1 ±5.3	21.0 ±4.1	.08(n.s.)	1.51(n.s.)
t- ratio	.84(n.s.)	.97(n.s.)		
F- ratio	.01(n.s.)			.03(n.s.)

TAPPING SPEED:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	230.0 ±47.5	230.4 ±45.7	.02(n.s.)	
NEUROT.	244.6 ±46.4	224.0 ±27.2	1.38(n.s.)	.12(n.s.)
t- ratio	.80(n.s.)	.43(n.s.)		
F- ratio	.74(n.s.)			.79(n.s.)

VERBAL FLUENCY-ANIMALS:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	17.9 ±4.3	17.9 ±5.3	.04(n.s.)	
NEUROT.	17.1 ±3.2	16.9 ±3.6	.22(n.s.)	.60(n.s.)
t- ratio	.53(n.s.)	.57(n.s.)		
F- ratio	.02(n.s.)			.01(n.s.)

VERBAL FLUENCY-WORDS:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	24.1 ±8.0	23.6 ±9.9	.14(n.s.)	
NEUROT.	30.0 ±11.4	23.8 ±8.8	1.56(n.s.)	1.32(n.s.)
t- ratio	1.53(n.s.)	.06(n.s.)		
F- ratio	1.58(n.s.)			1.14(n.s.)

VERDUN ASSOCIATION LIST-W:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	13.2 ±3.7	13.6 ±4.3	.23(n.s.)	
NEUROT.	13.8 ±2.6	15.3 ±2.0	1.67(n.s.)	1.58(n.s.)
t- ratio	.46(n.s.)	1.30(n.s.)		
F- ratio	1.04(n.s.)			.40(n.s.)

VERDUN ASSOCIATION LIST-S:

	Active	Residual	t-ratio	F- ratio
SCHIZO.	13.3 ±5.8	16.4 ±3.4	1.65(n.s.)	
NEUROT.	16.4 ±2.3	17.6 ±1.5	1.71(n.s., .05<p<.10)	4.69(.01<p<.05)
t- ratio	1.78(n.s.05<p<.10)	1.24(n.s.)		
F- ratio	4.69(.01<p<.05)			.79(n.s.)

VERDUN ASSOCIATION LIST-S:

	S-Scores 3-17	18-20		S-Scores 3-17	18-20
SCHIZO. (n= 28)	61%	39%	Actives (n= 28)	72%	28%
NEUROT. (n= 28)	54%	46%	Residuals (n= 28)	43%	57%
Chi^2 = .29(n.s.)			Chi^2 = 4.67 (.02<p<.05)		

VERDUN ASSOCIATION LIST-T1:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	11.1 ±5.5	12.4 ±5.3	.59(n.s.)	
				2.35(n.s.)
NEUROT.	12.4 ±4.0	15.2 ±4.2	1.76(n.s., .05<p<.10)	
t- ratio	.68(n.s.)	1.48(n.s.)		
F- ratio	2.35			.34(n.s.)

VERDUN ASSOCIATION LIST-T2:

	Active	Residual	t- ratio	F- ratio
SCHIZO.	10.4 ±6.9	13.0 ±5.7	1.07(n.s.)	
				5.37(.01<p<.05)
NEUROT.	13.9 ±3.9	16.0 ±3.1	1.51(n.s.)	
t- ratio	1.63(n.s.)	1.66(n.s.)		
F- ratio	2.76(n.s.)			.04(n.s.)

CONJUNCTIVE CLASS CONCEPT FORMATION (TEST)

Logical puzzles

(I) " If an animal has long ears, it is a mule or a donkey;
if it has a thick tail, it is a mule or a horse;
now if it has both long ears and a thick tail, what is it?"
(mule)

(II) " Edith has fairer hair than Suzy;
Suzy has darker hair than Lily;
Who is the darkest ? (Suzy)

Similarity questions

"What have these things in common, in what way are they alike or similar?"

a) table- chair- book case b) church- theater- school

RATING

Logical puzzles

2 = correct answer with satisfactory explanation
1 = correct answer with unsatisfactory explanation, e.g. based on only one attribute
0 = uncorrect answer; guessing around; "can't say", "don't know" etc.

Similarity questions

4 = groups all three together according to a universal concept which encompasses all important attributes of the objects

3 = groups all three together but bases classification on limited and secondary aspects of the objects

2 = groups two together according to a universal concept which encompasses all important attributes of the two objects

1 = groups two together but bases classification on limited and secondary aspects of the two objects

0 = groups none together, states " they have nothing in common, they are all different things " or " I don't know what they should have in common " etc.

CONJUNCTIVE CLASS CONCEPT FORMATION-LOGICAL PUZZLE I:

	Act.	Res.	t- ratio	F- ratio
SCHIZO.	.7 ±1.0	.9 ±1.0	.57(n.s.)	
				.24(n.s.)
NEUROT.	.8 ±1.0	1.1 ±1.0	.60(n.s.)	
t- ratio	.30(n.s.)	.40(n.s.)		
F- ratio	.69(n.s.)			.00 (n.s.)

CONJUNCTIVE CLASS CONCEPT FORMATION-LOGICAL PUZZLE II:

	Act.	Res.	t- ratio	F- ratio
SCHIZO.	.9 ±1.0	1.6 ±.7	2.15(.02<p<.05)	
				.60(n.s.)
NEUROT.	1.3 ±.9	.8 ±1.0	1.22(n.s.)	
t- ratio	1.04(n.s.)	2.32(.02<p<.05)		
F- ratio	.17(n.s.)			5.38(.01<p<.05)

CONJUNCTIVE CLASS CONCEPT FORMATION-SIMILARITY QUESTION a:

	Act.	Res.	t- ratio	F- ratio
SCHIZO.	2.1 ±1.4	2.1 ±1.5	.12(n.s.)	
				.18(n.s.)
NEUROT.	1.6 ±1.7	2.3 ±1.6	.95(n.s.)	
t- ratio	.77(n.s.)	.17(n.s.)		
F- ratio	.67(n.s.)			.44(n.s.)

CONJUNCTIVE CLASS CONCEPT FORMATION-SIMILARITY QUESTION b:

	Act.	Res.	t- ratio	F- ratio
SCHIZO.	1.9 ±1.6	2.9 ±1.0	1.8(n.s.,.05<p<.10)	
				.90(n.s.)
NEUROT.	1.9 ±1.4	2.1 ±1.7	.25(n.s.)	
t- ratio	.02(n.s.	1.41(n.s.)		
F- ratio	1.75(n.s.)			.85(n.s.)

		ONSET OF ILLNESS	COMPENS. NEUROTIC TREND (First demand)	COMPENS. AWARDED	RESIDUAL SYNDROME fully dev. since	Predom. ATTITUDE of signif. environm.
Group I (Schizo. active)	1.	1951		1953		
	2.	1944		1948		neg.
	3.	1947		1952		neg.
	4.	1949		1949		neg.
	5.	1942		1946		pos.
	6.	1942		-		
	7.	1945		1952		neg.
	8.	1945		1947		neg.
	9.	1945		1947		pos.
	10.	1944		1947		neg.
	11.	1954		-		
	12.	1944		1953		neg.
	13.	1944		1952		neg.
	14.	1943		1944		
Group II (Schizo. residual)	1.	1946		1954	1951	pos.
	2.	1945		1956	1957	pos.
	3.	1940		1946	1960	pos.
	4.	1946		1949	1959	pos.
	5.	1937		1955	1952	pos.
	6.	1945		1949	1959	pos.
	7.	1942		1946	1955	pos.
	8.	1942		1947	1960	pos.
	9.	1945		1951	1961	pos.
	10.	1940		1946	1957	pos.
	11.	1942		1944	1957	neg.
	12.	1945		1958	1962	pos.
	13.	1946		1960	1955	pos.
	14.	1944		1946	1946	pos.
Group IIIl. (Neurot. active)	1.	1941	yes, 1949	1957		neg.
	2.	1944		1957		pos.
	3.	1945		1960		neg.
	4.	1945		1961		neg.
	5.	1947		1959		neg.
	6.	1945	yes, 1954	1962		neg.
	7.	1944		1949		neg.
	8.	1944	yes, 1959	1960		neg.
	9.	1945	yes, 1947	-		
	10.	1945		1962		neg.
	11.	1946		1956		neg.
	12.	1942	yes, 1944	1948		pos.
	13.	1942		1962		neg.
	14.	1944		1962		neg.
Group IV (Neurot. residual)	1.	1943	yes, 1952	1964	1954	pos.
	2.	1945	yes, 1945	1957	1960	pos.
	3.	1943	yes, 1944	1962	1962	pos.
	4.	1941	yes, 1945	1960	1961	pos.
	5.	1942	yes, 1942	1955	1955	pos.
	6.	1941		1958	1962	neg.
	7.	1946		1961	1961	pos.
	8.	1943	yes, 1948	1957	1957	pos.
	9.	1943		1957	1962	pos.
	10.	1942		1959	1959	pos.
	11.	1946	yes, 1948	1959	1959	pos.
	12.	1941	yes, 1952	1959	1961	
	13.	1953	yes, 1955	1959	1959	
	14.	1943		1958	1960	pos.

COMPENSATION-NEUROTIC TREND:

	present		not present		Chi^2
	Act.	Res.	Act.	Res.	
SCHIZO.	0	0	100%	100%	0(n.s.)
NEUROT.	35%	64%	65%	36%	1.29(n.s.)
Chi^2	3.90 (.02<p<.05)	10.48 (.001<p<.01)			Group n = 14

PREDOMINANT ATTITUDE OF SIGNIFICANT ENVIRONMENT TOWARD THE PATIENT:

	negative		positive		unknown		Chi^2
	Act.	Res.	Act.	Res.	Act.	Res.	
SCHIZO.	57%	7%	14%	93%	29%	0	17.44 (p<.001)
NEUROT.	79%	7%	14%	79%	7%	14%	14.84 (p<.001)
Chi^2	2.21 (n.s.)	2.13 (n.s.)					Group n = 14

MODIFIED OBJECTIVE RORSCHACH (CSANK)

Table 1: Between groups comparisons of characteristic response types.

GROUPS	TYPE 1 RESPONSES	TYPE 2 RESPONSES	TYPE 3 RESPONSES	Chi-square	LEVEL OF SIGNIFICANCE
combined neurot.	14	4	2		
vs.					
combined schizo.	2	9	8	13.8	$p<.01$
active schizo.	14	12	7		
vs.					
residual schizo.	9	7	7	0.60	n.s.
active neurot.	15	8	2		
vs.					
residual neurot.	14	16	7	2.40	n.s.
active schizo.	9	14	10		
vs.					
active neurot.	14	5	4	5.98	$p<.05$
residual schizo.	6	6	10		
vs.					
residual neurot.	15	11	7	3.81	n.s., $p<.10$

TABLE II: Mean differences (%) in type 1, type 2, type 3 responses over the 10 RORSCHACH cards.

GROUPS	TYPE 1 RESPONSES		TYPE 2 RESPONSES		TYPE 3 RESPONSES	
	Mean difference %	Level of significance	Mean difference %	Level of significance	Mean difference %	Level of significance
combined neurot. - combined schizo.	+10.1	$p<.05$	-3.8	n.s.	-6.9	$p<.02$
res. schizo. - active schizo.	+ 0.2	n.s.	-4.1	n.s.	+3.0	n.s.
active neurot. - res. neurot.	+ 2.9	n.s.	-5.5	n.s., $p<.10$	+1.1	n.s.
active neurot. - active schizo.	+12.6	$p<.01$	-7.7	$p<.01$	-5.0	n.s., $p<.10$
res. neurot. - res. schizo.	+ 8.5	n.s., $p<.10$	+1.9	n.s.	-9.1	$p<.05$