

PSYCHOLOGICAL FACTORS  
IN THE  
ETIOLOGY OF PULMONARY TUBERCULOSIS  
AND IN THE  
CAUSATION OF RELAPSE.

BY

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**I N T R O D U C T I O N .**



## INTRODUCTION.

Let it be made clear at the start that the investigations and conclusions described in the ensuing pages in no way challenge established views on the etiology of tuberculosis or on the causes of relapse. The presence of the tubercle bacillus is absolutely essential to the development of tuberculosis, that is to say, is its 'specific cause'. Whether or not an individual develops pulmonary tuberculosis depends not only on infection but on the massiveness or otherwise of the infection and on the virulence of the organisms. The result of the infection depends also on inherent resistance, racial and familial. Factors which increase the spread of infection, or lower the resistance, or do both will favour the development of the disease, hence the widely accepted causative factors of overcrowding, malnutrition and faulty living habits, fatigue, overwork and the like.

But the tubercle bacillus is ubiquitous. In most countries the organism has abounded for centuries. Most people at some time in their lives are infected but relatively few develop the disease. Why does one person develop the disease while another with a similar exposure to infection, a similar family incidence and exposed to the same external factors, does not? Likewise, why do some people respond readily to treatment while others, all else being apparently equal, do not? Why is the disease prone to relapse? Why do some people relapse and not others, all else being apparently equal? It is obvious that the problem of resistance and the factors which affect it are by no means all known.

Since the days of antiquity it has been believed that psychological factors play a part in the onset and course of pulmonary tuberculosis. Despite the fact that in recent years increasing attention has been given to this aspect of/

of tuberculosis, no proof yet exists that psychological factors do, in fact, play a part. No investigation using controls has established that emotional factors or life situations precede the onset of tuberculosis more than in, say, healthy individuals, or in individuals suffering from other illnesses, or with similar symptoms. No investigation using controls has established the presence of a personality or of personality traits peculiar to tuberculosis. Indeed, a search of all the literature reveals only one investigation in which controls were used, an investigation designed to establish whether or not a specific premorbid personality existed, and in which the findings were negative (Derner, 1953,).

The most outstanding contribution to the study of Emotional Factors in the onset of tuberculosis is that of Wittkower (1949 and 1955) who is fully aware of the shortcomings left by lack of a control series. He complains that it is not possible to get a group of healthy controls to submit to a psychiatric examination of several hours duration and that the use of patients suffering from other diseases is open to objections - to what objections he does not say, though surely such a control series is better than none. Certainly, his method, involving a thorough psychiatric investigation of sanatorium patients with at least two hours interrogation of each patient, precludes the use of controls. The present position may be summed up in the following quotation from Day's Hunterian Society Oration (1952) - "When we examine pulmonary tuberculosis in the light of psychosomatic medicine what do we find? Halliday does not recognise it as a psychosomatic affection and it certainly does not fulfil his sevenfold criteria. Some of them - yes. Emotional traumata within the 18 to 24 months preceding the onset of the disease is to be found in a very large number of cases. But in enough to make it statistically significant? In more cases than would be found in a control section of the community, who did not develop tuberculosis or any other disabling illness? It is impossible to say ..... I tried to ascertain what peculiar personality traits, if any, these tuberculosis patients might/



might show in common. At the same time Wittkower was trying to do very much the same thing with other groups of patients along entirely different lines. I am sure he would forgive me if I state quite baldly that we both failed to arrive at any conclusions ..... ! "

The object of this study is to ascertain by investigations using controls and by subjecting the results to statistical analysis, the part played by emotional factors in the onset and recrudescence of pulmonary tuberculosis.

M A T E R I A L F O R T H E

I N V E S T I G A T I O N S.



MATERIAL FOR THE INVESTIGATIONS.

Like other workers with an interest in psychological medicine, an interest which has been supplemented by a basic psychiatric training, I had noticed how frequently certain life situations among my Sanatorium patients preceded the onset of the disease. There did not, however, appear to be any method whereby a controlled investigation could be carried out, especially during the years 1945-50 when the idea first gradually impressed itself on me and during which time I was employed full-time in Sanatorium work. I had plenty of tuberculosis patients to investigate but no means of getting comparable controls. However, in 1951, when responsible for the tuberculosis work in an area in Lanarkshire, a Diagnostic Clinic for the investigation of all chest illnesses was set up for the main part of my area, chiefly an industrial area which includes most of the Parish of Bothwell and in which the incidence of tuberculosis is relatively high. The general practitioners in the area have come to use this clinic for investigation of all their patients with chest symptoms. Thus there passes through this clinic patients who are diagnosed as suffering from pulmonary tuberculosis, various other chest ailments, and patients, with or without chest symptoms, in whom there is no evidence of any disease. For administrative reasons the clinic continues to be diagnostic in function, patients who are diagnosed as suffering from pulmonary tuberculosis having their supervision continued at the peripheral clinics in Bellshill and Uddingston. Being an industrial area, the majority of the patients are of the working classes, with a sprinkling of middle-class patients.

The set-up, therefore, consists of a central Diagnostic Clinic at Strathclyde Hospital, Motherwell, and two peripheral tuberculosis clinics at Bellshill and Uddingston, all covering the same industrial Parish of Bothwell area. This setting seemed to me to be suitable for a controlled investigation.

PLEASE ANSWER 'YES' OR 'NO' IN APPROPRIATE SQUARE.

DIAGNOSTIC CHEST CLINIC, MOTHERWELL.

Please read the following notes carefully.

- 1. Have you had any unusually severe emotional stress or strain, for example, a bereavement?
- or prolonged illness of a close relative?
- or difficulties or serious disagreement with your family?
- 2. Did you have a happy childhood?
- 3. Did you have any severe emotional upset in childhood?
- 4. Has there been any divorce or marital separation in your immediate family?
- 5. Have you had any unhappy love affairs?
- 6. Have you any sexual problems?
- 7. Have you any religious problems?
- 8. Have you any worrying difficulties in your work?
- 9. Have you had any frustrated desires, hopes or ambitions?
- 10. Have you had any other strains or upsets or worries not mentioned above?

- 1. It is requested that all patients aged 15 years and over answer the questions overleaf and complete the particulars below.
- 2. The careful and correct answer to these questions will be of considerable assistance to the Doctor.
- 3. The completed form should be handed by you personally to the Doctor when you enter the Consulting Room for examination after your X-Ray.
- 4. Your answers are COMPLETELY CONFIDENTIAL.

NAME .....

ADDRESS .....

AGE .....

Married  Single  Widowed  Divorced

living with Husband   
Wife

(Put 'X' in appropriate square).

1. METHOD AND CONDITIONS OF THE INVESTIGATION.

The first experiment was carried out at the Diagnostic Clinic.

Patients are normally seen here one morning weekly by appointment. The number seen at each half-day session varies from fifteen to thirty and it was obvious that time would not permit a detailed personal life history to be included in the investigation of each patient attending. It was, therefore, decided in the first instance to prepare a questionnaire for patients themselves to fill in. This was to be in the nature of a 'feeler'. A copy of the questionnaire is given opposite. Patients under the age of fifteen years were excluded mainly because they were considered to be too young to answer correctly some of the questions. The method which was adopted was as follows. All patients, aged fifteen and over, were given a blank questionnaire by the clerkess after their particulars, for clinic records, had been taken by her. They were asked to fill in the questionnaire in the privacy of the single dressing cubicle they occupied while awaiting X-Ray examination and admission to the Consulting Room, and to hand the completed form personally to me on entering the Consulting Room. They were then asked to give orally details of any significant reply in the questionnaire, the details being recorded by me on the other side of the questionnaire. All patients were treated in this way. X-Ray films were not viewed, nor clinical examination made, nor history taken, nor doctor's letter read before the questionnaire was disposed of. There were no refusals. Even with this simple investigation, clinic sessions became very prolonged. A chart of positive and negative findings was kept and it soon became apparent that significant results were being obtained. As time did not permit more detailed investigation, it was decided to continue this method. As experience was gained, it was felt that improvements could be made on the details in the questionnaire, but/

but alteration was decided against as by this time the experiment was too far advanced and changes at this stage might have impaired its value. One omission noted at the start was the absence of a question on financial worries. Although this was covered by the open nature of the last question, and indeed all references to such worries were made there, it was considered advisable to ask all patients this question - "Have you any financial worries?"

The results of the First Investigation are given in the ensuing pages. The test of significance used in all the Investigations described in this thesis was the simple test of difference/standard error. For statistical significance a difference of more than twice this was accepted.

2. RESULTS OF FIRST INVESTIGATION.

Distribution of Emotional Factors  
according to Sex.

Table I shows the distribution of emotional factors according to sex among the tuberculosis cases and controls.

TABLE I.

Incidence of Emotional Factors in Sex Groups among Tuberculosis and Controls.

	MALES.			FEMALES.		
	With preceding emotional factors.	No preceding emotional factors.	Total.	With preceding emotional factors.	No preceding emotional factors.	Total.
Tuberculosis	19 (65.5%)	10 (34.5%)	29	22 (62.9%)	13 (37.1%)	35
Controls	25 (25.0%)	75 (75.0%)	100	11 (32.4%)	23 (67.6%)	34
Total	44	84	129	33	37	69

It will be seen that 19 out of 29 (65.5%) of male tuberculosis cases and 25 out of 100 (25.0%) of the male controls showed preceding emotional factors.

Likewise, 22 out of 35 (62.9%) of female tuberculosis cases and 11 out of 34 (32.4%) of female controls showed emotional factors.

TABLE/

TABLE IA.

Total Incidence of Emotional Factors among Tuberculosis and Controls (Male and Female combined).

	With preceding emotional factors.	No preceding emotional factors.	Total.
Tuberculosis	41 (64.1%)	23 (35.9%)	64
Controls	36 (26.9%)	98 (73.1%)	134
Total	77	121	198

Adding both sexes together (Table IA), 41 out of 64 (64.1%) of tuberculosis cases and 36 out of 134 (26.9%) of controls showed preceding emotional factors.

THE INCIDENCE OF PRECEDING EMOTIONAL FACTORS IN THE TUBERCULOSIS CASES IS SIGNIFICANTLY HIGHER STATISTICALLY FOR BOTH MALES AND FEMALES THAN THE INCIDENCE IN THE CONTROLS. THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN THE INCIDENCE OF EMOTIONAL FACTORS IN MALES AS COMPARED WITH FEMALES.



Effect of Contact History on Incidence  
of Emotional Factors.

Table II shows the distribution of emotional factors among both tuberculosis cases and controls who gave a history of family or other close contact with tuberculosis.

TABLE II.

Incidence of Contacts with Emotional Factors among  
Tuberculosis and Controls according to Sex.

	MALES (CONTACTS).			FEMALES (CONTACTS).		
	With preceding emotional factors.	No preceding emotional factors.	Total	With preceding emotional factors.	No preceding emotional factors.	Total
Tuberculosis	6 (66.7%)	3 (33.3%)	9	12 (66.7%)	6 (33.3%)	18
Controls	6 (33.3%)	12 (66.7%)	18	4 (44.4%)	5 (55.6%)	9
Total	12	15	27	16	11	27

6 out of 9 (66.7%) of males and 12 out of 18 (66.7%) of females among the TUBERCULOSIS CONTACTS showed preceding emotional factors.

6 out of 18 (33.3%) of males and 4 out of 9 (44.4%) of females among the CONTROL CONTACTS showed preceding emotional factors.

Adding both sexes together, 18 out of 27 (66.7%) of TUBERCULOSIS CONTACTS and only 10 out of 27 (37%) of CONTROL CONTACTS showed preceding emotional factors.

The distribution is not statistically different from Table I. THEREFORE, A HISTORY OF CLOSE CONTACT WITH TUBERCULOSIS DOES NOT APPEAR APPRECIABLY TO ALTER THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING TUBERCULOSIS.

If one compares tuberculosis contacts showing emotional factors with tuberculosis/

tuberculosis non-contacts showing emotional factors, the following figures emerge:-

18 out of 27 (66.7%) of tuberculosis contacts had emotional factors.

23 out of 37 (62.2%) of tuberculosis non-contacts had emotional factors.

This confirms the finding that a history of close contact with tuberculosis does not appreciably alter the incidence of emotional factors.

Relationship between Extent of Disease and  
Incidence of Emotional Factors.

---

Table III shows the distribution of preceding emotional factors according to the extent of the disease in tuberculosis patients. Group I includes those cases involving up to 1 zone on x-ray, Group II up to 2 zones and Group III more than 2 zones. There were no pleural effusions.

TABLE III.

Distribution of Emotional Factors preceding Tuberculosis  
according to Extent of Disease (Male and Female).

Extent of Lesion on Diagnosis.	MALE.			FEMALE.		
	With preceding emotional factors.	No preceding emotional factors.	Total.	With preceding emotional factors.	No preceding emotional factors.	Total.
I	7 (58.3%)	5 (41.7%)	12	11 (61.1%)	7 (38.9%)	18
II	8 (80%)	2 (20%)	10	4 (50%)	4 (50%)	8
III	4 (57.1%)	3 (42.9%)	7	7 (77.8%)	2 (22.2%)	9
Total	19	10	29	22	13	35

In Group I cases, 7 out of 12 males (58.3%) and 11 out of 18 females (61.1%) showed emotional factors, i.e., a total of 18 out of 30 (60%).

In Group II, 8 out of 10 males (80%) and 4 out of 8 females (50%) showed emotional factors, i.e., a total of 12 out of 18 (66.7%).

In/

In Group III, 4 out of 7 males (57.1%) and 7 out of 9 females (77.8%) showed emotional factors, i.e., a total of 11 out of 16 (68.8%).

THE FIGURES SHOW THAT THERE IS NO SIGNIFICANT ASSOCIATION BETWEEN PRECEDING EMOTIONAL FACTORS AND THE EXTENT OF THE DISEASE WHEN FIRST DIAGNOSED.

Comparison between Tuberculosis Group  
and Three Control Groups.

---

Table IV (page 19) shows the distribution of the types of emotional factor preceding illness in the tuberculosis cases compared with three control groups. The control groups detailed are - (a) a group of 14 patients suffering from illnesses which are included among the psychosomatic affections and are recognised as having precipitating emotional factors. These consisted of 2 cases of bronchial asthma, 2 of duodenal ulcer, 1 of rheumatoid arthritis, 2 of cardiac disease and 7 of hypertension; (b) a group of 46 patients in whom no abnormality was discovered ('N.A.D.');

and (c) a group of 74 patients comprising all the other illnesses: these were - bronchial carcinoma (6), bronchiectasis (3), pneumoconiosis (29), inflammatory (including bronchitis) (36) referred to as 'Others'.

Incidence in the Various Groups:

19 out of 29 tuberculosis MALES (65.5%) had emotional factors compared with 4 out of 9 (44.4%) in the 'psychosomatic group', 6 out of 28 (21.5%) in the 'N.A.D.' group and 15 out of 63 (23.8%) in the 'Others'.

22 out of 35 tuberculosis FEMALES (62.9%) had emotional factors compared with 4 out of 5 (80%) in the 'psychosomatic group', 5 out of 18 (27.8%) in the 'N.A.D.' group and 2 out of 11 (18.2%) in the 'Others'.

In TOTAL, 41 out of 64 (64.1%) of tuberculosis patients showed emotional factors compared with 8 out of 14 (57.1%) in the 'psychosomatic group', 11 out of 46 (23.9%) in the 'N.A.D.' group and 17 out of 74 (22.9%) in the 'Others'.

It has already been shown (Table I) that the incidence of emotional factors in the Tuberculosis Group is significantly higher statistically than in the controls taken altogether. If, however, the incidence of emotional factors in/

in the tuberculosis cases is compared with that in the 'psychosomatic' group there is no significant statistical difference, either in total or taking the sexes separately. Comparing the incidence in tuberculosis cases with that in the 'N.A.D.' group, the former is statistically higher significantly than the latter, not only in the total but also as regards the sexes separately. Likewise, the incidence of emotional factors in the tuberculosis group is significantly higher statistically than the 'Others', not only in total but also for male and females separately.

THUS, EXCLUDING THE 'PSYCHOSOMATIC GROUP', THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING TUBERCULOSIS IS SIGNIFICANTLY HIGHER STATISTICALLY THAN ALL THE OTHER GROUPS, WHETHER TAKEN SEPARATELY OR ALTOGETHER, AND BOTH FOR MALES AND FEMALES.

#### Type of Emotional Factor in the Various Groups:

Table IV shows the commonest single emotional factor in the tuberculosis group to be a BREAK (OR SERIOUS THREAT OF BREAK) IN A ROMANCE, ENGAGEMENT OR MARRIAGE. 9 out of 29 (31%) of all male tuberculosis and 12 out of 35 (34.3%) of all female tuberculosis cases, or 21 out of 64 (32.8%) of all tuberculosis cases showed this to be a preceding emotional factor. The 'psychosomatic group' showed 1 out of 9 (11.1%) of males and 0 out of 5 (0) of females, a total of 1 out of 14 (7.1%) with this type of emotional factor. The 'N.A.D.' group showed this emotional factor in 3 out of 28 (10.7%) of males and 3 out of 18 (16.7%) of females, a total of 6 out of 46 (13%). 'Others' showed 2 out of 63 (3.2%) males and 0 out of 11 (0) females, a total of 2 out of 74 (2.7%) with this emotional factor.

There is a significant statistical difference in the frequency of this type of emotional factor between the tuberculosis group as a whole and between each of the other groups individually and added together. The increased frequency is/

is also significant when male tuberculosis cases are compared with male 'N.A.D's' and 'others' and when female tuberculosis cases are compared with female 'psychosomatics' and 'others' there is also a statistically significant high frequency in tuberculosis. In the other groups, i.e., the male 'psychosomatics' and the female 'N.A.D's', although the figures do not quite satisfy the statistical proof because of their smallness when broken up, the same trend is there.

At first glance the remaining types of emotional factors appear to show a great diversity, but closer examination shows that those in categories 2 to 7 inclusive, have in common with category 1, factors causing a break or threatened break with a loved person or persons. If categories 1 to 7, therefore, are grouped together as factors causing a BREAK (OR THREATENED BREAK) IN A LOVE LINK and the tuberculosis cases compared with each of the other groups and each of the sexes, the following figures emerge. 17 out of 29 males (58.6%) and 20 out of 35 females (57.1%), a total of 37 out of 64 (57.8%), in the tuberculosis group had a Break or Threatened Break in a Love Link. In the 'psychosomatic' group the comparable figures are - for males 4 out of 9 (44.4%) and for females 3 out of 5 (60%), a total of 7 out of 14 (50%). In the 'N.A.D.' group the figures are 5 out of 28 (17.8%) males and 5 out of 18 (27.8%) females, a total of 10 out of 46 (21.7%). In the 'others' group the figures are 13 out of 63 (20.6%) males and 2 out of 11 (18.2%) females, a total of 20.3%. In all the male controls added together the figure is 22 out of 100 (22%) and in all the female controls added together the figure is 10 out of 33, or (30%).

STATISTICAL ANALYSIS SHOWS THAT THE INCIDENCE OF FACTORS CAUSING A BREAK OR THREATENED BREAK IN A LOVE LINK IS SIGNIFICANTLY HIGHER IN THE TUBERCULOSIS CASES, BOTH AS A WHOLE AND SEPARATED INTO MALE AND FEMALE, COMPARED WITH ALL THE CONTROLS TOGETHER, BOTH AS A WHOLE AND SEPARATED INTO MALE AND FEMALE. IT IS ALSO GREATER IN MALE AND FEMALE TUBERCULOSIS CASES COMPARED WITH THE/

THE CORRESPONDING MALE AND FEMALE GROUPS OF 'N.A.D.' AND 'OTHERS'. There is, however, no significant difference when compared with the small 'psychosomatic group' either separately for sexes or as a whole.

It is, of course, recognised that emotional factors commonly precede the onset of the psychosomatic illnesses. It is, however, worth examining this small group to see if, in fact, the particular type of emotional factor 'Break in a Love Link' has the same meaning to them, that is to say - was the broken link a Love Link? It has previously been shown in the analysis of the incidence of 'Break or serious threat of break in a romance, engagement or marriage' that the incidence of this particular emotional factor was significantly higher in the tuberculosis cases than in the 'psychosomatic' group as a whole and also for the females of these groups separately and that the trend was the same for the males, though the small numbers in the latter prevented statistical confirmation. ONE MUST, THEREFORE, QUESTION WHETHER OR NOT THE EMOTIONAL FACTORS NUMBERS 2 TO 7 HAVE THIS SAME MEANING - BREAK IN A LOVE LINK - TO THE 'PSYCHOSOMATIC' GROUP. Of the 8 'psychosomatic' cases with emotional factors, 3 can be excluded on the grounds that the emotional factor concerned the removal of a mother-fixation figure in two cases of bronchial asthma and of an object of hate in one case of rheumatoid arthritis. So far as the tuberculosis group is concerned, all the emotional factors in 1 to 7 of Table IV represent a Break (or Threat) in a Love Link.

#### Bereavement:

This was noted as an emotional factor in 8 out of 64 tuberculosis cases (12.5%) and 15 out of 134 controls (11.2%). There is no statistically significant difference.

In the 8 tuberculosis cases, aggravating factors were noted in all of them, whereas in the 15 controls aggravating factors were present in only 7 (46.6%). This/



This difference is significant and suggests the possibility that the aggravating factor increases the sense of loss. Details of the aggravating factors are given:-

Tuberculosis Cases.

- (1) Single female (18): mother and brother seriously ill with threat to life.
- (2) Single female (26): quarrel with sibling over domestic arrangements as the result of the bereavement.
- (3) Married male (66): (a) son separated from wife and living with another woman.  
(b) disappointed in a daughter who was 'no good'.
- (4) Single male (46): unhappy home life due to dominating old father.
- (5) Married male (45): financial worries.
- (6) Married male (48): financial worries.
- (7) Married male (60): multiple bereavements (1 brother and 2 sisters within six months of each other.
- (8) Married male (67): passed over for promotion on two occasions, the last occasion just before his wife's death.

Controls.

- (1) Married female (32) N.A.D.: (a) financial worries.  
(b) inability to have family.
- (2) Married female (40) N.A.D.: inability to have family.
- (3) Married female (58) N.A.D.: disappointed over son's widow's remarriage and behaviour.
- (4) Married female (67) Hypertension: multiple bereavements (6 close friends and 1 sister, and housekeeper's suicide within one year).
- (5) Married male (31) N.A.D.: changed job and unhappy at work.
- (6) Married male (45) Duodenal Ulcer: financial worries and work worries.
- (7) Married male (45) Bronchitis: financial worries.

TABLE IV, THEREFORE, SHOWS THAT THE OUTSTANDING TYPE OF EMOTIONAL FACTOR PRECEDING PULMONARY TUBERCULOSIS IS THAT WHICH INVOLVES A BREAK OR THREATENED BREAK IN A LOVE LINK AND EXAMPLIFIED BY THE BREAK OR SERIOUS THREAT TO A BREAK IN A ROMANCE, ENGAGEMENT OR MARRIAGE, THESE FEATURES BEING SIGNIFICANTLY HIGHER STATISTICALLY IN THE TUBERCULOSIS GROUP THAN IN ALL THE CONTROL GROUPS SEPARATELY OR TOGETHER.

TABLE IV.

Types of Emotional Factor in Tuberculosis  
Cases and Controls (Male and Female).

Factors causing break in a love link.	MALES.				FEMALES.			
	Tuberculosis	Controls.			Tuberculosis	Controls.		
		Psychosomatic	N.A.D.	Others		Psychosomatic	N.A.D.	Others
1. Break or serious threat to break in romance, engagement or marriage.	9	1	3	2	12	-	3	-
2. Break with family for marriage reasons.	1	1	-	2	4	-	-	-
3. Break with family for other reasons.	-	1	-	1	-	1	-	-
4. Enforced or unwilling separation due to circumstances.	-	-	-	-	1	-	-	-
5. Bereavement.	6	1	2	6	2	2	2	2
6. Serious illness to relative with threat to life.	-	-	-	2	1	-	-	-
7. Unfulfilled desire for family.	1	-	-	-	-	-	-	-
8. Sexual difficulties.	-	-	-	-	-	-	-	-
9. Work difficulties.	2	-	1	1	1	1	-	-
10. Religious difficulties.	-	-	-	-	1	-	-	-
11. Financial difficulties.	-	-	-	1	-	-	-	-
Total with emotional factors	19 (65.5%)	4 (44.4%)	6 (21.5%)	15 (23.8%)	22 (62.9%)	4 (80%)	5 (27.8%)	2 (18.2%)
Total with no emotional factors	10 (34.5%)	5 (55.6%)	22 (78.5%)	48 (76.2%)	13 (37.1%)	1 (20%)	13 (72.2%)	9 (81.8%)
Grand Total of each group	29	9	28	63	35	5	18	11

Influence of Age and Sex  
on Incidence of Emotional Factors.

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Table V (page 24) shows the type of emotional factor in the under 35 and over 35 age groups for both males and females.

MALES:

8 out of 15 (53.3%) male tuberculosis cases UNDER 35 showed emotional factors compared with 5 out of 25 (20%) of male controls UNDER 35. The difference is statistically significant.

11 out of 14 (78.6%) male tuberculosis cases OVER 35 showed emotional factors compared with 20 out of 75 (26.7%) of male controls OVER 35. The difference is statistically significant.

THE INCIDENCE OF EMOTIONAL FACTORS IN MALE TUBERCULOSIS CASES OVER 35 IS HIGHER THAN IN THOSE UNDER 35, BUT THE DIFFERENCE IS NOT STATISTICALLY SIGNIFICANT.

FEMALES:

Among the tuberculosis females UNDER 35, 19 out of 32 (59.4%) showed emotional factors compared with 6 out of 22 (27.3%) of the controls. The higher incidence in the tuberculosis cases is statistically significant.

In the tuberculosis females OVER 35, 3 out of 3 (100%) showed emotional factors compared with 5 out of 12 (41.7%) of controls. The total numbers in this group are too small to satisfy statistical confirmation but the trend is the same as in the other groups.

There is no statistical difference between the MALE and FEMALE TUBERCULOSIS CASES UNDER 35 - 53.3% and 59.4% respectively - or between MALE and FEMALE OVER 35 - 78.6% and 100% respectively, though it tends to be higher in those/

those over 35.

AGE:

If the TOTALS (MALE AND FEMALE) UNDER 35 are investigated, one finds 27 out of 47 (57.4%) tuberculosis cases under 35 compared with 11 out of 47 (23.4%) controls. The difference is statistically significant and of the same general order as the differences revealed by the previous figures.

Likewise, comparing the TOTALS FOR ALL OVER 35, there are 14 out of 17 (82.3%) tuberculosis cases compared with 25 out of 87 (28.7%) controls. This too is statistically significant and of the same trend revealed by the previous figures.

Comparing the incidence of emotional factors in tuberculosis cases under 35 with tuberculosis cases over 35, we find 27 out of 47 (57.4%) in the former and 14 out of 17 (82.3%) in the latter. The difference is significant statistically.

THUS THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING TUBERCULOSIS IS SIGNIFICANTLY HIGHER IN THOSE OVER 35 WHEN COMPARED WITH THOSE UNDER 35. WHEN MALES AND FEMALES ARE CONSIDERED SEPARATELY, ALTHOUGH THERE IS NO STATISTICALLY SIGNIFICANT DIFFERENCE, THE TREND IS ALSO HIGHER IN THOSE OVER 35.

Influence of Age and Sex  
on Type of Emotional Factor.

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MALES:

Factors causing a Break in a Love Link (Table V, page 24) show 7 out of 15 (46.7%) in MALE TUBERCULOSIS UNDER 35 and 10 out of 14 (71.4%) in MALE TUBERCULOSIS OVER 35.

The incidence of Category 1 emotional factor - Break or threatened break in a romance, engagement or marriage - is 6 out of 15 (40%) in MALE TUBERCULOSIS UNDER 35 and 3 out of 14 (21.4%) in MALE TUBERCULOSIS OVER 35. The difference is not statistically significant.

There are more bereavements in the over 35 age group (5 out of 14) compared with the under 35 age group (1 out of 14).

Comparing MALE CONTROLS UNDER 35, there are 4 out of 25 (16%) showing a Break in a Love Link and 2 out of 25 (8%) showing Category 1 emotional factor. Similarly, for those OVER 35, 18 out of 75 (24%) show a Break in a Love Link and 4 out of 75 (5.3%).

FEMALES:

In FEMALE TUBERCULOSIS CASES factors causing a Break in a Love Link show 17 out of 32 (53.1%) in those UNDER 35 and 3 out of 3 (100%) in those OVER 35. The incidence of Category 1 emotional factor - Break or threatened Break in a Romance, Engagement or Marriage - is 12 out of 32 (37.5%) in those UNDER 35 against 0 out of 3 in those OVER 35.

In those over 35 there was a higher incidence of quarrel over marriage causing a break with the family (3 out of 3).

Comparing FEMALE CONTROLS UNDER 35, there are 5 out of 22 (22.7%) with a Break in a Love Link and 3 out of 22 (13.6%) with Category 1 emotional factor.

For/

For those OVER 35, 5 out of 12 (41.7%) show a Break in a Love Link but 0 out of 12 show Category 1 emotional factor.

AGE:

Comparing all the TUBERCULOSIS CASES under 35, male and female, with those over 35, one finds 24 out of 47 (51%) showing a Break in a Love Link compared with 13 out of 17 (76.5%) in those over 35. The higher incidence in those over 35 is statistically significant. The incidence of Category 1 emotional factor is 18 out of 47 (38.3%) in those under 35 and 3 out of 17 (17.7%) in those over 35. There is no significant difference statistically, but the trend is for a lesser incidence in those over 35.

The total number showing a Break in a Love Link is 37 out of 64 (57.8%) and the Category 1 figure is 21 out of 64 (32.8%).

Among the CONTROLS under 35, 9 out of 47 (19.2%) show a Break in a Love Link and 5 out of 47 (10.6%) Category 1 emotional factor. In those over 35, there are 23 out of 87 (26.4%) with a Break in a Love Link and 4 out of 87 (4.6%) with Category 1.

FACTORS CAUSING A BREAK IN A LOVE LINK ARE SIGNIFICANTLY HIGHER IN THOSE OVER 35 WHEN COMPARED WITH THOSE UNDER 35, THE TREND BEING LIKEWISE WHEN MALES AND FEMALES ARE CONSIDERED SEPARATELY. THE INCIDENCE OF CATEGORY 1 FACTOR - THE BREAK OR THREATENED BREAK IN A ROMANCE, ENGAGEMENT OR MARRIAGE IS, HOWEVER, HIGHER IN THOSE UNDER 35 AND THOUGH THIS DOES NOT REACH STATISTICAL SIGNIFICANCE, THE TREND IS THE SAME FOR BOTH MALES AND FEMALES. IN THOSE OVER 35 THERE IS A INCREASED TREND TO BEREAVEMENT, AND MARRIAGE LEADING TO FAMILY BREAK, AS EMOTIONAL FACTORS, THOUGH THE INCIDENCE OF CATEGORY 1 EMOTIONAL FACTOR IS STILL SIGNIFICANTLY HIGHER THAN IN THE CONTROLS.

Types of Emotional Factor in Male and Female  
Under and Over 35.

Type of Emotional Factor.	MALES.				FEMALES.			
	Under 35		Over 35		Under 35		Over 35	
	Tuberculosis	Controls	Tuberculosis	Controls	Tuberculosis	Controls	Tuberculosis	Controls
1. Break or serious threat to break in romance engagement or marriage.	6	2	3	4	12	3	-	-
2. Break with family for marriage reasons.	-	-	1	3	1	-	3	-
3. Break with family for other reasons.	-	-	-	2	-	-	-	1
4. Enforced separation due to circumstances.	-	-	-	-	1	-	-	-
5. Bereavement.	1	2	5	7	2	2	-	4
6. Serious illness to relative with threat to life.	-	-	-	2	1	-	-	-
7. Unfulfilled desire for family.	-	-	1	-	-	-	-	-
8. Sexual difficulties.	-	-	-	-	-	-	-	-
9. Work difficulties.	1	-	1	2	1	1	-	-
10. Religious difficulties.	-	-	-	-	1	-	-	-
11. Financial difficulties.	-	1	-	-	-	-	-	-
Total with emotional factors	8 (53.3%)	5 (20%)	11 (78.6%)	20 (26.7%)	19 (59.4%)	6 (27.3%)	3 (100%)	5 (41.7%)
Total with no emotional factors	7 (46.7%)	20 (80%)	3 (21.4%)	55 (73.3%)	13 (40.6%)	16 (72.7%)	0 (0)	7 (58.3%)
Grand Total of each group	15	25	14	75	32	22	3	12

Factors causing break  
in a love link.



3. CONCLUSIONS FROM FIRST INVESTIGATION.

1. The incidence of emotional factors preceding tuberculosis is significantly higher statistically than in all the controls taken together. Taking the controls separately, the incidence in tuberculosis is significantly higher statistically than in the 'N.A.D.' group and the 'Others' group, but shows no significant difference compared with the small 'psychosomatic' group.

2. The type of emotional factor preceding tuberculosis can be grouped under the one heading - 'Break or Threatened Break in a Love Link'. Other types of emotional factors are significant by their absence. The incidence of this Emotional Factor group is significantly higher statistically than in all the controls taken together. Taking the controls separately, the incidence is significantly higher than the 'N.A.D.' group and 'Others' group but shows no significant difference compared with the 'psychosomatic' group.

3. The particular type of emotional factor (within the Break or Threatened Break in a Love Link group) was a Break or Threatened Break in a Romance, Engagement or Marriage. The incidence of this is significantly higher statistically in the tuberculosis group compared with the 'N.A.D.' group, the 'Others' group and the 'psychosomatic' group, taken separately and together.

4. Neither a contact history nor the extent of the disease appear to be related to the emotional factors.

5. The incidence of emotional factors is significantly higher in those over 35 when compared with those under 35, the higher trend being present in both males and females.

6. The/

6. The type of emotional factor - Break in a Love Link - is significantly higher in those over 35 when compared with those under 35, the trend being likewise when males and females are considered separately. In those over 35 there is an increased tendency to 'bereavement' in males and 'break with family due to marriage' in females being the main factors causing Break in a Love Link.

Illustrative case histories are given at the end of the Second and Third Investigations.

**S E C O N D I N V E S T I G A T I O N .**

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**INVESTIGATION INTO EMOTIONAL FACTORS**

**PRECEDING RELAPSE.**

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## 1. METHOD AND CONDITIONS OF THE INVESTIGATION.

Before describing the method adopted, it is necessary to define certain terms:-

### QUIESCENT:

The Joint Tuberculosis Council definition of this term was used, viz., - "Cases in which the general condition and exercise tolerance are good, having regard to the extent of the lesion; which show no evidence of toxæmia; in which no tubercle bacilli have been found on three consecutive monthly examinations by stained films; and in which changes revealed by other clinical investigations and by serial skiagrams point to retrogression of the tuberculous lesion." In addition, culture examination of sputum was always carried out.

### RELAPSE:

A patient was considered to have relapsed if, after the disease had been quiescent after treatment at home or in hospital, and on normal daily activity for a period of at least twelve months, there was evidence of breakdown or spread of the disease on radiological or confirmed bacteriological examination. A single positive sputum result had to be confirmed by other investigation before being regarded as evidence of relapse. Haemoptysis, without radiological or bacteriological confirmation, was not regarded as evidence of breakdown, this symptom being not uncommon as a mechanical result in healed disease, for example, from a bronchiectatic area or from irritation caused by a calcified spicule.

This investigation was carried out at the peripheral tuberculosis clinics in Bellshill and Uddingston, so that the source of the material was the same as that in the First Investigation. Patients normally attend here at intervals/

intervals of one month, two months or three months depending on their general condition, the length of time the disease has been quiescent, the home circumstances and whether or not they are working. A few patients attend twice yearly or yearly.

Normally, when the disease has been quiescent for five years, the patient's name is removed from the tuberculosis register as recovered, though they are advised to attend the clinic annually for precautionary examination. Some patients are not good attenders, though these are in a minority. Most patients, whether off the tuberculosis register or bad attenders, usually attend the clinic for examination if they have had an upper respiratory infection, so that during the months January to May nearly all tuberculosis patients in the area are seen at the clinic. It was felt, therefore, that, if all patients attending during a three month period in the first half of the year were investigated, a representative unselected majority of tuberculosis patients in the area would have been studied.

The investigation was carried out from mid-February to mid-May. The only patients excluded were those under 15 years of age and those whose recovery, either in sanatorium or at home, was so recent, or whose relapse occurred too soon after apparent quiescence that they did not conform to the definition of relapse laid down. Cases of non-pulmonary tuberculosis were also excluded.

No special register is kept of relapses, so it was not known whether or not there would be a sufficient number among the patients studied to make the investigation worth while. All my Health Visitors for the Parish of Bothwell area, ten in number, were, therefore, asked to look through their records and find out those they knew to have relapsed. As a result of this it is known that all available cases of relapse in the area, with two exceptions, have been included. These two are bad attenders and unlikely to attend the clinic unless they relapse again. The non-relapsers, who are, of course, the controls in this  
Second/

Second Investigation, represent an unselected, very large majority of all the available remaining patients.

An investigation into sanatorium patients who relapsed or showed evidence of spread while under treatment, or failure to respond to treatment, was not included for the following reasons. Firstly, my own sanatorium patients at Glenlee Hospital (30 beds) are a selected group, in that they are all female and include a number of beds, up to one-third of the total, for pregnant mothers suffering from tuberculosis: it is, therefore, not a suitable group for investigation. Secondly, patients in the Lanarkshire Sanatoria, including Glenlee Hospital, are admitted from all parts of the County and Burghs; thus, although the patients in Glenlee are mostly from my own area, they are not exclusively so, and, in addition, patients from my own area are scattered in other sanatoria. Thirdly, it is very difficult to exclude causes other than psychological in assessing reasons for failure of a patient to do well, e.g., it may be due to inadequate or over-enthusiastic treatment on the part of the doctor in charge; it may be due to inadequate nursing or inadequate general supervision; or the patient may have been so physically ill when diagnosed that no treatment could have been of avail. In any case it is felt that, if the importance of psychological factors in onset and relapse is proved, the need for concurrent treatment of these patients along psychosomatic lines from the moment of diagnosis and throughout their stay in sanatorium (or at home if their physical treatment is carried out there) is established. Supervision along psychosomatic lines is also necessary in the follow-up clinics for a considerable time after recovery. Harz (1944, 1950 and 1954) has referred to emotional problems which retard treatment of tuberculosis; so have Day (1946, 1951 and 1955) and many other authors. A controlled study into failure of response to treatment has recently been made by Wittkower, Durost and Laing (1955) and this, as well as other studies, will be referred to later.

'Chronic' patients attending the tuberculosis clinics were also investigated. 'Chronic' patients were defined as patients in whom the disease had been present for a minimum period of two years, who had had all possible treatment appropriate to their condition, who had attained the maximum response to treatment, but in whom cavitation persisted and in whom the prospect of further improvement was unlikely. As these patients were able to attend the clinic, it is obvious that for the most part they were fairly 'good chronics'. The results of the 'chronic' group are not included in the main text but are given separately in the Appendix.

The same questionnaire was used in this investigation as in the first one and it was hoped that the conditions would be the same. However, it was obvious from the start that many of the patients were unwilling to disclose any information. One reason for this was soon discovered to be a fear that the answers might not be completely confidential; that the questionnaire might be filed with the patient's clinic records so that access to them would be had by the nursing and clerical staff, many of whom resided in the same area. This attitude of the patients at the Tuberculosis Clinics was in contrast to that of the patients at the Diagnostic Clinic where the completely confidential nature of the questionnaire was readily accepted. No doubt, patients attending a clinic for the first time, unacquainted with clerical and nursing staff, anxious only to know what is wrong with them, are only too keen to give all information they feel might be helpful, and this certainly appeared to be the case at the Diagnostic Clinic. Patients who had been attending the Tuberculosis Clinics for some time naturally wondered why all of a sudden, at this stage of the proceedings, they were asked to give such intimate particulars.

It was decided, therefore, to adopt the following approach. The questionnaire was issued in the same way by the clerkess with instructions for the patient to complete the particulars in the privacy of the dressing cubicle.

When/

When the completed questionnaire was handed to me in the Consulting Room I first re-assured the patient of the fact that their answers were in complete confidence and that the questionnaire was retained in my personal keeping; that there was no compulsion to answer the questions; and that I would now go over the questions with them again to give them the opportunity to amend their answers in the light of the re-assurance. Those who asked the purpose of the interrogation were told that it was part of an investigation. Confidence was quickly obtained and rapport established and significant replies were soon forthcoming. All the information was obtained before referring to significant dates in their tuberculosis clinic record, this information being extracted and collated at the end of the investigation. One refusal only was encountered and one hesitation in over 200 patients. All the patients were known to me and a number of those who had relapsed were also known to have relapsed. The approach to all those patients, however, was exactly the same.

One difficulty worth recording is the fact that in the first few sessions ALL patients over 15 years of age had to be interviewed. Not till the first patients seen had returned one month later did dilution of the numbers occur. This meant that, at first, thirty to thirty-five patients were being interviewed at each very prolonged session. The number of significant replies in the first few sessions were a little less than those subsequently obtained, though whether this was due to initial lack of confidence, or fatigue on the part of the patients and interviewer is not quite clear. It is worth noting that the number of patients attending the clinics in the last two months of the interviews was 17 per cent. higher than in the corresponding months last year, whereas in the two previous months the figures were much the same as in the corresponding months of last year. This may have been due, in part, to curiosity, but so many of the patients took the opportunity of discussing their troubles and expressing gratitude for being allowed to do so, that it appeared they were attracted, to no small extent, by the opportunity this afforded.



2. RESULTS OF SECOND INVESTIGATION.

## Distribution of Relapses in Sex Groups.

Table VI shows the distribution, according to sex, of the numbers who relapsed compared with those who did not relapse.

TABLE VI.

Incidence of Relapses and  
Non-Relapses in Sex Groups.

	Male	Female	Total
Relapses	25	48	73
Non-Relapses	50	71	121
Total	75	119	194

The total number of patients investigated in this series was 194, of whom 75 (38.7%) were males and 119 (61.3%) females. The higher number of females in this group is partly accounted for by the slightly higher incidence of tuberculosis among females than males (see Table I - 45.3% males and 54.7% females in the first series) and partly, as will be seen, by the slightly higher, though not statistically significant, relapse rate among females than males.

25 out of a total of 75 (33.3%) males relapsed compared with 48 out of a total of 119 (40.2%) females. The difference is not statistically significant.

Of the 73 relapses, 25 (34.2%) were males and 48 (65.8%) were females.

Of the 121 who did not relapse, 50 (41.3%) were males and 71 (58.7%) were females.

The proportion of male relapses to female relapses show no significant difference statistically when compared with the proportion of male non-relapses to female non-relapses.

Distribution of Emotional Factors  
Preceding Onset.

The total incidence (Table VII) of emotional factors preceding the onset is 50 out of 73 (68.5%) in those who subsequently relapsed and 68 out of 121 (56.2%) in those who did not subsequently relapse. The difference is statistically significant.

TABLE VII.

Total Incidence (Male and Female Combined)  
of Emotional Factors Preceding Onset.

	With preceding emotional factors.	With no preceding emotional factors.	Total.
Relapses	50 (68.5%)	23 (31.5%)	73
Non-Relapses	68 (56.2%)	53 (43.8%)	121
Total	118	76	194

Taking the sexes separately (Table VIIA), 17 out of 25 males (68%) with preceding emotional factors relapsed and 33 out of 48 females (68.8%).

28 out of 50 (56%) males with preceding emotional factors did not relapse and 40 out of 71 (56.3%) females.

The higher incidence of emotional factors at the onset in the relapses, taking the males and females separately, is not quite significant statistically, but the trend is the same as for the total.

TABLE VIIA/

TABLE VIIA.

Incidence of Emotional Factors Preceding Onset  
(Relapses and Non-Relapses) in Sex Groups.

	MALE.			FEMALE.		
	With preceding emotional factors.	No preceding emotional factors.	Total.	With preceding emotional factors.	No preceding emotional factors.	Total.
Relapses	17 (68%)	8 (32%)	25	33 (68.8%)	15 (31.2%)	48
Non-Relapses	28 (56%)	22 (44%)	50	40 (56.3%)	31 (43.7%)	71
Total	45	30	75	73	46	119

Taking the alternative method, 50 out of 118 patients (42.4%) (see Table VII) with preceding emotional factors relapsed and 23 out of 76 (30.3%) with no preceding factors relapsed. This figure is not quite significant statistically.

Taking the sexes separately by the alternative method (see Table VIIA), 17 out of 45 (37.8%) male patients with emotional factors preceding the onset relapsed and 33 out of 73 (45.2%) females. Out of 30 males with no preceding emotional factors, 8 (26.7%) relapsed and 15 out of 46 females (32.6%). These figures are not statistically significant.

Although the figures for the alternative method are not statistically significant, the trend is the same as for the first method.

ONE CAN, THEREFORE, CONCLUDE THAT WHERE AN EMOTIONAL FACTOR PRECEDES THE ONSET OF TUBERCULOSIS THERE IS, ON THE WHOLE, A SUGGESTIVELY HIGHER TENDENCY TO RELAPSE.

TABLE VII ALSO SHOWS THAT THE TOTAL INCIDENCE OF EMOTIONAL FACTORS PRECEDING THE ONSET - 118 OUT OF 194 (60.8%) - IS SIMILAR TO THE INCIDENCE FOUND PRECEDING THE ONSET IN THE FIRST INVESTIGATION - (64.1%).

Distribution of Emotional Factors  
Preceding Relapse.

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In Table VIIIA the distribution of emotional factors preceding RELAPSE but occurring after initial recovery, and occurring or continuing after recovery in the non-relapses, is given for males and females. Table VIII shows the total figures combined (Male and Female). At the foot of each of these tables is a section - 'All Relapses' (First plus subsequent). This includes an additional 16 relapses occurring in 14 patients who had already relapsed, and is given for the sake of completeness. As they do not appreciably alter the figures they will only be referred to when necessary and, when the term 'Relapses' is used, it will only refer to those relapsing for the first time, unless otherwise stated.

TABLE VIII.

Total Incidence of Emotional Factors Preceding  
Relapse (Male and Female combined).

	Emotional Factors Present.	Emotional Factors Absent.	Total.
First Relapses	55 (75.3%)	18 (24.7%)	73
Non-Relapses	14 (11.6%)	107 (88.4%)	121
Total	69	125	194
All Relapses (First plus subsequent)	69	20	89

Table VIII shows that 55 out of 73 (75.3%) of the patients who relapsed had preceding emotional factors. Of the non-relapses, 14 out of 121 (11.6%) had emotional factors subsequent to their recovery. The difference is highly significant statistically. If 'all relapses' is taken, the figure is 69 out of 89 (77.5%) compared with 11.6%.

Putting it another way, out of 69 patients with preceding emotional factors 55 (79.7%) relapsed. Out of 125 with no emotional factors 18 (14.4%) relapsed. These figures too are highly significant statistically. The corresponding figures for 'all relapses' is 69 out of 83 (83.1%) compared with 20 out of 127 (15.7%).

TABLE VIIIA.

Incidence of Emotional Factors Preceding Relapse according to Sex.

	MALE.			FEMALE.		
	Emotional Factors Present.	Emotional Factors Absent.	Total.	Emotional Factors Present.	Emotional Factors Absent.	Total.
First Relapses	15 (60%)	10 (40%)	25	40 (83.3%)	8 (16.7%)	48
Non-Relapses	5 (10%)	45 (90%)	50	9 (12.7%)	62 (87.3%)	71
Total	20	55	75	49	70	119
All Relapses (First plus subsequent)	20	11	31	49	9	58

When the incidence of emotional factors preceding relapse is examined for each sex (Table VIIIA), the following figures emerge. 15 out of 25 males (60%) with preceding emotional factors relapsed, compared with only 5 out of 50 (10%) of the non-relapsers with emotional factors subsequent to their recovery. This figure is of high statistical significance.

The corresponding figure for females is 40 out of 48 (83.3%) with emotional factors preceding the relapse, compared with 9 out of 71 (12.7%) of the non-relapsers with emotional factors subsequent to their recovery. These figures too are of high statistical significance.

Putting these figures the alternative way, 15 out of 20 (75%) of males with emotional factors relapsed while 10 out of 55 (18.2%) with no emotional factors/

factors relapsed, figures of high statistical significance; and for females 40 out of 49 (81.6%) with emotional factors relapsed while 8 out of 70 (11.4%) with no emotional factors relapsed, figures also of high significance statistically. The figures are similar if 'all relapses' are included.

IT IS THUS CLEAR THAT RELAPSE IN PULMONARY TUBERCULOSIS IN MALES AND FEMALES, TAKEN SEPARATELY OR TOGETHER, IS PRECEDED IN A SIGNIFICANTLY HIGH PROPORTION OF CASES BY EMOTIONAL FACTORS OCCURRING SUBSEQUENT TO THE RECOVERY FROM THE FIRST ILLNESS. IF EMOTIONAL FACTORS DO OCCUR, THE CHANCE OF RELAPSE IS SIGNIFICANTLY RAISED.

Comparison between males and females of the Incidence  
of Emotional Factors Preceding Relapse.

Table VIIIA shows that 60% (15 out of 25) males with preceding emotional factors relapsed compared with 83.3% (40 out of 48) of females. The higher relapse rate in females is just statistically significant. The figure is also significantly higher when the 'all relapses' are included - 84.5% (49 out of 58) for females against 64.5% (20 out of 31) for males.

Among the non-relapses there is no significant difference in the incidence of emotional factors after recovery between males and females - 12.7% (9 out of 71) for females and 10% (5 out of 50) for males.

THUS THERE IS A SIGNIFICANTLY HIGHER INCIDENCE OF EMOTIONAL FACTORS OCCURRING AFTER RECOVERY AND PRECEDING RELAPSE IN FEMALES COMPARED WITH MALES.

Distribution of Emotional Factors Preceding  
Onset and Relapse for each patient.

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Table IX shows the incidence of emotional factors preceding both the onset and the subsequent relapse.

TABLE IX.

Incidence of Emotional Factors Preceding  
both Onset and Relapse for each patient.

		Preceding Onset.		
		Emotional Factors Present.	Emotional Factors Absent.	Total.
Preceding Relapse	Emotional Factors Present	41	14	55
	Emotional Factors Absent	9	9	18
Total		50	23	73

56.2% (41 out of 73) of the relapses had emotional factors preceding both the onset and relapse.

12.3% (9 out of 73) had no emotional factors either preceding the onset or relapse.

19.2% (14 out of 73) had no emotional factors preceding the onset but these were present before relapse.

12.3% (9 out of 73) had emotional factors before onset but not before relapse.

These figures confirm the finding that a significantly high proportion of the relapses occur among those with emotional factors preceding the onset (56.2% against 12.3%) especially if emotional factors are present subsequent to recovery (56.2% against 19.2%), THAT IS TO SAY, THERE IS A DISTINCT CORRELATION BETWEEN THE INCIDENCE OF EMOTIONAL FACTORS BEFORE AND AFTER RECOVERY.

Effect of Contact History on Incidence  
of Emotional Factors.

The effect of a contact history on the incidence of emotional factors both before onset and before relapse is worked out for those who relapsed and those who did not relapse. The figures are shown in Table X.

TABLE X.

Incidence of Emotional Factors among  
those with a Contact History.

	BEFORE ONSET (Number of Contacts).			BEFORE RELAPSE (Number of Contacts).		
	Emotional Factors Present.	Emotional Factors Absent.	Total.	Emotional Factors Present.	Emotional Factors Absent.	Total.
Relapses	22 (28)	7 (16)	29 (44)	25 (30)	4 (14)	29 (44)
Non-Relapses	27 (41)	19 (34)	46 (75)	7 (7)	39 (68)	46 (75)
Total	49 (69)	26 (50)	75 (119)	32 (37)	43 (82)	75 (119)

Figures in parenthesis are the corresponding figures for non-contacts.  
Percentages for this Table are given in text only.

RELAPSES:

The number of CONTACTS with emotional factors preceding ONSET is 22 out of 29 (75.9%); the number of NON-CONTACTS with emotional factors preceding ONSET is 28 out of 44 (63.6%). There is no significant difference.

The number of CONTACTS with emotional factors preceding RELAPSE is 25 out of 29 (86.2%); the number of NON-CONTACTS with emotional factors preceding RELAPSE is 30 out of 44 (68.1%). There is no significant difference.

NON-RELAPSES:/



NON-RELAPSES:

Among the non-relapses 46 were CONTACTS. Of this 27 (58.7%) had emotional factors preceding the ONSET. NON-CONTACTS with emotional factors preceding the ONSET were 41 out of 75 (54.7%). There is no significant difference.

7 out of 46 (15.2%) CONTACTS had emotional factors subsequent to recovery and did not relapse. 7 out of 75 (9.3%) NON-CONTACTS had emotional factors subsequent to recovery and did not relapse.

THE PRESENCE OF A CONTACT HISTORY HAS NO SIGNIFICANT EFFECT ON THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING ONSET AND RELAPSE AS SHOWN BY STATISTICAL ANALYSIS.

Relationship between Extent of Initial Lesion  
and Incidence of Emotional Factors.

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1. Preceding Onset:

This is first considered in relation to the onset both for those who relapsed and those who did not relapse - see Table XI. The three groups are classified as in Table III, that is, Group I includes those cases involving up to 1 zone on x-ray; Group II involving up to 2 zones; and Group III more than 2 zones. There were 6 cases of pleural effusion among the relapses and 4 cases among the non-relapses included in Group I.

TABLE XI.

Incidence of Emotional Factors Preceding Onset in  
Relapses and Non-Relapses according to the  
Initial Extent of Disease.

Extent of Initial Lesion on Diagnosis.	RELAPSES.			NON-RELAPSES.		
	With Emotional Factor before Onset.	No Emotional Factor before Onset	Total	With Emotional Factor before Onset.	No Emotional Factor before Onset	Total
I	25 (65.8%)	13 (34.2%)	38	26 (55.3%)	21 (44.7%)	47
II	19 (70.4%)	8 (19.6%)	27	29 (56.9%)	22 (43.1%)	51
III	6 (75%)	2 (25%)	8	13 (56.5%)	10 (43.5%)	23
Total	50	23	73	68	53	121

In Group I, 25 out of 38 (65.8%) of the relapses and 26 out of 47 (55.3%) of the non-relapses had emotional factors.

In Group II, 19 out of 27 (70.4%) of the relapses and 29 out of 51 (56.9%) of the non-relapses had emotional factors.

In Group III, 6 out of 8 (75%) of the relapses and 13 out of 23 (56.5%) of the non-relapses had emotional factors.

These/

These figures are all in accord with the general incidence of emotional factors among the relapses and non-relapses. There is no statistically significant difference in the incidence in the three sub-divisions (extent of disease).

THESE FINDINGS CONFIRM THE CONCLUSIONS MADE IN THE FIRST INVESTIGATION THAT THERE IS NO STATISTICALLY SIGNIFICANT ASSOCIATION BETWEEN EMOTIONAL FACTORS BEFORE THE ONSET AND THE EXTENT OF THE INITIAL LESION.

## 2. Preceding Relapse:

The relationship between the extent of the initial lesion and the incidence of emotional factors preceding RELAPSE (but after recovery) is now considered - see Table XIA.

TABLE XIA.

Incidence of Emotional Factors Preceding Relapse  
according to Initial Extent of Lesion on Diagnosis.

Extent of Initial Lesion on Diagnosis.	RELAPSES.			NON-RELAPSES.		
	With Emotional Factor before Relapse.	No Emotional Factor before Relapse.	Total	With Emotional Factor after Recovery.	No Emotional Factor after Recovery.	Total
I	30 (78.9%)	8 (21.1%)	38	9 (19.1%)	38 (80.9%)	47
II	20 (74%)	7 (26%)	27	4 (7.8%)	47 (92.2%)	51
III	5 (62.5%)	3 (37.5%)	8	1 (4.3%)	22 (95.7%)	23
Total	55	18	73	14	107	121

Table XIA includes in Group I, 6 cases of pleural effusion among the relapses and 1 among the non-relapses.

Table XIA shows that in Group I, of those who relapsed, 30 out of 38 (78.9%) had antecedent emotional factors, but of those who did not relapse only 9 out of 47 (19.1%) had such factors.

In Group II, of those who relapsed, 20 out of 27 (74%) had antecedent emotional/

emotional factors but of those who did not relapse only 4 out of 51 (7.8%) had such factors.

In Group III, the corresponding figures are 5 out of 8 (62.5%) and 1 out of 23 (4.3%).

These figures show that the incidence of emotional factors preceding relapse shows no statistically significant difference in the three Groups according to extent of initial lesion, though it shows a distinct downward trend from Groups I to III.

If one examines the non-relapses, it is seen that comparing Group I with Group II and Group III there is a higher incidence of emotional factors after recovery in Group I - 19.1% (9 out of 47) - compared with each of the other groups - 7.8% (4 out of 51) and 4.3% (1 out of 23). These differences are not quite significant statistically, though the downward trend is again obvious.

THUS COMPARING THE INCIDENCE OF EMOTIONAL FACTORS AFTER RECOVERY, BOTH FOR THOSE WHO RELAPSED AND THOSE WHO DID NOT RELAPSE, WITH THE EXTENT OF THE INITIAL LESION, NO STATISTICALLY SIGNIFICANT DIFFERENCE IS FOUND IN THE THREE GROUPS BUT THERE IS AN OBVIOUS DOWNWARD TREND FROM GROUPS I TO III.

These figures must not be taken as evidence that the extent of the disease when first diagnosed has no relationship to the prognosis for it takes no account of patients who have died or who are still in hospital having treatment, nor does it take into account the length of treatment or type of treatment entailed by the different extent of the disease.

Relationship between Treatment of Initial Lesion  
and Relapse Preceded by Emotional Factors.

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Table XII (page 49) shows the distribution of emotional factors in the relapses and non-relapses among the various forms of treatment.

It should be made clear that the table cannot be taken as an indication of the efficiency or otherwise of the various forms of treatment. For instance, it takes no account of failures of treatment at home or in hospital. It takes no account of the fact that many of those in 'Method of Treatment' Groups 2, 3, 4 and 5 may previously have had treatment of the type described in 1, 2, 3 or 4.

The purpose of the table is to find out to what extent, if any, the method of treatment of the initial disease influenced relapse in the presence or otherwise of emotional factors.

SECTION A, THE FIRST RELAPSES, will be considered first.

CONSIDER THOSE TREATED BY BED REST ONLY. 25 patients with emotional factors out of a total of 55 treated by this method only relapsed, i.e., 45.5%, while 8 with no emotional factors out of 55 relapsed, i.e., 14.5%. The difference is statistically significant and shows that in this group the presence of emotional factors is more than coincidence.

CONSIDER THOSE TREATED BY BED REST PLUS CHEMOTHERAPY. 8 with emotional factors out of 48 treated this way relapsed, i.e., 16.7%, while 3 out of 48 with no emotional factors relapsed, i.e., 6.3%. Although the trend is the same, the difference between those with emotional factors relapsing and those without is not statistically significant.

The difference of relapse rate in these two groups between those treated with chemotherapy and those without chemotherapy - 16.7% and 45.5% respectively/

respectively - in those with emotional factors, is significantly less statistically in the chemotherapy treated group.

CONSIDER NOW THOSE TREATED BY COLLAPSE THERAPY. Where chemotherapy was given in addition, 3 with emotional factors out of a total of 29, i.e., 10.3% relapsed, and 1 with no emotional factor out of 29 (3.4%) relapsed. Here too, although the trend is for a higher incidence among those with emotional factors, the difference is not statistically significant.

In collapse treatment without chemotherapy, 14 with emotional factors out of 28 (50%) relapsed, while 5 with no emotional factors out of 28 (17.9%) relapsed - a significant difference statistically.

In the collapse treatment group the relapse rate between those treated with chemotherapy and those without - 10.3% and 50% respectively - in those with emotional factors, is significantly less statistically in those with chemotherapy.

The figures for the remaining 'Methods of Treatment' are too small for statistical comparison.

If, however, we add up ALL THOSE TREATED WITH CHEMOTHERAPY and compare the total with the total for those treated without chemotherapy, the following figures emerge.

42 patients with emotional factors out of 94 (44.7%) with no chemotherapy relapsed, while 14 patients out of 94 (14.9%) with no emotional factors in this group relapsed, a statistically significant difference confirming the previous figures. Of 100 patients treated by chemotherapy, 13 (13%) with emotional factors relapsed and 4 (4%) with no emotional factors relapsed. This lower incidence of relapse among the chemotherapy treated patients, with emotional factors, grouped together is statistically significant.

SECTION B, SECOND OR FURTHER RELAPSES, WILL NOW BE CONSIDERED.

This shows that there were 16 further relapses (in 14 patients). Of this/

this number 12, all with emotional factors, had been treated in their previous breakdown with chemotherapy, and 4 by bed rest only. 14 had emotional factors preceding the relapse and only 2 (both in the bed rest group) had no preceding emotional factors. Thus 12 out of 12 (100%) patients with emotional factors, who had been treated with chemotherapy, had a second relapse and 2 out of 4 with emotional factors, but who had not been treated with chemotherapy, also relapsed.

It is, therefore, proposed to reconsider the various chemotherapy treated groups with the addition of the second or further relapses.

In 'Method of Treatment', Group I (bed rest only), 27 out of 59 (45.8%) of patients with emotional factors relapsed and 10 out of 59 (16.9%) of these with no emotional factors.

In 'Method of Treatment', Group 2 (bed rest plus chemotherapy), 17 out of 57 (29.8%) of those with emotional factors relapsed and 3 out of 57 (5.3%) with no emotional factors relapsed. The smaller incidence in the chemotherapy treated group is only just significant statistically.

In 'Method of Treatment', Group 3, of those treated by collapse therapy plus chemotherapy, showing emotional factors, 5 out of 31 relapsed (16.1%) and 1 out of 31 (3.2%) with no emotional factors. The figures for those with no chemotherapy is unchanged at 14 out of 28 (50%) for those with emotional factors and 5 out of 28 (17.9%) with no emotional factors. The smaller incidence in those treated with chemotherapy is still statistically significant.

Comparing the totals of those treated with chemotherapy with the total of those not so treated, the following figures emerge.

44 out of 98 (44.9%) patients treated with chemotherapy, and showing emotional factors, relapsed, while 16 (16.3%) with no emotional factors relapsed. 25 out of 112 (22.3%) treated with chemotherapy, and with emotional factors, relapsed against 4 (3.5%) with no emotional factors.

THE LOWER INCIDENCE OF RELAPSE IN THE CHEMOTHERAPY TREATED GROUP IS STILL SIGNIFICANT STATISTICALLY THOUGH THE DIFFERENCE IS LESS. BUT AMONG THE CHEMOTHERAPY TREATED RELAPSES THE INCIDENCE OF EMOTIONAL FACTORS IS SIGNIFICANTLY HIGH.

Conclusions from Table XII.

1. The advent of chemotherapy has reduced significantly the number of relapses in patients covered by this Investigation, even in those with emotional factors.

It must be emphasised that many of the cases not treated with chemotherapy and which relapsed, had their initial lesion a considerable time ago; indeed, one was diagnosed first in 1932 and there are a few cases included who were first diagnosed before and during the Second World War. Thus the cases not treated with chemotherapy have had a longer time in which to relapse. This may well have caused the difference in the rate of relapse between the two groups to be exaggerated, as is suggested by the increase of relapse among cases treated with chemotherapy in the Second Relapse group.

2. Relapses, however, still do occur in all groups treated with chemotherapy and are significantly more frequent in those with emotional factors than in those without. With the lowered mortality rate in tuberculosis, it may well be in the future that relapses will increase.

3. When second or subsequent relapses are considered, there is a higher relapse rate among those treated with chemotherapy (12 out of 16) especially if they have emotional factors (12 out of 12). Since chemotherapy has only been used extensively in this country since 1948-49, there may well be late relapses, late compared with non-chemotherapy days, still to occur.

In addition, it must be stressed that 13 of the 73 patients who relapsed and who had emotional factors, had eventually to have major surgery and



a number are under consideration for this. If the emotional side could be treated, there may well be a reduction in the necessity for major surgery.

4. A note on 'Method of Treatment', Group 4 (Extra pleural pneumothorax), must be added. This method of treatment was put in a separate category because it is considered to have a fairly high relapse rate. It has, in fact, been abandoned as a method of treatment in Lanarkshire for this reason. It is generally found that when the collapse is abandoned, failure is due to persistence of cavitation, and patients are immediately re-admitted for treatment. Thus no relapses attend the Dispensary and the small group of 6 shows no relapses. This tends to exaggerate the good results of chemotherapy.

Treatment of Initial Disease Among  
Relapses and Non-Relapses.

## NOTE TO TABLE XII:

Table XII is divided into two sections - A. and B.

Section A. deals with the main Relapse group, i.e., those who relapsed for the first time. Columns 3 & 4 give the presence or absence of emotional factors preceding relapse in this group, and Column 2 gives the total of first relapses (Column 3 plus 4). Column 1 is the comparable figure among the Non-Relapses.

Section B. deals with second or further relapses in two Columns, 5 and 6, indicating the presence or absence of emotional factors preceding the relapse.

The last two Columns (7 & 8) give the total for first and second relapses added together.

The numbers in parenthesis, in the Method of Treatment Column, indicates the total number treated by each method.

Method of Treatment.	1.	2.	A.		B.		7.	8.
	Non-Relapses	Relapses (Total)	RELAPSES.		SECOND RELAPSES.		TOTAL RELAPSES (1st & 2nd together)	
			Emotional Factors Present.	Emotional Factors Absent.	Emotional Factors Present.	Emotional Factors Absent.	Emotional Factors Present.	Emotional Factors Absent.
1. Bed Rest: (Domiciliary - (24) (Sanatorium - (31)	12) 22 10)	12) 33 21)	9) 25 16) (45.5%)	3) 8 5) (14.5%)	2) 2 0)	0) 2 2)	11) 27 16) (45.8%)	3) 10 7) (16.9%)
2. Chemotherapy and Bed Rest: (Domiciliary - (15) (Sanatorium - (33)	11) 37 26)	4) 11 7)	3) 8 5) (16.7%)	1) 3 2) (6.3%)	5) 9 4)	0 0	8) 17 9) (29.8%)	1) 3 2) (5.3%)
3. Collapse Therapy (A.P. & P.P.): (Chemotherapy - (29) (No chemotherapy - (28)	25 9	4 19	3(10.3%) 14(50%)	1(3.4%) 5(17.9%)	2 0	0 0	5(16.1%) 14(50%)	1(3.2%) 5(17.9%)
4. Extrapleural Pneumothorax: (All with chemotherapy - (6)	6	0	0	0	0	0	0	0
5. Major Surgery: (Chemotherapy - (17) (No chemotherapy - (1)	15 0	2 1	2 0	0 1	1 0	0 0	3 0	0 1
6. No Treatment: (Observation - (10)	7	3	3	0	0	0	3	0
Total	121	73	55	18	14	2	69	20

Influence of Age and Sex on Incidence of  
Emotional Factors Preceding Onset.

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For the figures in this section, see Table XIII (page 56).

RELAPSE GROUP:

The incidence of emotional factors preceding onset in those subsequently relapsing was as follows:-

Males under 35	- 16 out of 22 (72.7%).
Males over 35	- 1 out of 3 (33.3%).
Females under 35	- 31 out of 44 (70.5%).
Females over 35	- 2 out of 4 (50%).
Total Both Sexes under 35	- 47 out of 66 (71.2%).
Total Both Sexes over 35	- 3 out of 7 (42.9%).

NONE OF THESE FIGURES SHOWS SIGNIFICANT DIFFERENCES STATISTICALLY, THAT IS TO SAY, IN THE RELAPSE GROUP THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING THE ONSET SHOWS NO SIGNIFICANT STATISTICAL DIFFERENCE BETWEEN ALL PATIENTS UNDER 35 AND ALL OVER 35, NOR BETWEEN MALES AND FEMALES UNDER AND OVER 35.

Figures have already been given for the total sexes, separately and together (see Tables VII and VIIA, pages 33 and 34).

NON-RELAPSE GROUP:

The incidence of emotional factors preceding onset in those who did not subsequently relapse was as follows:-

Males under 35	- 21 out of 38 (55.3%).
Males over 35	- 7 out of 12 (58.3%).
Females under 35	- 36 out of 63 (57.1%).
Females over 35	- 4 out of 8 (50%).
Total Both Sexes under 35	- 57 out of 101 (56.4%).
Total Both Sexes over 35	- 11 out of 20 (55%).

THE INCIDENCE, THEREFORE, OF EMOTIONAL FACTORS PRECEDING THE ONSET IN THIS GROUP ALSO SHOWS NO SIGNIFICANT STATISTICAL DIFFERENCE BETWEEN ALL PATIENTS UNDER 35 AND OVER 35 NOR BETWEEN MALES AND FEMALES IN EACH GROUP.

Comparing the incidence of emotional factors preceding the ONSET in Relapse and Non-Relapse groups, THE INCIDENCE IN THE UNDER 35 RELAPSES - 47 OUT OF 66 (71.2%) - IS SIGNIFICANTLY HIGHER THAN IN THE UNDER 35 NON-RELAPSES - 57 OUT OF 101 (56.4%). The trend is the same for both males and females though the individual figures for the sexes are not quite statistically significant. There is no significant difference in those over 35, but the total numbers in this age group are rather small for assessment.

It was noted previously (Tables VII and VIIA) that the total incidence of emotional factors was significantly higher in the Relapse group than in the Non-Relapses. It is now shown that this is confined to those under 35 with the same trend for males and females under 35.

TOTAL INCIDENCE OF EMOTIONAL FACTORS PRECEDING ONSET:

If the totals for Relapses and Non-Relapses are added together, the total incidence of emotional factors at ONSET is as follows:-

Males under 35	-	37 out of 60 (61.7%).
Males over 35	-	8 out of 15 (53.3%).
Females under 35	-	67 out of 107 (62.6%).
Females over 35	-	6 out of 12 (50%).
Total Both Sexes under 35	-	104 out of 167 (62.3%).
Total Both Sexes over 35	-	14 out of 27 (51.9%).

None of these differences are of statistical significance.

Although the incidence of emotional factors tend to be less in those over 35, the difference is not statistically significant. These figures for the total differ from the findings of the First Investigation where the incidence of emotional/

emotional factors was significantly higher in those over 35.

CONCLUSION:

THE INCIDENCE OF EMOTIONAL FACTORS PRECEDING THE ONSET IS SIGNIFICANTLY HIGHER STATISTICALLY IN THOSE WHO SUBSEQUENTLY RELAPSE COMPARED WITH THOSE WHO DO NOT. THE HIGHER INCIDENCE OCCURS ONLY IN THOSE UNDER 35 AND, THOUGH THE FIGURES ARE NOT QUITE SIGNIFICANT STATISTICALLY, THE TREND IS THE SAME FOR BOTH MALES AND FEMALES.

IF CASES WHICH RELAPSED AND THOSE WHICH DID NOT ARE GROUPED TOGETHER, THE FINDINGS DIFFER FROM THE FINDINGS OF THE FIRST INVESTIGATION, IN THAT THIS INVESTIGATION SHOWS NO SIGNIFICANT DIFFERENCE IN THE INCIDENCE OF EMOTIONAL FACTORS BETWEEN THOSE UNDER AND OVER 35, WHEREAS IN THE FIRST INVESTIGATION THERE WAS A SIGNIFICANTLY HIGHER INCIDENCE IN THOSE OVER 35.

In the First Investigation the total number of patients over 35 was 17 out of 64 (26.6%). In this Investigation there were in the over 35 group 27 out of 194 (12.7%). THE NUMBER OF PATIENTS OVER 35 IN THE SECOND INVESTIGATION IS SIGNIFICANTLY LESS STATISTICALLY THAN ONE WOULD HAVE EXPECTED FROM THE RESULTS OF THE FIRST INVESTIGATION. THIS SUGGESTS THAT PATIENTS OVER 35 WHO HAVE AN EMOTIONAL FACTOR, ESPECIALLY - A BREAK IN A LOVE LINK - WHEN FIRST DIAGNOSED, TEND TO HAVE A POOR PROGNOSIS, since the numbers in this group attending follow up tuberculosis clinics are less than would be expected; either they have died or they are unable to attend because of illness. It is possible that those over 35 default in attendance more than the younger group, but this is extremely unlikely.

Types of Emotional Factor Preceding Onset  
in Relation to Sex and Age.

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For the figures in this section see Table XIII (page 56).

RELAPSE GROUP:

MALES UNDER 35 showed a Break in a Love Link in 14 out of 22 patients (63.6%). The incidence of Category 1 factor - Break or Serious Threat in Romance, Engagement, Marriage, etc., - was 5 out of 22 (22.7%). In this group of males there is also a rather high incidence of Bereavement at 4 out of 22 (18.2%) but this is not significant.

MALES OVER 35 are too small in number for assessment, there being 1 Break in a Love Link in 3 patients and none in Category 1.

FEMALES UNDER 35 showed a Break in a Love Link in 30 out of 44 patients (68.2%). The incidence of Category 1 factor was 18 out of 44 (40.9%). Bereavement occurred in only 5 out of 44 (11.3%).

FEMALES OVER 35. This group is also too small for assessment. 2 out of 4 (50%) having a Break in a Love Link and 1 out of 4 (25%) being in Category 1.

Considering ALL THE MALES in this group, 15 out of 25 (60%) showed a Break in a Love Link and of this 5 out of 25 (20%) were in Category 1.

Taking ALL THE FEMALES in this group, 32 out of 48 (66.7%) had a Break in a Love Link. Of this 19 out of 48 (39.6%) were in Category 1.

Taking ALL RELAPSES UNDER 35, a Break in a Love Link was present in 44 out of 66 (66.7%) and of this 23 out of 66 (34.8%) were in Category 1.

Taking ALL RELAPSES OVER 35, a Break in a Love Link was present in 3 out of 7 (42.9%) and in Category 1 there was 1 out of 7 (14.3%).

Taking the TOTAL FOR ALL AGES AND SEX, a Break in a Love Link was found/

found in 47 out of 73 (64.4%) and of these there were in Category 1 24 out of 73 (32.9%). Bereavement was present in 10 out of 73 (13.7%) and is the next highest category.

Comparing these figures with the corresponding figures for the First Investigation, it is seen that in general they agree. One difference, however, is in the over 35 group where, though the number is too small in the present series for proper comparison, the trend for the incidence of Break in a Love Link is less than in the First Investigation. In the First Investigation the figures were for those under 35 - Break in a Love Link (51%) (compare 66.7%) - and for those over 35 - (76.5%) (compare 42.9% in 7 cases).

Category 1 factor is similar in both Investigations.

NON-RELAPSE GROUP:

MALES UNDER 35 - 19 out of 38 (50%) - show a Break in a Love Link, of which 13 (34.2%) were in Category 1 - Break in Romance, etc. There is no significant difference from the corresponding Relapse group.

MALES OVER 35 - 6 out of 12 (50%) - show a Break in a Love Link, of which 2 were in Category 1 (16.7%).

FEMALES UNDER 35 - 35 out of 63 (55.6%) - show a Break in a Love Link, of which 24 (38.1%) were in Category 1. There is no significant difference from the corresponding Relapse group.

FEMALES OVER 35 - 4 out of 8 (50%) - show a Break in a Love Link, of which 2 (25%) were in Category 1.

Taking ALL NON-RELAPSES UNDER 35 - 54 out of 101 (53.4%) - show a Break in a Love Link, of which 37 (36.3%) were in Category 1. Not quite significantly different from the 'Relapses' but the trend is the same as was found for those under 35 as a whole.

Taking ALL NON-RELAPSES OVER 35 - 10 out of 20 (50%) - show a Break in

a Love Link, of which 4 (20%) were in Category 1. Although this shows no significant difference from the First Investigation, here too the trend is for a lesser incidence in Break in a Love Link in those over 35.

There is no difference in Category 1 factor compared with the other Investigations.

Taking the TOTAL FOR ALL AGES AND SEX, a Break in a Love Link was found in 64 out of 121 (52.9%), of which 41 (33.9%) were in Category 1. There is no significant statistical difference between the two groups of Relapses and Non-Relapses.

ADDING THE TWO GROUPS OF RELAPSES AND NON-RELAPSES TOGETHER, the following figures result:-

MALES UNDER 35: Break in a Love Link - 33 out of 60 (55%); Category 1 emotional factor - 18 out of 60 (30%). There is no significant difference from the First Investigation where the figures respectively were 46.7% and 40%.

MALES OVER 35: Break in a Love Link - 7 out of 15 (46.7%); Category 1 factor - 2 out of 15 (13.3%). Compare First Investigation figures of 71.4% and 21.4% in 14 cases; the corresponding figures show no significant statistical difference, but the trend for the Break in a Love Link in those over 35 is less in the Second Investigation.

FEMALES UNDER 35: Break in a Love Link - 65 out of 107 (60.7%); Category 1 - 42 out of 107 (39.2%). Compare First Investigation figures of 53.1% and 37.5%; there is no significant difference.

FEMALES OVER 35: Break in a Love Link - 6 out of 12 (50%); Category 1 - 3 out of 12 (25%). Compare First Investigation - 100% and 0 in 3 cases; the figures are too small for comparison.

ADDING TOGETHER ALL THOSE UNDER 35, a Break in a Love Link occurred in 98 out of 167 (58.7%); Category 1 factor occurred in 60 out of 167 (35.9%). The incidence is similar to that in the First Investigation - 51% and 38.3% respectively.

ADDING/



ADDING TOGETHER ALL THOSE OVER 35, a Break in a Love Link occurred in 13 out of 27 (48.1%); Category 1 factor in 5 out of 27 (18.5%). The corresponding figures in the First Investigation are 76.5% and 17.7% respectively.

Comparing those under 35 with those over 35 of the Second Investigation, there is no significant difference either in Break in a Love Link or Category 1 factor.

Comparing those under 35 in this Investigation with those in the First Investigation, there is no significant difference.

Comparing those over 35 in this Investigation with those in the First Investigation, there is no significant difference in Category 1 factor, but when Break in a Love Link is compared it is significantly less in this series than in the First Investigation.

This confirms the observation previously made that in those over 35 who have a Break in a Love Link when first diagnosed, the prognosis appears to be poorer compared with those under 35.

ADDING ALL AGES AND SEXES TOGETHER: A Break in a Love Link occurred in 111 out of 194 patients (57.2%); Category 1 factor occurred in 65 out of 194 patients (33.5%). The corresponding figures in the First Investigation are 57.8% and 32.8% respectively.

The incidence of Bereavement in this Investigation was 20 out of 194 (10.3%) compared with 12.5% (8 out of 64) in the First Investigation. The incidence was not significantly higher in the older age group.

The incidence of 'Break with Family' was not significantly different in those under 35 compared with those over 35.

The findings of this Investigation amply confirm the findings in the First Investigation that a BREAK IN A LOVE LINK occurs in nearly all cases with emotional factors, the commonest single type of factor being BROKEN ROMANCE, ENGAGEMENT OR MARRIAGE. 111 out of 118 (94%) patients with emotional factors showed/

showed a Break in a Love Link and Category 1 factors were present in 65 (55%).

The corresponding figures in the First Investigation were 90.2% and 51.2%

The incidence of emotional factors preceding onset in those under 35 who relapsed is just significantly higher in those under 35 who did not relapse, but when a Broken Love Link incidence is compared for these Relapses and Non-Relapses it just fails to be significantly higher, though the trend is there.

The incidence of emotional factors preceding onset, especially a Break in a Love Link, in those over 35 is significantly less in this Investigation than in the First Investigation and it is suggested that the presence of such factors in those over 35 may well indicate a poorer prognosis.

TABLE XIII.

Types of Emotional Factor Preceding Onset for Relapses and Non-Relapses, separately in Males and Females for under and over 35.

Type of Emotional Factor.	MALES.				FEMALES.				Total
	Under 35		Over 35		Under 35		Over 35		
	Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	
1. Break (or serious threat) to romance, engagement or marriage.	5	13	-	2	18	24	1	2	65
2. Break (or threat) with family for marriage reasons.	2	2	-	1	2	2	1	-	10
3. Break (or threat) with family for other reasons.	2	-	-	-	5	3	-	1	11
4. Enforced separation.	-	1	-	1	-	-	-	-	2
5. Bereavement.	4	2	1	2	5	5	-	1	20
6. Serious illness to relative with threat to life.	1	1	-	-	-	-	-	-	2
7. Unfulfilled desire for family.	-	-	-	-	-	1	-	-	1
8. Sexual difficulties.	-	1	-	-	-	-	-	-	1
9. Work difficulties.	2	1	-	1	1	1	-	-	6
10. Religious difficulties.	-	-	-	-	-	-	-	-	-
11. Financial difficulties	-	-	-	-	-	-	-	-	-
Total with emotional factors	16 (72.7%)	21 (55.3%)	1 (33.3%)	7 (58.3%)	31 (70.5%)	36 (57.1%)	2 (50%)	4 (50%)	118
Total with no emotional factors	6 (27.3%)	17 (44.7%)	2 (66.7%)	5 (41.7%)	14 (29.5%)	26 (42.9%)	2 (50%)	4 (50%)	76
Grand Total of each group	22	38	3	12	44	63	4	8	194

Factors causing break in a love link.

a Love Link, of which 4 (20%) were in Category 1. Although this shows no significant difference from the First Investigation, here too the trend is for a lesser incidence in Break in a Love Link in those over 35.

There is no difference in Category 1 factor compared with the other Investigations.

Taking the TOTAL FOR ALL AGES AND SEX, a Break in a Love Link was found in 64 out of 121 (52.9%), of which 41 (33.9%) were in Category 1. There is no significant statistical difference between the two groups of Relapses and Non-Relapses.

ADDING THE TWO GROUPS OF RELAPSES AND NON-RELAPSES TOGETHER, the following figures result:-

MALES UNDER 35: Break in a Love Link - 33 out of 60 (55%); Category 1 emotional factor - 18 out of 60 (30%). There is no significant difference from the First Investigation where the figures respectively were 46.7% and 40%.

MALES OVER 35: Break in a Love Link - 7 out of 15 (46.7%); Category 1 factor - 2 out of 15 (13.3%). Compare First Investigation figures of 71.4% and 21.4% in 14 cases; the corresponding figures show no significant statistical difference, but the trend for the Break in a Love Link in those over 35 is less in the Second Investigation.

FEMALES UNDER 35: Break in a Love Link - 65 out of 107 (60.7%); Category 1 - 42 out of 107 (39.2%). Compare First Investigation figures of 53.1% and 37.5%; there is no significant difference.

FEMALES OVER 35: Break in a Love Link - 6 out of 12 (50%); Category 1 - 3 out of 12 (25%). Compare First Investigation - 100% and 0 in 3 cases; the figures are too small for comparison.

ADDING TOGETHER ALL THOSE UNDER 35, a Break in a Love Link occurred in 98 out of 167 (58.7%); Category 1 factor occurred in 60 out of 167 (35.9%). The incidence is similar to that in the First Investigation - 51% and 38.3% respectively.

ADDING/

ADDING TOGETHER ALL THOSE OVER 35, a Break in a Love Link occurred in 13 out of 27 (48.1%); Category 1 factor in 5 out of 27 (18.5%). The corresponding figures in the First Investigation are 76.5% and 17.7% respectively.

Comparing those under 35 with those over 35 of the Second Investigation, there is no significant difference either in Break in a Love Link or Category 1 factor.

Comparing those under 35 in this Investigation with those in the First Investigation, there is no significant difference.

Comparing those over 35 in this Investigation with those in the First Investigation, there is no significant difference in Category 1 factor, but when Break in a Love Link is compared it is significantly less in this series than in the First Investigation.

This confirms the observation previously made that in those over 35 who have a Break in a Love Link when first diagnosed, the prognosis appears to be poorer compared with those under 35.

ADDING ALL AGES AND SEXES TOGETHER: A Break in a Love Link occurred in 111 out of 194 patients (57.2%); Category 1 factor occurred in 65 out of 194 patients (33.5%). The corresponding figures in the First Investigation are 57.8% and 32.8% respectively.

The incidence of Bereavement in this Investigation was 20 out of 194 (10.3%) compared with 12.5% (8 out of 64) in the First Investigation. The incidence was not significantly higher in the older age group.

The incidence of 'Break with Family' was not significantly different in those under 35 compared with those over 35.

The findings of this Investigation amply confirm the findings in the First Investigation that a BREAK IN A LOVE LINK occurs in nearly all cases with emotional factors, the commonest single type of factor being BROKEN ROMANCE, ENGAGEMENT OR MARRIAGE. 111 out of 118 (94%) patients with emotional factors showed/

showed a Break in a Love Link and Category 1 factors were present in 65 (55%).

The corresponding figures in the First Investigation were 90.2% and 51.2%

The incidence of emotional factors preceding onset in those under 35 who relapsed is just significantly higher in those under 35 who did not relapse, but when a Broken Love Link incidence is compared for these Relapses and Non-Relapses it just fails to be significantly higher, though the trend is there.

The incidence of emotional factors preceding onset, especially a Break in a Love Link, in those over 35 is significantly less in this Investigation than in the First Investigation and it is suggested that the presence of such factors in those over 35 may well indicate a poorer prognosis.

TABLE XIII.

Types of Emotional Factor Preceding Onset for Relapses  
and Non-Relapses, separately in Males and Females for under and over 35.

Type of Emotional Factor.	MALES.				FEMALES.				Total
	Under 35		Over 35		Under 35		Over 35		
	Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	
1. Break (or serious threat) to romance, engagement or marriage.	5	13	-	2	18	24	1	2	65
2. Break (or threat) with family for marriage reasons.	2	2	-	1	2	2	1	-	10
3. Break (or threat) with family for other reasons.	2	-	-	-	5	3	-	1	11
4. Enforced separation.	-	1	-	1	-	-	-	-	2
5. Bereavement.	4	2	1	2	5	5	-	1	20
6. Serious illness to relative with threat to life.	1	1	-	-	-	-	-	-	2
7. Unfulfilled desire for family.	-	-	-	-	-	1	-	-	1
8. Sexual difficulties.	-	1	-	-	-	-	-	-	1
9. Work difficulties.	2	1	-	1	1	1	-	-	6
10. Religious difficulties.	-	-	-	-	-	-	-	-	-
11. Financial difficulties	-	-	-	-	-	-	-	-	-
Total with emotional factors	16 (72.7%)	21 (55.3%)	1 (33.3%)	7 (58.3%)	31 (70.5%)	36 (57.1%)	2 (50%)	4 (50%)	118
Total with no emotional factors	6 (27.3%)	17 (44.7%)	2 (66.7%)	5 (41.7%)	14 (29.5%)	26 (42.9%)	2 (50%)	4 (50%)	76
Grand Total of each group	22	38	3	12	44	63	4	8	194

Factors causing break in a love link.

21.

Influence of Age and Sex on Incidence of  
Emotional Factors Preceding Relapse.

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For the figures in this section, see Table XIV (page 62).

RELAPSE GROUP:

The incidence of emotional factors preceding relapse proved to be as follows:-

Males under 35	- 13 out of 19 (68.4%).
Males over 35	- 2 out of 6 (33.3%).
Females under 35	- 33 out of 39 (84.6%).
Females over 35	- 7 out of 9 (77.8%).
Total Both Sexes under 35	- 47 out of 58 (81%).
Total Both Sexes over 35	- 9 out of 15 (60%).

There is no statistically significant difference between the incidence of emotional factors preceding relapse when males are compared with females or when those under 35 are compared with those over 35.

The figures have already been given for the total sexes, separately and together (Tables VIII and VIIIA).

NON-RELAPSES:

The incidence of emotional factors after recovery in those who did not relapse were, by contrast, as follows:-

Males under 35	- 5 out of 38 (13.2%).
Males over 35	- 0 out of 12 (nil).
Females under 35	- 7 out of 63 (11.1%).
Females over 35	- 2 out of 8 (25%).
Total Both Sexes under 35	- 12 out of 101 (11.9%).
Total Both Sexes over 35	- 2 out of 20 (10%).



It has already been shown (Tables VIII and VIIIA) that the incidence of emotional factors preceding relapse was significantly higher than in those who did not relapse, both as a whole and for each sex.

If the figures for each sex and age group among the Relapses are compared with the corresponding figures in the Non-Relapses, it is seen that those in the Relapse Group show a significantly higher incidence statistically, except in the Male over 35 group and Female over 35 group. The trend in these two groups, however, is also higher in the Relapses but the smaller numbers prevent statistical confirmation. The total, male and female combined, for those over 35 is, however, significantly higher in the Relapses.

Types of Emotional Factors Preceding  
Relapse in Relation to Sex and Age.

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For the figures in this section, see Table XIV (page 62).

RELAPSE GROUP:

MALES UNDER 35: A Break in a Love Link was present in 9 out of 19 (47.4%); Category 1 emotional factor - Break in Romance, Marriage, etc., - was present in 6 out of 19 (31.6%). The incidence in both cases is similar to the corresponding groups preceding the onset.

MALES OVER 35: Break in a Love Link occurred in 2 out of 6 (33.3%), and in 1 out of 6 (16.7%) in Category 1. The incidence in both cases is also similar to corresponding groups preceding the onset.

FEMALES UNDER 35: Break in a Love Link occurred in 33 out of 39 (84.6%); Category 1 factor - 27 out of 39 (69.2%).

THE HIGH INCIDENCE BOTH IN THE BREAK IN A LOVE LINK AND IN THE PARTICULAR FACTOR OF BREAK OR THREATENED BREAK IN A ROMANCE, MARRIAGE, ETC., IS SIGNIFICANTLY HIGHER IN FEMALES UNDER 35 THAN IN MALES UNDER 35.

When the incidence of these two factors before relapse - the general 'Break in a Love Link' and the particular 'Break in a Romance, etc.,' - are compared with the incidence of the corresponding factors before the ONSET in the FIRST INVESTIGATION (53.1% and 37.5% respectively in 32 cases), IT IS SIGNIFICANTLY HIGHER STATISTICALLY IN THE RELAPSES FOR FEMALES UNDER 35.

When the incidence of these two factors preceding relapse is compared with the corresponding incidence preceding ONSET in the NON-RELAPSE group (55.5% and 38.1% in 63 patients), THE INCIDENCE IS ALSO SIGNIFICANTLY HIGHER STATISTICALLY IN THE FEMALE RELAPSES UNDER 35.

When compared with the incidence before ONSET in the RELAPSE GROUP (68.2%)/

(68.2% and 40.9% in 44 patients), there is no statistically significant difference between the Break in a Love Link group (although the trend is the same), BUT IN CATEGORY 1 THERE IS A SIGNIFICANTLY HIGHER INCIDENCE BEFORE RELAPSE THAN BEFORE ONSET.

THUS IN FEMALES UNDER 35 THE BREAK IN A LOVE LINK WITH THE BROKEN ROMANCE OR ENGAGEMENT OR MARRIAGE DOMINATING IS AN OUTSTANDING CAUSE OF RELAPSE.

FEMALES OVER 35: Break in a Love Link occurred in 6 out of 9 (66.7%) and in Category 1 the figures are - 3 out of 9 (33.3%). The trend here is the same as in all the other groups before onset and relapse except females under 35 before relapse.

TAKING ALL UNDER 35: A Break in a Love Link occurs in 42 out of 58 (72.4%) and Category 1 factor in 33 out of 58 (56.9%). The higher incidence compared with other groups is due to the females under 35.

TAKING ALL OVER 35: Break in a Love Link occurs in 8 out of 15 (53.3%); Category 1 - 4 out of 15 (26.6%). These figures are the same general trend as other groups before onset and relapse except the under 35 females before relapse.

TAKING THE TOTALS FOR ALL THE RELAPSES: Break in a Love Link occurs in 50 out of 73 (68.5%), and Broken Romance, etc., in 37 out of 73 (50.7%).

Here again the higher incidence, especially for Category 1, is due to the high incidence in females under 35, the other groups corresponding to the similar groups before ONSET.

NON-RELAPSE GROUP WITH EMOTIONAL FACTORS AFTER RECOVERY:

MALES UNDER 35: Break in a Love Link occurs in 5 out of 38 (13.2%), and Category 1 factor - Broken Romance, etc., - in 1 out of 38 (2.6%). These figures are significantly less statistically when compared with the corresponding male group of Relapses and with all the other corresponding groups of tuberculosis cases before ONSET AND RELAPSE (i.e., First Investigation Tuberculosis cases and Second/

81.  
Second Investigation Relapse and Non-Relapse preceding ONSET) both for Break in a Love Link and Category 1.

MALES OVER 35: 0 out of 12, i.e., No Break in a Love Link.

FEMALES UNDER 35: Break in a Love Link occurs in 7 out of 63 (11.1%), and Category 1 factor in 4 out of 63 (6.3%).

Like the males under 35, the figures are significantly less statistically than all the corresponding female groups of tuberculosis cases before ONSET OR RELAPSE both in First and Second Investigations.

FEMALES OVER 35: Break in a Love Link occurs in 2 out of 8 (25%), and Category 1 factor in 1 out of 8 (12.5%).

These figures agree with the general trend for the age group, being less than the figures for the comparable groups, but the numbers are too small for statistical assessment.

TAKING ALL MALES: Break in a Love Link occurs in 5 out of 50 (10%), and Category 1 factor in 1 out of 50 (2%).

TAKING ALL FEMALES: Break in a Love Link occurs in 9 out of 71 (12.8%), and Category 1 factor in 5 out of 71 (7.0%).

The figures for both these groups are significantly less than the other corresponding tuberculosis groups both preceding onset and relapse.

TAKING ALL THOSE UNDER 35: Break in a Love Link occurs in 12 out of 101 (11.9%), and Category 1 factor in 5 out of 101 (4.9%).

TAKING ALL THOSE OVER 35: Break in a Love Link occurs in 2 out of 20 (10%), and Category 1 factor in 1 out of 20 (5%).

These figures are also significantly less than in the other corresponding groups.

Taking TOTALS FOR ALL NON-RELAPSES, 14 out of 121 (11.6%) had a Break in a Love Link, and Category 1 factor in 6 out of 121 (4.9%).

These figures are significantly less than in the other tuberculosis groups before onset and relapse.

TABLE XIV.

Types of Emotional Factor Preceding Relapse  
(After Recovery) in Males and Females under and over 35.

Factors causing break in a love link.	Type of Emotional Factor.	MALES.				FEMALES.				Total
		Under 35		Over 35		Under 35		Over 35		
		Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	Relapse	Non-Relapse	
	1. Break (or threat) in romance, engagement or marriage.	6	1	1	-	27	4	3	1	43
	2. Break (or threat) with family for marriage reasons.	-	-	-	-	-	2	1	-	3
	3. Break (or threat) with family for other reasons.	2	2	1	-	3	1	1	1	11
	4. Enforced separation.	-	-	-	-	2	-	-	-	2
	5. Bereavement.	1	2	-	-	1	-	1	-	5
	6. Serious illness to relative with threat to life.	-	-	-	-	-	-	1	-	1
	7. Unfulfilled desire for family.	-	-	-	-	-	-	-	-	-
	8. Sexual difficulties.	-	-	-	-	-	-	-	-	-
	9. Work difficulties.	2	-	-	-	-	-	-	-	2
	10. Religious difficulties.	1	-	-	-	-	-	-	-	1
	11. Financial difficulties.	1	-	-	-	-	-	-	-	1
	Total with emotional factors	13 (68.4%)	5 (13.2%)	2 (33.3%)	- (-)	33 (84.6%)	7 (11.1%)	7 (77.8%)	2 (25%)	69
	Total with no emotional factors	6 (31.6%)	33 (86.8%)	4 (66.7%)	12 (100%)	6 (15.4%)	56 (88.9%)	2 (22.2%)	6 (75%)	125
	Grand Total of each group	19	38	6	12	39	63	9	8	194

3. CONCLUSIONS FROM SECOND INVESTIGATION.

1. The findings in the Second Investigation confirm the findings of the Incidence of Emotional Factors preceding the onset, i.e., 60.8% compared with 64.1% in the First Investigation.

2. The Incidence of Emotional Factors preceding the ONSET in those who subsequently relapsed was significantly higher than in those who did not subsequently relapse, 68.5% against 56.2%, and occurred only in those under 35, the trend being present in males and females.

3. The type of Emotional Factor preceding the ONSET was again shown to belong, in nearly all cases (over 90% of those with an emotional factor), to the group called 'Break or Threatened Break in a Love Link'. Again, the particular type of emotional factor - the Break or Threatened Break in a Romance, Engagement or Marriage - dominated. The higher incidence of Break in a Love Link before ONSET in those who relapsed compared with those who did not relapse did not quite reach statistical significance, though the trend was there.

4. The incidence of emotional factors in general and of Break in a Love Link in particular was significantly less in those over 35 when compared with the corresponding group in the First Investigation. There was no difference in the incidence of Category 1 factor. It is suggested that this may indicate a poorer prognosis in those over 35 who have an emotional factor preceding the onset when first diagnosed.

5. A contact history had no significant relationship with emotional factors.

6. The extent of the initial lesion had no significant relationship with emotional factors either preceding onset or relapse, but comparing the incidence of/

of emotional factors after recovery for those who relapsed and those who did not with the extent of the initial lesion, there was a downward trend in incidence from the smaller to the larger lesions.

7. The use of chemotherapy has significantly reduced the incidence of relapses. The figures must be accepted with reservations in that patients treated with chemotherapy have not been observed over such a long period as the patients not so treated, chemotherapy having only been used extensively since 1948-49, while several of the relapses had their onset before the war, the earliest being in 1932. Despite this, relapses have occurred in all groups treated by chemotherapy and especially in second or later relapses (14 out of 16 treated by chemotherapy), and in the relapses treated by chemotherapy, as in the others, the incidence is significantly higher in those with emotional factors.

8. The incidence of emotional factors after recovery from the initial illness is significantly higher statistically in both males and females in those who relapse compared with those who do not relapse. It is especially so in the under 35 age groups of both sexes. The trend in the over 35 age groups is similar. It is significantly higher in females compared with males.

9. The type of emotional factor preceding relapse is again mainly Break in a Love Link which includes 92.7% of all the emotional factors. The particular type of factor - Broken Romance, etc., - is the commonest single type. The incidence is significantly high compared with those who do not relapse.

10. The incidence of this type of emotional factor as a cause of Relapse is especially high in females under 35 when compared with all other groups, male and female, under and over 35, preceding onset and relapse, both for the broad Break in a Love Link group, and for the particular Broken Romance, Engagement or Marriage/

## Marriage type.

The type of emotional factor involved, both before the onset and relapse, dealing as it does with broken love links, strongly suggests that deprivation of affection and love play an important part in the onset and relapse of tuberculosis. These patients appear to be especially in need of love and affection or, as Wittkower puts it, - have an 'inordinate need for affection'.



RELAPSES.Illustrative Case Histories.  

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Case 1: J.M. (Male) - No contact history:

This patient joined the Regular Army in 1935 at the age of 18. He was of good education, having taken his Higher Leaving Certificate two years previously. He had wanted to take a University degree in languages but his parents could not afford to keep him at University, so he chose an Army career with the ultimate intention of taking a commission in the Pay Corps or Education Corps.

In 1936, a girl with whom he had been going for one year and whom he would have liked to marry if he could have afforded to do so, became pregnant. He was not guilty of this but had to face legal proceedings for affiliation before he proved his innocence. He was considerably upset, not because of the legal proceedings but because it eventually came out that she had been associating with several other men while he was seriously courting her. About a year or so later in 1937 he had a haemoptysis and was found to have minimal pulmonary tuberculosis. He was treated in sanatorium for one year, from 1937-1938, on bed rest and did very well.

Early in 1939 he obtained employment as a civilian clerk in the Territorial Army. On the outbreak of war, being a Territorial, he was posted as an Administrative Officer to a Convalescent Depot. About this time he formed an association with another girl. After about nine months, his intentions being serious, he told her of his past medical history with regard to tuberculosis. She then broke off the association, a break which upset him considerably. The following year he broke down again with some extension of the disease to the other lung and was treated in sanatorium by bed rest for nine months/

months in 1941-1942.

In 1944 he married, and remained happily married for two years. In 1946 his wife died in childbirth, leaving him with a little girl. He did not, however, relapse. In 1948 he remarried and has been happily married since then, though his wife suffers from 'nerves'. In 1949 she gave birth to a baby and 'nearly died' in childbirth. "I thought the same thing was going to happen as happened to my first wife." Certainly, he relived the experience of his first wife's death. He did not attend the clinic again until 1951, about eighteen months after his second wife's illness, when he reported haemoptysis and was found to have a small cavity in the left upper zone and positive spit, the right lung remaining well healed. He was treated by chemotherapy at home, made a good recovery and has kept well since. He has been back at work as a Company Secretary for two years.

Case 2: H.S. (Female) - Contact:

This patient's father was found to be suffering from chronic pulmonary tuberculosis (spit positive) at the end of 1949. At the beginning of 1950, routine x-ray as a contact showed this girl to have a minimal lesion of low-grade activity. She was spit negative. She was the only other member of the family of three girls to be affected.

She had known a boy since 1944, when she was 16 years old, and had 'gone seriously' with him since 1946. By 1949 the couple were planning to get married but she experienced considerable family opposition because of their different religions - he was a Roman Catholic. She had agreed to change her religion.

Such was the position when her minimal lesion was found in 1950. She was treated with bed rest at home and did very well. By the end of a year she had made a good recovery, and in May, 1951, she became engaged.

Within/

Within a few months their engagement was in jeopardy and she and her fiance were quarreling continuously. At least part of the reason for the disagreement was the difference in religion causing family opposition. Possibly the nature of her illness contributed. This state of affairs continued for about nine months and the engagement was broken, by mutual agreement, in May, 1952. At this time a routine x-ray showed spread of the disease in the right upper zone and a new, small lesion in the left upper zone and her spit had become positive. She was treated by bed rest and chemotherapy at home and made a good recovery.

Soon after she recovered, in March, 1953, she met another lad more acceptable to her parents and of the same religion as herself. They were married in March, 1954, and the marriage is apparently successful. So far she has kept very well and I think is likely to do so, so long as her married life remains happy.

Case 3: I.B. (Female) - No contact history:

This patient's mother had died of purperal fever when the patient was born. Her father remarried when the patient was 5 years old. In 1945, when she was fifteen, her father died of cancer. A friend of her late father appeared to take a paternal interest in her and took her out a great deal. On one occasion he seduced her. The patient insists that this happened only once and the friend stopped visiting soon after, but in 1946 she gave birth to a baby. She maintains that she did not know she was pregnant, nor did her stepmother, almost until the actual arrival of the baby. Thus the shock of realisation was severe both for the patient and stepmother. She was confined in hospital and the baby taken away from her immediately to be adopted. She does not know what became of it and this sometimes 'causes pangs'. She herself was sent by her stepmother to friends in the North for several months, and her relationship with her stepmother was 'very strained'.

About/

About eighteen months later she was found to be suffering from pulmonary tuberculosis involving the right upper zone and, to a lesser degree, the right mid zone. She was treated in sanatorium for two and a half years, the treatment consisting of a right artificial pneumothorax with adhesion section in addition to general sanatorium measure. The A.P. was abandoned in 1951 and she resumed work in 1952.

In 1952 she started going with a boy who also suffered from pulmonary tuberculosis. Their relationship grew and they hoped to get engaged but her mother raised strong objections because he also had suffered from tuberculosis and she terminated the friendship after one year. She was considerably upset. About nine months later, in June, 1954, she had a haemoptysis and showed some radiological extension of the disease in the right mid zone. She was treated at home by chemotherapy and has done well. She recently resumed work.

The risk of relapse in this girl is obviously high.

It would be interesting to know the fate of the youth with whom she broke off, but unfortunately he is not in my area and she does not know anything of him.

Case 4: R.F. (Male) - Contact:

This patient was married in 1943 while he was in the Services and when he was 33 years of age. His wife, a Roman Catholic, was of different religion. There was family opposition on both sides but they were married eventually in the Catholic Church. Two years later his wife developed pulmonary tuberculosis and she died in 1946. There was one child of the marriage who, at the mother's dying request, has been brought up as a Roman Catholic, though the patient himself has remained Protestant.

One year later the patient was found to have pulmonary tuberculosis and was treated in sanatorium for two years until 1950, treatment consisting of artificial/

artificial pneumothorax, which was unsuccessful, and then by thoracoplasty.

He kept well and in 1953 remarried - to another patient of mine. The marriage has been unsuccessful. He was resented by his in-laws, with whom they lived at first, and this appeared to start the trouble between them. For one reason or another they do not get on. A year later, in 1954, he broke down with extensive disease in the other side and positive spit, and is at present having sanatorium treatment. His wife had a thoracoplasty in 1953, just before their marriage, and so far has managed to maintain her condition, though her prognosis is very doubtful. This lady's onset occurred after her first marriage was broken, eventually ending in divorce.

These cases illustrate some of the various types of emotional factor which precede onset and relapse. Differences in religion are described in two of the illustrative cases and this was a precipitating cause of breakdown in a third to a quarter of all the cases. Although at this stage of my Investigation special inquiry was not made into childhood deprivation of affection, this was noted in many cases, as the illustrative cases show, and stimulated the special inquiry into deprivation of affection in childhood made in the Third Investigation.

The cases also show the difficulty in dating an emotional factor since it often happens over a long period. Likewise, it is difficult to date the start of the new lesion, which may have been present for some time before diagnosis.

Brief reference will now be made to some cases in which simple help could be given and which may have averted or yet avert breakdown.

Case 5: E.M. (Married Female - now aged 23 years) - No contact history:

This patient's precipitating cause was a serious threat to her marriage by in-law trouble. Having no house of her own, she and her husband have to live with her husband's family. She did not get on with them and the marriage was at breaking/

breaking point when she developed tuberculosis.

She was treated in sanatorium by thoracoplasty and was discharged a little over a year ago. By reason of her tuberculosis, I was able to speed up rehousing for her and she has a house of her own. She and her husband are reconciled and very happy.

Case 6: S.C. (Married Female - now aged 30 years) - Contact:

This girl had a broken engagement two and a half years before being found, in 1950, to be suffering from pulmonary tuberculosis involving both upper zones. She was a contact of her mother.

She has been happily married since 1953 and has one baby, born in 1954, which she finds 'a handful'. Being a sensible girl, she is anxious to avoid another pregnancy until she is considered to be able to cope with another child, but, as she is a Catholic, she will not practice contraception. Instead she and her husband practice coitus interruptus.

Their sexual life has become rather difficult and, although the marriage is still satisfactory, the continued state of affairs might lead to trouble. I have advised her that she will be ready for another pregnancy in another year, and knowledge of this has helped her and her husband to adjust themselves better.

This type of difficulty - conflict between religion and the need for practising control in childbirth - is common among Roman Catholic tuberculous patients. Advice must obviously vary according to the condition and temperament of the patient. It is no use advising contraception to stir up religious trouble. Pregnancy by itself, or labour, is not considered nowadays to affect the course of the disease (Cohen, 1946, Raeburn and Glancy, 1955,) though obviously repeated pregnancies at short intervals and the care of many young children must cause fatigue, which may predispose to relapse.

Case 7: R.B. (Married Male - aged 62 years) - Contact:

This patient's first wife died of pulmonary tuberculosis in 1919. He was found to have tuberculosis in April, 1952, the disease involving right upper and mid zones; he was spit positive. He was treated at home with bed rest and chemotherapy and did very well.

When his married son learned that his father had tuberculosis, he stopped visiting his father and did not let his family come near him. "If he does come I'll turn him away", said the patient. "I don't mind him not coming, but it keeps the grand-children away". Fifteen months ago he relapsed and, though he has responded well to further chemotherapy and bed rest at home, his disappointment is still there. Not only that, but since he first took ill his wife's people have stopped visiting too.

This is another fairly common problem which can have serious results for the patient and where the Health Visitor can help tactfully.

Case 8: E.B. (Married female - now aged 43 years):

This patient was a tuberculosis nurse who married a patient, contrary to the wishes of her family, in 1948. Soon after her marriage she was found to have a minimal lesion. In view of her family's initial attitude, and her resultant disease, she has cut herself off from her own family - none of whom live in Scotland - they are in England and Ireland. She relapsed two years ago and her condition is still not satisfactory. Her separation from her family distresses her and she has at last been persuaded to make up with them, a factor which I think ought to help her.

T H I R D   I N V E S T I G A T I O N .

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INCLUDING MODIFIED INVESTIGATION

INTO PERSONALITY TRAIT.

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### THIRD INVESTIGATION.

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#### INCLUDING MODIFIED INVESTIGATION INTO PERSONALITY TRAIT.

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##### 1. METHOD AND CONDITIONS OF INVESTIGATION.

An investigation into Premorbid Personality was not originally included in the scope of this Investigation for several reasons:-

1. A great deal of work on this subject has been done in this country and in the United States with what are, in effect, negative results. As has been mentioned, in only one of these investigations (Derner, 1953), were controls used and here too the results were negative. It seemed to me, therefore, that any further investigation along these lines was not likely to be fruitful.

2. To obtain a proper personal history, any investigation into the premorbid personality necessitates devoting a considerable amount of time not only to the patients but to their relatives. As the investigations must be fitted into the investigator's ordinary work, not only because of lack of time but also to avoid selection and to make use of controls, it was obviously not practicable at this stage.

3. When a premorbid personality is reconstructed from a post-morbid state there is obvious room for criticism. Such criticism has been made of Wittkower's (1949) study. As Dunbar has said - "too much of the literature has been based on a priori assumption and too little on scientifically accurate data." I had, therefore, decided to take a long term view of such an investigation and plan for the future. My idea was to investigate the personality structure of a group of the population in which it was known there was a higher incidence of pulmonary tuberculosis/

tuberculosis. It is well known that the incidence of the disease is higher in contacts, though only a minority develop the disease. The plan, therefore, was to interview as many new contacts as possible during the next few years and follow up their clinical history with particular reference to tuberculosis. As all contacts are followed up and x-rayed as a routine for several years in my area, this scheme was quite practical. The correlation of their personality traits with their subsequent history would, of course, complete the investigation.

However, after the First Investigation was well-established and I began to investigate detailed results, these supported a clinical impression that had been growing during the mass investigation at the tuberculosis clinics, probably because of the larger numbers of tuberculosis patients and the greater questioning to which they had necessarily to be subjected, that there were some common personality traits among the patients. The outstanding trait, of course, was the 'inordinate need for affection' previously described by Wittkower and also by Weiss and English, Harz and others. I decided, therefore, to carry out a modified but controlled preliminary study and adopted the following procedure at the Diagnostic Clinic where the investigation was made.

As the investigation had to be carried out in the ordinary course of duties, not only because of lack of time, but also to avoid selection and to make use of controls, it was decided to investigate the first five consecutive patients at each session. Even with this reduced number, time would not allow a full personal history to be taken nor could relatives be interviewed. The questions were, therefore, in all cases directed along the particular lines that appertained to the suspected common personality trait - 'the inordinate need for affection'. This interrogation was carried out after the questionnaire was filled up in the usual way and under the same conditions as the First Investigation - namely, no clinical, radiological or other information pointing to a diagnosis was referred to until the interrogation was completed and personality traits elicited and recorded/

recorded. In view of the alteration in the method of interrogation, the conditions were somewhat different from the First Investigation. These cases, therefore, were not included as part of the First Investigation.

It is emphasised that this Third Investigation is a modified, short, preliminary study, trimmed to suit the circumstances of the major Investigation and the conditions at the clinic. It is hoped at a later date to make this the subject of a separate, full investigation. It is introduced at this stage as an adjunct to the main studies.

It is appropriate at this point to describe the method used in assessing the personality trait.

In assessing the particular personality trait with which this Investigation is primarily concerned - 'the inordinate need for affection' - the only information available was that of the patient. Where a parent or adult or spouse accompanied a patient, they were excluded from the interview, as they were from the cubicle, partly to maintain the privacy which has been a feature of all the Investigations and which is necessary to elicit the life situation, partly to maintain uniformity in assessing all the cases - it would obviously be open to criticism if parents' information was included in some cases and not in others - and partly because of the shortage of time. Particular attention was paid to the patient's knowledge of their childhood, as remembered by themselves or gleaned from others through time, their knowledge of the illnesses of themselves and siblings and parents, their reaction to their siblings and their parents and what they felt their siblings and parents reaction was to them; the particular affection for members of their family, especially their parents (individually) and the affection they thought their parents had for them and their siblings. Deprivation of natural parental affection in childhood was particularly noted and analysed in the Tables. Other factors noted were the patient's friendships outside the family, evidence of a closely-bound family unit and life situations. These/

These were factors which could be sought out and which, in many instances, can be described.

One striking feature, however, which cannot be properly described is the impact of the tuberculosis patient's personality. In telling the story, particularly concerning life situations or relationship with parents, the intimacy of the subject to the patient, as shown by the facial expression and the mode of telling, made a strong impact. This was in striking contrast to nearly all the patients in the control group. It may be argued that the tuberculosis patient, having a typical appearance, would readily make an impact. That this is not so is illustrated by the fact that the tuberculosis group included well-nourished patients, with no toxæmia and lesions of doubtful activity, as well as those with varying degrees of emaciation and toxæmia. At the same time, the control group included emaciated and toxic patients as well as apparently normal individuals. Only a minority of patients have the typical text-book appearance of tuberculosis and conversely not a few non-tuberculosis people look like the text-book case of tuberculosis. Indeed, in some instances, the personality trait was successfully used as an aid to diagnosis. It must also be stressed that neither the patient nor myself was aware of the diagnosis at interview, though most patients feared a diagnosis of tuberculosis.

It is hoped to illustrate these points by some case histories given at the end of this section.

## 2. RESULTS OF THIRD INVESTIGATION.

The first part of this Investigation is really a continuation of the First Investigation since all patients were still asked to complete the questionnaire. In view of the more detailed questioning, it is given separately from the First Investigation and, in view of the smaller numbers, is less detailed.

The second part of the Investigation deals with the personality trait.

### FIRST PART OF THIRD INVESTIGATION.

Incidence of Emotional Factors Preceding  
Onset in Tuberculosis Cases and Controls.

TABLE XV.

Incidence of Emotional Factors Preceding Onset  
in Tuberculosis Cases and Controls (Male and Female).

	TUBERCULOSIS.		CONTROL.	
	Male	Female	Male	Female
With Emotional Factor	5 (71.4%)	12 (70.6%)	4 (18.2%)	7 (30.4%)
Without Emotional Factor	2 (28.6%)	5 (29.5%)	18 (81.8%)	16 (69.6%)
Total	7	17	22	23

It can be seen (Table XV) that 5 out of 7 (71.4%) of males and 12 out of 17 (70.6%) of females showed emotional factors compared with 4 out of 22 (18.2%) male controls and 7 out of 23 (30.4%) female controls.

Thus a total of 17 out of 24 tuberculosis cases (70.8%) and 11 out of 45 (24.4%) of controls showed emotional factors (see Table XVI, page 78).

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THE HIGHER INCIDENCE IN TUBERCULOSIS CASES, TAKEN AS A WHOLE AND TAKEN FOR EACH SEX SEPARATELY, IS IN EACH CASE SIGNIFICANTLY HIGHER THAN IN THE CORRESPONDING CONTROLS AND THE FIGURES ARE SIMILAR TO THOSE FOUND IN THE FIRST AND SECOND INVESTIGATIONS.

In view of the small numbers, separation into under and over 35 groups has not been attempted, as the number of tuberculosis cases in the over 35 group would be too small for statistical assessment.

Types of Emotional Factor  
in Tuberculosis Cases and Controls.

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The types of emotional factor are shown in Table XVI (page 78). In view of the small numbers and the confirmatory nature of this part of this investigation, no detail is given of the separate groups of controls, though they are similar to those in the First Investigation.

From the Table the following figures emerge:-

TUBERCULOSIS GROUP:

The corresponding figures for the First Investigation are given in parenthesis:-

Males with Broken Love Link:	5 out of 7, or 71.4%, (58.6%).
Males with Category 1 Emotional Factor:	2 out of 7, or 28.6%, (31.0%).
Females with Broken Love Link:	12 out of 17, or 70.6%, (57.1%).
Females with Category 1 Emotional Factor:	5 out of 17, or 29.4%, (34.3%).
Total with Broken Love Link:	17 out of 24, or 70.8%, (57.8%).
Total with Category 1 Factor:	7 out of 24, or 29.2%, (32.8%).

These figures are very similar to the results of the First Investigation.

The higher incidence in the Broken Love Link is this series compared with the First Investigation is not significant statistically.

TABLE XVI.

Types of Emotional Factor in Tuberculosis  
and Controls (Male and Female).

Type of Emotional Factor.	TUBERCULOSIS.			CONTROLS.		
	Male	Female	Total	Male	Female	Total
1. Broken romance, marriage, etc.,	2	5	7	3	4	7
2. Break with family due to marriage.	-	1	1	-	2	2
3. Break with family for other causes.	2	1	3	-	-	-
4. Enforced separation.	-	-	-	-	-	-
5. Bereavement.	-	2	2	1	1	2
6. Serious illness with threat to life.	1	2	3	-	-	-
7. Unfulfilled desire for family.	-	1	1	-	-	-
8. Sexual Difficulties.	-	-	-	-	-	-
9. Work Difficulties.	-	-	-	-	-	-
10. Religious Difficulties.	-	-	-	-	-	-
11. Financial Difficulties.	-	-	-	-	-	-
Total with Emotional Factor	5 (71.4%)	12 (70.6%)	17 (70.8%)	4 (18.2%)	7 (30.4%)	11 (24.4%)
Total with no Emotional Factor	2 (28.6%)	5 (29.4%)	7 (29.2%)	18 (81.8%)	16 (69.6%)	34 (75.6%)
Grand Total	7	17	24	22	23	45

CONTROL/

CONTROL GROUP:

The corresponding figures for the First Investigation 'N.A.D.' group are given in parenthesis:-

Males with Broken Love Link:	4 out of 22, or 18.2%, (17.8%).
Males with Category 1 Emotional Factor:	3 out of 22, or 13.6%, (10.7%).
Females with Broken Love Link:	7 out of 23, or 30.4%, (27.8%).
Females with Category 1 Emotional Factor:	4 out of 23, or 17.4%, (16.7%).
Total with Broken Love Link:	11 out of 45, or 24.4%, (21.7%).
Total with Category 1 Emotional Factor:	7 out of 45, or 15.6%, (13.0%).

There is no significant difference between the figures for these controls and controls used in the First Investigation.

Comparing the tuberculosis group with the controls in this series, the incidence of Break in a Love Link is significantly higher statistically both for males and for females. Considering Category 1 factor, the trend of a higher incidence in the corresponding tuberculosis groups is the same but the smaller number prevent statistical confirmation.

These figures generally confirm the First Investigation findings regarding the Incidence and Type of Emotional Factor in Tuberculosis Cases and Controls.



SECOND PART OF THIRD INVESTIGATION.

Evidence of Strong Need for Affection.

Table XVII shows the incidence of the personality trait 'inordinate need for affection' as discovered by modified personality investigation.

TABLE XVII.

Incidence of Strong Need for Affection  
(Tuberculosis and Controls).

	TUBERCULOSIS.			CONTROLS.		
	Males	Females	Total	Males	Females	Total
Showing strong need for affection.	5 (100%)	15 (100%)	20 (100%)	3 (30%)	1 (6.7%)	4 (16%)
Showing no strong need for affection.	0 (-)	0 (-)	0 (-)	7 (70%)	14 (93.3%)	21 (84%)
Total	5	15	20	10	15	25

In the TUBERCULOSIS CASES all patients in this study, i.e., 5 males and 15 females, a total of 20 (100%) showed this personality trait and were considered to have this personality trait before diagnosis was known to me or to the patient, according to the conditions of the investigation already described.

Among the CONTROLS, 3 out of 10 (30%) of males and 1 out of 15 (6.7%) of females, a total of 4 out of 25 (16%), showed the personality trait.

THE HIGH INCIDENCE OF THE PERSONALITY TRAIT IN THE TUBERCULOSIS PATIENTS IS STATISTICALLY SIGNIFICANT, NOT ONLY IN TOTAL BUT FOR MALES AND FEMALES SEPARATELY.

One of the four controls with this trait was tuberculin negative down to 1/100 Mantoux and had a typical life situation also. She would appear to be a potential/

potential case of tuberculosis if she meets the organism. She is described later among the illustrative cases. In two cases where the personality trait was considered to be negative for 'need for affection', x-ray films showed equivocal appearances with tuberculosis a definite possibility. Follow up confirmed that the 'personality diagnosis' was correct, in that the conditions were subsequently proved to be acute inflammatory in each case. One of these cases is described later in the illustrative cases.

Among the controls, 3 patients (1 male and 2 females) were found to have a 'mother-fixation' personality trait and were eventually diagnosed as bronchial asthma. Likewise, one tuberculosis patient showed, in addition to strong affection needs, evidence suggestive of mother-fixation and was found to be a known sufferer from bronchial asthma. She is also described later in the illustrative cases.

Evidence of Deprivation  
of Affection in Childhood.

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Table XVIII shows the incidence of deprivation of affection in childhood in males and females as ascertained in the modified personality investigation.

TABLE XVIII.

Incidence of Deprivation  
of Affection in Childhood.

	TUBERCULOSIS.			CONTROL.		
	Male	Female	Total	Male	Female	Total
Evidence of Deprivation	2 (40%)	10 (66.7%)	12 (60%)	3 (30%)	1 (6.7%)	4 (16%)
No evidence of Deprivation	3 (60%)	5 (33.3%)	8 (40%)	7 (70%)	14 (93.3%)	21 (84%)
Total	5	15	20	10	15	25

In the TUBERCULOSIS GROUP, 2 out of 5 males (40%) were found with evidence of deprivation of affection in childhood and 10 out of 15 females (66.7%).

In the CONTROLS, 3 out of 10 males (30%) were found and 1 out of 15 females (6.7%).

The total for tuberculosis cases is 12 out of 20 (60%) and for the controls 4 out of 25 (16%). The 4 in the controls was not necessarily the same as the 4 controls in Table XVII who were found to show evidence of Strong Need for Affection.

THE INCIDENCE OF DEPRIVATION OF AFFECTION IN CHILDHOOD IN TUBERCULOSIS CASES AS A WHOLE IS SIGNIFICANTLY HIGHER STATISTICALLY THAN IN THE CONTROLS. IT IS ALSO SIGNIFICANTLY HIGHER FOR FEMALE TUBERCULOSIS CASES, BUT NOT FOR MALES WHERE THE NUMBERS OF PATIENTS ARE TOO SMALL FOR STATISTICAL ASSESSMENT. THE SLIGHT BIAS SHOWN IS IN FAVOUR OF A HIGHER INCIDENCE AMONG THE TUBERCULOSIS GROUP.

Type of Deprivation of Affection  
in Childhood.

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Table XIX shows the various types of deprivation as elicited in the personality study. The numbers are too small to make definite conclusions on each type.

As the results of the Third Investigation are not divided into age groups because of the smaller numbers, it should be stated that the age of the patients whose personalities were studied varied from 15 to 53 with an average of 29 in the Tuberculosis Cases, and from 17 to 70 with an average of 33 in the Controls.

TABLE XIX.

Type of Deprivation of Affection  
in Childhood.

TYPE OF DEPRIVATION.	TUBERCULOSIS.	CONTROLS.
Death of Mother (no re-marriage).	1	1
Death of Father (no re-marriage: Mother working).	4	-
Death of Father (re-marriage: disagreement with step-father).	-	1
Death of both parents.	1	1
Parents separated or divorced in childhood.	3	-
Illegitimate: brought up by foster parents.	1	-
Illegitimate: brought up by Mother and grandparents.	-	1
Crippled Father (bed-ridden since infancy of patient after prolonged hospitalisation).	2	-
Total with Deprivation	12	4
Total with no Deprivation	8	21
Grand Total	20	25

### 3. CONCLUSIONS FROM THIRD INVESTIGATION.

1. The findings of the First Investigation are confirmed in the following respects:-

- (a) Emotional factors preceded the onset in cases of tuberculosis in a significantly higher proportion as compared with controls;
- (b) The emotional factor characteristically preceding the onset in cases of tuberculosis, as compared with controls, was the Break in a Love Link, and its occurrence was statistically significant;
- (c) Of the Breaks in a Love Link, the outstanding type was A Break or Threatened Break in a Romance, Engagement or Marriage.

2. The outstanding personality trait common to all the tuberculosis cases studied showed an 'inordinate need for affection'. This occurred in 100% tuberculosis cases compared with 16% of the controls and was significant for both sexes.

3. Deprivation of Affection in Childhood occurred significantly more often in tuberculosis cases - 60% - compared with the controls - 16%. This was true for females but the figures for males alone was too small for statistical analysis.

ILLUSTRATIVE CASE HISTORIES.1. J. McC. (Single Male, aged 15 years) - No contact history:

This boy is the eldest of a family of four, three boys and one girl. One brother, four years younger, has been in a Home for Mental Defectives since infancy. He knew of no illness of himself or other members of his family in childhood. He could not remember much of his early childhood except that he knew his parents 'didn't get on for a long time'. This culminated nine years previously, the patient being 6 years old, when his 'mother ran away with another man'. He has not seen or heard of her since and his father does not talk about her. His father looked after the family, cooking breakfast before he went out to work, and dinner when he came home at night, and this has continued. An aunt comes to clean the house in the evening. Gradually the patient assumed the role of looking after the younger members of his family, seeing them off to school and giving them 'tea' during the day. He liked doing this and did not look on it as a burden. He described his father as a 'happy man' who looked after them well, fed and clothed them well and 'only goes out on a Saturday night'. All were treated alike. He had left school six months previously and worked for a Gate Builder. He had had no particular friends and appeared to have few interests outside his family. When questioned about his mother, he deplored her action but admitted he would very much like to see her again. As he said this he had a warm, soft expression and his eyes filled with tears. When asked about his views on marriage, he replied, perhaps rather surprisingly for such a young lad, that when he was old enough he would like a woman to look after him and love him and give him a home and family, 'but only if she's the right kind'. When asked what he meant by the right kind, he replied, 'one that wouldn't do what she did'.

In/

In assessing this boy's personality trait, there was no doubt as to his strong need for affection. There was also a broken love link before he was really out of childhood, a situation which had persisted for nine years before he took ill. The length of time for which the life situation had persisted was puzzling. Another feature which did not appear to fit in was the fact that he looked very ill. He was small for his age and, though of average nutrition, he was cyanosed and looked sharply ill. The explanation of these puzzling features was soon clear when his x-ray film was viewed. There was the snowstorm appearance throughout both lung fields typical of acute miliary tuberculosis, evidence that the tubercle bacillus had but recently caught him up, and found him defenceless.

2. M.S. (Single Female, aged 16 years) - No contact history:

This case showed some features similar to the first one. She is the oldest of a family of six and her parents have been separated since she was 12 years old, the children living with the mother. For as long as she can remember, however, her parents had been 'arguing and fighting', the home was very unhappy and the children neglected physically. "There was never enough money for food or clothes." Obviously there was no room for giving or receiving affection in such an atmosphere. Since her father's departure her mother had been living with another man, to whom she has had two children. When asked how she felt about the present home set-up, her little, sad face, with a most expressive 'lost' look about her eyes, assumed an expression of defiance as she said - "I'm glad. He looks after us and gives us food and money. He's kind to the children." Her mother was hoping to get her divorce soon so that she could marry this other man. She had not seen her father since he left home and, when asked how she felt about him, she replied that she 'felt sorry for him'. She did, however, want to see him/

him again but didn't want 'back to the old days'. She had left school at the age of 15 and worked as a cake packer. She had few friends and her only outings were to the pictures. Since leaving school there had been no particular change in her circumstances, except that their financial position was eased somewhat by her contribution to the family income.

The story here shows clearly the strong need for affection. Here too, however, the predisposing life situation had persisted for some years and, in addition, had been aggravated by poverty and overcrowding. She was rather pale and her symptoms had been present for about two months. Her x-ray showed her right root shadow to be enlarged and there was some surrounding perihilar infiltration. Although she was tuberculin positive, the appearances were just as consistent with an acute inflammatory condition as with primary tuberculosis. Her personality, however, strongly suggested the probability of the lesion being tuberculosis. She was seen again one month later, by which time an inflammatory condition would have shown at least some degree of resolution, but her condition had deteriorated markedly and pulmonary infiltration had increased. Although at the time of writing a positive spit has not yet been obtained, the lesion is undoubtedly tuberculosis of recent origin and she has been admitted to sanatorium for treatment. She too had escaped until the tubercle bacillus had caught up with her and found her with inadequate defences.

3. M.F. (Single Female, aged 17 years): No contact history:

This girl is the oldest of a family of 5 and has three sisters and 1 brother. She was illegitimate but her parents married in 1944, when she was 6 years old. From birth she lived with her mother and grandfather (her grandmother was dead). Her father served in the Army from 1939-46 and, as far as she knew, he spent most of his leave with his parents in Edinburgh, but saw her mother occasionally/



occasionally - at least until they were married. The patient got on well with her mother, of whom she was fond, and with her grandfather, of whom she was extremely fond, an affection which appeared to be reciprocated. In 1946 they left the grandfather's home when her parents got a home of their own, but they lived not far from the grandfather and the patient spent a lot of time with him. Right from the start she did not get on with her father. The next oldest in the family was born when the patient was 7. Her father made a great fuss of this sister "and never paid much attention to me. I put it down to the fact that I was more attached to my grandfather than to him and so he showed more affection to Anne." She did not think the antipathy between her and her father was directly due to the circumstances of her birth. She did not know of her illegitimacy until about four years ago and was 'shocked and upset' when she heard about it. She still felt guilty and sought reassurance of her innocence because 'the fault was not mine'. Her grandfather died three years ago, a bereavement which she felt considerably. There is no significant feature in her school history or relationships and friendships outside the family. Since leaving school she has worked as an 'Invisible mender' in a factory. In recent months her relationship with her father has become more strained for the following reason. Due to shortage of work she has had to work short-time and so gets less pay. Consequently, the pay packet she normally gives her father has been less. In return, she receives less pocket money. When she protested about this, her father told her she could go elsewhere 'for lodgings'. She decided she had no alternative but to accept. She had thought of the possibility of taking up nursing (an ambition she has had for a long time) so that she could live elsewhere, but does not want to leave her mother.

Quite apart from the strong impact of her personality, which to me was typically that of tuberculosis, there is good evidence in her story of a strong need for affection. Although her grandfather acted in some ways as a father-substitute/

substitute in early life, she knew he was not her father and that she was different from other children. The return of her father, by causing a strain in her relationships, accentuated the deprivation. Although the link with her mother does not appear to have been strong, her need for affection is illustrated by her reluctance to leave her mother even under the strained (almost broken) relationship with her father. It would have been no surprise had this girl broken down with tuberculosis at any time during the past few years - when she learned of her illegitimacy, when her grandfather died, and at any time during her strained relationship with her father. Her physical appearance showed no evidence of toxæmia or malnutrition, but she was very pale. It was surprising, therefore, on viewing her x-ray to find no evidence of tuberculosis - only very slight inflammatory mottling. The explanation of this was forthcoming when she was found to be tuberculin negative. She has not yet met the organism, but there is no doubt that sooner or later she is bound to meet it and her personality leaves me in no doubt but that she will be an easy victim. I do not think it fair, even in the interest of science, to wait and see if my prediction will be right, and this girl will be vaccinated with B.C.G. at an early date. (This is one of the cases shown in the Tables to have a 'need for affection' and 'evidence of deprivation of affection in childhood' among the CONTROLS).

4. T.D. (Married Male, aged 45 years) - No contact history:

This man was the father of five children and had been married for almost twenty years. His married life was quite happy and he had suffered no family bereavements. He had had a normal childhood and was the third in a family of five children. There had been no separations or bereavements in childhood, all the siblings having kept well, and both his parents were still alive. School life was normal, he was a good mixer and had many friends. He had worked in a Blacksmiths since/

since leaving school at 14. He disclosed no significant life situation. He struck me as being a somewhat aggressive type of individual, perhaps something like Wittkower's 'rebellious' type (see Page 102), but no evidence could be elicited of deprivation of affection in childhood, as Wittkower describes in his rebellious cases, nor did his personality strike me as that of tuberculosis. He had been x-rayed just prior to attending my clinic, the film having been read by a colleague whose report to the patient's doctor stated that there was infiltration in the left upper zone, the appearances being those of minimal pulmonary tuberculosis, and referring him to my clinic. Of course, I was not aware of this x-ray, but the patient's doctor had obviously told the patient, because the first thing I was told when he entered the Consulting Room was - "If I've got T.B., I'm not going into hospital unless I get a new house." To which I gave him the obvious reply - "If you've got T.B., you'll not get a new house unless you go into hospital." We got on well after that and rapport was quickly established. He was quite a big man and, although well-built, had lost a fair amount of weight in the two months he had been unwell. His other chief symptom was of recently increased, productive cough. He looked ill and toxic and showed marked pallor. His B.S.R. was 84 m.m. in one hour. X-ray showed infiltration in the left upper zone consistent with tuberculosis. Despite this, I made a provisional diagnosis of a non-tuberculous lesion - either acute inflammatory (atypical pneumonia) or possibly carcinoma, my reasons for this being as follows - (1) He did not have the tuberculosis personality; (2) He appeared rather too ill and his B.S.R. too high, having regard to the extent of the lesion, unless he happened to be on the verge of an acute spread. He was seen again four weeks later, following penicillin treatment, by which time six sputum tests were returned as negative (and, since then, two cultures also), and his x-ray showed complete resolution of the infiltration. His B.S.R. also was approaching normal and his general condition had improved. The condition was, therefore, proved to be acute inflammatory.

This/

This case illustrates how even negative personality findings can be an aid to diagnosis.

5. E.J. (Single Female, aged 16 years) - Contact:

This patient is a tall, well-built, healthy-looking girl who looks older than her years. She is the youngest of a family of eleven children (4 males and 7 females) all of whom, except the patient, are now married. The oldest is now 37 and the one above her is two years older. No siblings died, nor is she aware of any serious illness to any of her family while she was a child. Her father died when she was 5 years old but her mother did not have to go out to work as there were several children working. She has no clear recollection of her relationship with her father. She says she has always been very fond of her mother and close to her but there does not appear to have been any deep bond of affection between them perhaps because 'there was a lot of children'. She was, however, 'completely spoiled' by the older members of her family and her mother in getting her own way, but there was no outstanding love bond with any particular one member of her family. She was above average at school, was a good mixer and appears to have a number of friends of both sexes, though no close ones. Nevertheless, she goes out infrequently and her only pastime is going to the pictures. She left school at 15 and since then has worked as an assistant in a grocer's shop.

At the age of 14-15 she 'went seriously' with a boy a little older than herself. This romance lasted for almost a year and was terminated by the boy about a year ago. She was very upset. She is not sure why he broke it off, but thinks it may have been to do with the fact that they were of different religions - he was Roman Catholic. She herself had not given the question of religious difference much thought but had felt her family was not too keen. Shortly before this/

this relationship started one of her sisters, four years older than her and still unmarried (the third youngest) was found to have active minimal pulmonary tuberculosis. She was under my care and had treatment at home consisting of bed rest and chemotherapy and has, in fact, made an excellent recovery. So that, after the patient's diagnosis, I was able to refer to her contact record. This showed, at the time of her sister's diagnosis in June, 1953, she was tuberculin positive, but her x-ray was normal and was normal at least until December, 1954. I first saw her when she was sent to the clinic because of symptoms in April, 1955, and x-ray then and in the following month showed a minimal lesion in the right mid zone. This minimal lesion has appeared about one year after the break of her romance.

This case shows a number of important features. Her personality impact was strongly tuberculous. There is evidence of 'deprivation of affection' due to the death of her father in childhood. It is not surprising that her mother did not lavish any great maternal affection on the younger children, since by the time they arrived she had already brought up a large family and, by nature, was approaching the grandmother stage. Despite the patient's assertion that she has many friends, she appears to be rather a 'home bird' indicating her dependent needs. And there is the evidence of her typical precipitating life situation one year before the first minimal appearances in the x-ray picture. There is also the presence of active tuberculosis in the house at the critical time. Although no positive spit was obtained from the sister, treatment was started early and there is no doubt that, if time had been allowed to elapse, a positive spit would have been obtained as the x-ray appearances were typical.

The sister is one of the cases included in the Second Investigation, though as a Non-Relapser. No personal history was taken of her but it seems reasonably likely that her history would be similar to her sister's, so far as evidence of deprivation is concerned, even though she is four years older.

Certainly/

Certainly in retrospect her personality is similar to that of her sister. Her precipitating factor was a serious threat to her potential engagement by the presence of 'another woman' for a period lasting almost a year up to about 9-12 months before her diagnosis. Happily for her, her difficulties were resolved and she made an excellent recovery. She has recently got married.

6. P. McK. (Married male, aged 33 years) - Contact:

This patient was the third oldest of a family of five, having 2 brothers and 2 sisters. So far as he remembers and knows, he had a normal childhood and got on well with his siblings and parents, both of whom are still alive. There were no illnesses in childhood or separations among siblings or parents and no deaths. For as long as he can remember, however, he has been afraid alone in the dark. As a child he used to have to walk across a dark back-green at night to get coal and he was always 'scared stiff' and ran as hard as he could. This fear has persisted into adult life. He was an average pupil at school and, though he got on well with his school mates, he had no special friends. He confesses to being a poor mixer and to being 'very shy'. He has never liked going into other peoples houses and has visited his in-laws only six times in four years of marriage for this very reason.

He left school when aged 14 and worked as a miner until he was 20. He served in the R.A.F. (non-flying) from 1941-46. His only upsetting experience here was a fright by a snake in the dark when serving in India, an experience he has never forgotten and which made him feel 'very nervous' and aggravated his fear of the dark. After demobilisation, he worked as a labourer for one year, as a steel worker for one year, and since then as a railwayman. He changed his job only to get better conditions. His only hobbies are pictures twice weekly and going for walks.

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An outstanding feature of his family life is a strong family link between all brothers and sisters and parents. The attachment is to both parents but especially the mother, although 'we're best of pals with my father too'. The patient could not say why this was, but maintained it had been so for as long as he could remember and that they differed in this respect from most of their neighbours. "I never go home at night from work without first looking in to see my parents." When asked the reason for this, his reply was that he had always done this.

In 1948, a brother developed pulmonary tuberculosis and has not been well since. He has been in hospital for the past two years and has recently had a thoracoplasty. Five years ago the patient broke off with his girlfriend whom he had been courting for three years. They were of different religions and this had been upsetting his family, especially his mother, as well as the girl's family. He confessed to being very upset and miserable about it, but could do nothing else in view of his mother's attitude. One year later he married a girl whom he had known for some months. He is apparently happily married but has no children and, to him, this is frustrating. He denied regretting his marriage on this account but confessed to wondering if he could have been more successful with the other girl.

This patient was in good general condition, good colour, average height and build and nutrition and not toxic. He was sent to me for investigation because of a haemoptysis. His x-ray showed a cavity in the right apex with surrounding infiltration in the upper zone. The appearance was consistent with the cavity having been present a considerable time and the condition may have persisted undetected for a long time yet with perhaps slow increase in size or spread had not the haemorrhage supervened. His sputum was found to be positive.

Evidence of insecurity, from whatever cause, is given by his shyness and fear of the dark. There is strong evidence of dependence, especially on his mother/

mother with whom the love link appears to be strong. There is no doubt that the threat to this love link by his previous romance as well as the actual break of the romance was a telling factor in the onset of his tuberculosis, and the recent doubts about his marriage (due to inability to have children) stirring up guilty thoughts about his broken romance, may have been an aggravating factor. The need of this patient to have children on which to bestow affection also illustrates the great need to give as well as receive affection, which many of these patients show.

This patient's personality was very strongly that of tuberculosis. The impression he gave was that of a very pleasant, nice, gentle individual; it is as well to point out that these personality traits - the need to give and receive affection - are simply exaggerations of the normal, and in many cases are very pleasing, albeit abnormal and potentially harmful characteristics.

7. J.P. (Single Female - aged 51 years) - No contact history:

This patient is the oldest of a family of four, being the only female. There were no serious illnesses or deaths among siblings in childhood. Her mother was killed in a railway accident while she was a child and not long after starting school. She was not very bright mentally and her memory for dates and events was hazy. Her father did not re-marry and for as long as she can remember she looked after the house. She maintained that she got on well at school, was a good mixer and had plenty of friends. "I've always had plenty of friends", "my friends are good to me" and similar expressions were used so frequently throughout the interview that one felt she did 'protest too much'. She left school at the age of 14 years and kept house. At the outbreak of war she took a job in a Jam Factory and she still worked there at the time of diagnosis. A brother was killed in the pits 18 years ago and her father died 12 years ago. They/



They were 'all the best of friends'. "I've two good brothers - one neither smokes nor drinks." Both brothers have remained unmarried and continue to live with her. When asked why none of them had married, she said that she had never met anyone she wanted to marry but she didn't know about her brothers. She didn't know if either at any time contemplated marriage. "I don't ask any questions. I don't know if they have girlfriends. They can all please themselves. I've got plenty of friends I could go and stay with. I wouldn't care if they got married."

In this case no other life situation since the death of her father was noted. The lack of and need for affection stood out and the threat to a break with the remaining members of the family, should they marry, must have been present for a long time. She was constantly on the defensive. The impact of her personality was decidedly that of tuberculosis.

Her general condition was not good. She was rather thin and looked toxic. Her x-ray showed widespread fibrotic disease of the right lung, with basal pleurisy. Her spit was positive. The condition appeared to have been long-standing. She refused hospital treatment, but was agreeable to being treated at home. Home help was also refused. \* "My friends will look after me."

8. J.H. (Single Female, aged 22 years) - No contact history:

Examples have been given of typical life situations and typical personality traits failing to cause disease until the tubercle bacillus arrived on the scene. This case illustrates how the disease will not develop, even in the presence of infection and typical life situation, in a personality which does not show the characteristic trait. Marriage difficulties need not necessarily cause tuberculosis unless the 'soil' is suitable.

This patient was the second oldest of a family of six. There were

no separations or deprivations in childhood. The home was a happy one; the relationships between individual siblings and between parents and siblings happy and normal. She was rather more fond of her mother than her father, who tended to be dominating, but nevertheless showed them affection. She was a good mixer, got on well at school and has got on well at work (as a clerkess) since leaving school. Her parents got on well together. When she was 15 her father's attitude became more dominating and he resented her and her sister (two years younger) going out. When they did go out the atmosphere was 'frigid' on return. He particularly resented the girls bringing their boyfriends home. Nine months ago her father disapproved of her sister's intention to get married. He also disapproved of the patient's fiance, so both sisters left home. Her sister got married and the patient eventually returned home, at the request of the mother who was particularly unhappy at the situation. Her father told her he would not give her a wedding. She has remained at home so that she can save up to get married in a few years. She has no strong ties to her home and would have no hesitation in going abroad with her husband, should that be necessary.

The patient was in good general condition and she was negative clinically and radiologically. She was tuberculin positive. She had no obvious deprivation of affection and her behaviour and demeanour showed no strong family links. There was no suggestion of strong need for affection. Her personality did not give any suggestion of being related to the tuberculosis one.

9. M.H. (Married Female, aged 44 years): No contact history:

In a search for personalities showing a strong need for affection, it is inevitable that other links between parent and child be uncovered and of these a mother-fixation occurred in four cases associated with patients who were subsequently found to be suffering from bronchial asthma. This description concerns/

concerns a patient who had both pulmonary tuberculosis and asthma.

This patient was illegitimate and adopted in infancy by a couple whose family of four children had grown up and were all married. She knew early on that her foster-parents were not her own and gradually through the years learned of her illegitimacy. She admits that she was 'completely spoiled' by the foster-parents. She had been told by the rest of the family that she got off with most things. In childhood she remembered being ill with 'chest trouble' for a while. This happened when her step-sister's children were in hospital with scarlet fever. There was nothing significant in her adolescence or in her relationship with others. Her step-mother died twenty years ago. She was 'upset' but apparently not unduly. As she said, "I still had my father." No illnesses were recorded at this time. Ten years ago, however, while nursing her father, in his last illness, she developed 'chest trouble' and she has never really got better since. Her father died one year later and she was severely upset by his death. "When father died I was left alone." One year later she married, at the age of 36, apparently happily, but her chest has not improved. Two years ago she had an accident to her leg which got 'stuck in railings' and this 'seemed to affect my chest worse than usually'. She has no children of her own, a lack which she said she missed terribly.

Clinically, her story was typically that of chronic bronchitis and asthma, and asthmatic attacks are frequent and severe. In addition, chest x-ray showed tuberculous infiltration of doubtful activity in the left upper zone.

Her story shows many interesting points. Deprivation of true parental affection is the fundamental cause of her 'inordinate need for affection'. But having a substitute in her foster-parents who were anxious to give her normal love, and who perhaps overdid it, her affection needs were, in some ways, over compensated without being properly and naturally satisfied. In addition, being basically insecure and dependent, and having someone willing to indulge (and over indulge/

indulge) her childhood need for affection, a fixation to one (or both) of her parents developed, so that two outstanding personality traits resulted - an inordinate need for affection and a mother-fixation. Apparently the first asthmatic attack occurred in childhood when her sister's children were in hospital - the threat of separation from her 'mother-figure' being the precipitating factor. It is surprising that the mother's death did not precipitate an attack but perhaps the patient's own statement "I still had my father" answers this - the father was the mother-substitute. This is borne out by the patient's deterioration during her father's last illness and after his death. Her husband has not proved to be an effective 'mother-substitute'. The precipitating factor in her tuberculosis is less obvious. The one upsetting factor in her life is the absence of children and her need to bestow affection and this may well be the precipitating cause.

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## REVIEW OF THE LITERATURE.

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### 1. HISTORICAL REVIEW.

A connection between emotional factors and tuberculosis has been assumed since early antiquity. Berle (1948) points out that as early as 1500 B.C., the Hindus mention grief as one factor in the development of tuberculosis. Margetts (1954) states that Hippocrates (460-370 B.C.) described two types - habitus apoplecticus (the muscular and strong) subject to apoplexy, and phthisicus (delicate and weak) subject to phthisis - though these are physical personality types. Berle, however, points out that the School of Hippocrates believed that tuberculosis could be influenced by 'sentiment'. Grigg (1955) points out that early Sanskrit and Hellenic writings include mental diseases among the causes of tuberculosis and that Galen (131-201) discussed 'hectica ex ira ac moerore'; many authors to recent times have referred to 'fury and grief' as causative factors. Grigg also states that a close connection between pulmonary tuberculosis and love (especially in its physical aspects) has been believed since early antiquity and quotes 'Lover's Mark', an ode ascribed to the Chanter of Theos (563-478 B.C.):-

"But from all men else a lover  
I can easily discover  
For upon his easy breast  
Love his brand-mark hath imprest."

He also mentions Susreta (5th Century) who not only considered grief to be a factor but believed love, not only in the physical but in the spiritual sense, to be a causative factor. In this connection he tells the story of Antiochus (son of the Syrian King - 358-280 B.C.) as told by Valerius Maximus (1st Century) whose tuberculosis was cured when his repressed love for his stepmother was released.

Dubos and Dubos (1953) believe that the part played by psychological factors such as bereavement, disappointment in love and loss of fortune in the causation of pulmonary tuberculosis was readily accepted by doctors and laymen until the 19th Century, when the rapid advances in pathology and bacteriology put the psychological factors into the background. They refer to Morton's Phthisiologia (1689) in which he wrote that phthisis often had its origin in 'long and grievous passion of the mind'; also to Hufeland (1797) who referred to one of the causes of scrofula as a 'mournful disposition of the soul', to Auenbrugger (1722) who considered 'ungratified desires' especially 'nostalgia' as a cause of phthisis, and to Laennec who, in the early part of the 19th Century, wrote of prolonged 'profound melancholy passions' as a cause. That psychological factors were not entirely neglected in the 19th Century is revealed in Grigg's (1955) mention of Sir Thomas Albutt (1871) who suspected that phthisis may develop in women after disappointment in love.

On the whole, however, historical references to psychological factors as a cause of tuberculosis onset or relapse is very scanty.

## 2. REVIEW OF THE MORE MODERN LITERATURE.

### (a) Wittkower's Contributions:

The most extensive studies of the role of emotional factors in the etiology and course of pulmonary tuberculosis have been made by Wittkower (1949, 1952 c & d, 1955, and with Durost and Laing 1955). It is proposed, therefore, to describe Wittkower's contributions to the subject and discuss their significance.

He investigated 300 unselected patients, males and females from all social classes, at eight sanatoria and two dispensaries. Each patient had at least one thorough psychiatric examination of not less than two hours duration, special attention being paid to the life situation preceding the onset of symptoms of tuberculosis. He found a common personality trait of these patients to be an 'inordinate need for affection' which is not necessarily openly expressed and may be hidden. Although he found no uniform premorbid personality, he was able to identify four groups according to their behaviour pattern and basic conflicts. These were - (1) Overtly insecure types; (2) Rebellious types; (3) Self-drivers; (4) Conflict-harassed types. Seven per cent were unclassifiable. The first group is characterised by their regard for the normal demands of life as hardships, or by being lost without a supporting figure, or by being unduly sensitive to rebuffs; the second group resent imposed authority and hardship; the third group are guilty of overdoing things; and the fourth group are troubled by conflicts over aggressiveness and sexuality.

He interpreted preceding life situations in terms of their behaviour patterns, i.e., as a rebuff or the loss of a supporting figure or removal of a person who had been loved and hated simultaneously. With regard to Self-drivers, he considered that precipitating factors must be secondary to their 'self-damaging, self-frustrating and self-humiliating trends'. In the Conflict-harassed group, the/



the conflict over aggression or sexuality came to a climax before the onset of symptoms because they did, or imagined they did, something they should not have done. Preceding life situations were found in 114 out of 153 (75%) patients in the first two groups, or about 38 per cent of all the patients investigated. No figures are given of actual precipitating factors in the other groups. In the case of 'relapses', preceding life situations were found in 4 out of 26 (15%) in these groups, or about 6 per cent of all the patients who relapsed.

It is necessary to examine closely the significance of this investigation and the significance of the conclusions. In the first place the value of the work is greatly impaired by the lack of a control series, although as was stated in the Introduction, the method used by Wittkower of studying known tuberculosis cases, thorough as it is as a psychiatric study, precludes the proper use of controls. It is a basic fact, as Halliday (1948) says, that everyone needs affection; how is one to know when the need for this is 'inordinate' in tuberculosis (premorbid) without comparison with other healthy and unhealthy groups? Likewise, the reconstruction of premorbid personality groups from the post-morbid state of known tuberculosis is rather a shaky foundation on which to interpret the meaning to the patient of emotional life situations. Halliday (1949) pointed out that Wittkower's personality groups were not peculiar to tuberculosis but occurred in other diseases of psychosomatic interest and that his account of aggressiveness could apply to many other disorders. In fact, Wittkower's personality groups are reaction patterns, and Halliday (1942) quotes White, Cobb and Jones (1939) who, in a study of mucous colitis, said - "classification of persons in terms of these psychological reaction patterns fail to indicate personality", a view with which Halliday expresses agreement. The interpretation of life situations in terms of reaction patterns, valuable though they are in a study of the course of the illness, elicits no preceding psychological set-up peculiar to tuberculosis. The life situation should have been interpreted in terms of the one common premorbid personality trait discovered/

discovered, i.e., 'an inordinate need for affection', but Wittkower failed to do so. Any life situation which denies or threatens to deny this need, whether it be a broken engagement, a bereavement, a serious family quarrel, etc., will cause the wound and the wound will be there whether its presence be 'openly expressed, thinly disguised, well concealed, or flatly denied' according to the prevailing reaction pattern. This most obviously applies to all Wittkower's groups, including the 'self-drivers' and 'conflict-harassed', and it is a pity he did not give his reasons for his assertion that life situations must take second place to the behaviour (over-activity) caused by the personality among the self-drivers. Indeed, it is a pity that no account of the actual preceding life situation in these two groups is given. Generally, Wittkower does not give his actual findings but only his interpretation of them.

In a more recent study - on the course of the disease - with Durost and Laing (1955), 40 patients with a 'favourable course' were compared with 40 patients with an 'unfavourable course'. A 'favourable course' was defined as one in which tubercle bacilli were absent and there was no radiological evidence of activity; 20 patients were still in hospital having been non-infective for at least six months, while the other 20 had been home from hospital for at least one year. An 'unfavourable course' was defined as one in which tubercle bacilli were present in the sputum and there was radiological evidence of activity after all available therapeutic procedures or after five years of the disease, even if all possible treatment had not been given. Those with a family history of tuberculosis, a history of prolonged massive infection, those in whom the disease was advanced on admission and those in whom optimum treatment conditions were absent were prominent in the unfavourable group. On the whole, patients who acknowledged and enjoyed their dependence did well and those who concealed it behind hostility did badly. 14 out of 28 of the Overtly insecure, 2 out of 8 of the Rebellious, 18 out of 21 of the Self-asserters, 3 out of 13 of the Self-drivers, 2 out of 8 of the Conflict-harassed/

harassed and 1 out of 2 of the unclassified did well. The only references to precipitating factors either at onset or during treatment are as follows:-

1 of 14 with a favourable course and 8 of 14 with an unfavourable course among the Overtly insecure had the onset preceded by loss or permanent separation from supporting figures; that a period of overwork preceded the onset among Self-drivers; and threat to financial and social security preceded the onset among Self-asserters. They also conclude that personality factors may lead to behaviour resulting in relapse, e.g., some go back to work too soon and work too hard; some resume their former pleasures and break down; some remain bound to hospital routine, some leave hospital irregularly because of home worries or guilt at inactivity (Self-drivers) or the need for love and affection (Overtly insecure) or just because they are rebellious. Generally, the view appears to be that the personality by influencing the physical behaviour contributes to the onset and influences the course of the illness. Severe concern about the illness influences the course of the illness unfavourably.

Criticism of this study must run parallel with the criticism of Wittkower's chief contribution to etiology. It is true, as I have pointed out, that reaction patterns by influencing the patient's behaviour may influence the course of the disease, and the authors draw attention to the behaviour difficulties which occur in the various groups according to the reaction pattern and which lead to poor response to treatment or relapse. A point of criticism here is that although they define 'unfavourable' they do not define 'relapse'. Indeed, they speak of relapse due to psychological factors occurring in patients still in sanatorium when the relapse could easily be attributed to other factors such as inadequate treatment or being allowed up too early and insufficient time having been allowed to test the satisfactory nature of the healing. A more serious criticism, however, is that little indication is given as to the persistence or recurrence of the preceding life situations or the advent of new ones during treatment/

treatment, and no indication at all in terms of the common premorbid personality trait - the 'inordinate need for affection' - an omission which must impair the value of the work.

Wittkower (1952 b & c) also stresses the importance of the psychological aspects of after care and makes a plea for a consideration of these factors in the management of the patient so that he may readapt himself to being healthy, to life in a healthy environment and to resumption of work. The main factors are - (1) those due to the illness itself, some of which are common to any chronic illness (secondary narcissism, egocentricity, hypochondriasis, dependence and a need for affection) and some of which are exaggerated by tuberculosis (anxiety and over dependence) and caused by tuberculosis (the feeling of being outcasts due to infection); (2) effects of the treatment which exaggerate the dependence and constrict the field of interest.

These points are of practical interest and value.

(b) Studies relating to Wittkower's Investigations:

The view that tuberculosis patients require affection inordinately had previously been expressed by Weiss and English (1943), who found 'a strong need for love and protection' to be present in some of the cases studied, and by Merrill in 1949 (1953) who thought this was an outstanding trait in their obsessive compulsive personality.

In a more recent investigation, Pasche (1951 - reviewed in Tuberculosis Index) investigated 150 sanatorium patients and reached conclusions similar to those of Wittkower in that three types of premorbid personality similar to Wittkower's are described, viz., - (1) Overt dependence; (2) Self-drivers; (3) Passive disposition. They found childhood adversities in 30 per cent of patients due to excess solicitude in a neurotic mother and in a large number of these/

these the father was ineffectual. This study is marred by the fact that one quarter of these patients were referred for psychiatric reasons, a large number volunteered for the investigation and only 50 were consecutive arrivals, so that the patients were not, strictly speaking, 'unselected'. In addition, no controls were used.

Harz (1954), in a study lacking controls, dealt with the problem of those who do not do well under modern treatment conditions and found in his patients a history of disturbed relationship in childhood, mainly with the mother, resulting eventually in a strong need for affection. About one-third of his patients had the onset or course of the disease determined by emotional factors. The main problem in those whose emotional reactions caused difficulties in treatment is, he found, the problem of accepting the passive dependent role of allowing himself to be looked after completely over a long period. In some this stirs up guilt feeling, in others it comes as a relief.

Saul and Lyon (1954) confirm Wittkower's findings that basic features of tuberculosis patients are a great degree of dependence and difficulty in handling hostile situations. Their impression, in a psychoanalytical study of a small series without controls, appears to be that the main factor in the dependence is that it takes the intra-uterine form - a wish to return to a state in which the respiratory tract is not used for breathing and that the related emotions, frustration, anger and guilt are acted out over this pathway.

Another article from the foreign literature (abstracted from Tuberculosis Index and not read in the original because of language difficulties) is that by Fréour and Serise (1954). They describe some personality traits similar to those described by Wittkower, namely, an immature psyche in which infantile attitudes persist into adult life, so that the tuberculosis personality lacks resources for meeting change and dealing with emotional conflicts.

(c) Studies relating to Intra-psychical Conflicts:

A number of writers have suggested that tuberculosis develops as a result of severe intra-psychical conflicts and their unsatisfactory attempt at solution.

Pearson (1946) expressed the view that in some cases the disease is a means of escape, subconsciously, which allows the patient time to adjust himself to unpleasant and difficult situations, which, if they persist or recur, may delay healing or cause relapse.

Day (1946 and 1951) has said that "tuberculosis provides means for a flight from frustration, for self-punishment....." Many of his patients developed pulmonary tuberculosis in the absence of the typical physical environmental causes and he considered they did so because of disease in their psychological environment. Similarly he considered that the conscious state of mind influenced the course of the disease and referred to the exacerbations which sometimes preceded the proposed return of a patient to a home with an adverse psychological background. Similarly, patients with subconscious conflicts and anxiety were adversely affected.

Harz (1944, 1950, 1954) has put forward views similar to those of Day and Pearson. Thus he has said that in some cases the sanatorium acts as a 'peaceful refuge' from pressure of work or unbearable situations, especially in obsessive personalities. In some, the illness is regarded as a gradual suicide and they have no incentive to get well (this 'organic suicide' had previously been referred to by Menninger, K.A., (1937), quoted by Hodgins (1951) and referred to by Wittkower (1949). Menninger's publication was unobtainable by me). The author gives this as the reason for rarity of suicide among tuberculosis patients. In others, the illness is felt as 'a major psychological crisis of their lives' and until satisfaction is obtained he believes recurrent relapses occur or they become good chronics.

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Such views as are put forward above are obviously difficult to prove and must give rise to controversy which is not lessened by the excellence of the detailed descriptive histories given. Unexplained failure of recovery in chronic or other illness is not peculiar to tuberculosis and there is no evidence at all that the emotional situations described, and their results, are peculiar to tuberculosis. One would require statistical proof that they occur more often in tuberculosis than in other conditions.

Groen (1953) described an investigation by a team of doctors, consisting of a general physician, a chest physician, two psychiatrists and one psychologist, into an unselected group of tuberculosis patients in an Amsterdam sanatorium (this is a non-English publication and is abstracted from a review in 'Tubercle'). Their material consisted of - (1) 20 men and 20 women suffering from long-standing pulmonary tuberculosis; (2) 40 men and 40 women of approximately the same age and social background who were not ill; (3) 20 men and 20 women suffering from chronic non-tuberculous pulmonary affections. Psychiatric examination using the method of 'biographical anamnesis' was carried out, followed by psychological examination using the Bellevue test and the Behn Rohrschach test. The following conclusions were reached - (1) An unsolved, severe inner conflict lowers the resistance against tuberculosis infection; (2) Successful psychotherapy may favourably influence the course of the disease.

The types of 'emotional conflict' found is not indicated in the review and the information generally is too scanty to allow the value of this investigation to be properly assessed.

(d) Studies relating to Emotional Factors and Premorbid Personality:

Munro (1926) expressed the view (unsupported by scientific evidence) that there/

there may be purely psychological elements involved not only in the etiology of tuberculosis but in the patient's reaction to it.

Early studies of premorbid personalities in tuberculosis were made by Muhl and Wolepor (1929). Muhl's studies were not available to me but were mentioned by among others - Wittkower (1949) and Edwards (1932). Her contention that the personalities of patients suffering from tuberculosis have certain common features has not been generally accepted.

Wolepor studied 100 sanatorium patients, his main object being to ascertain what influence phthisis had on the personality of the individual. He concluded that there was no specific tuberculous personality, that phthisis did not alter the personality of the patient but 'influences inherent tendencies and exposes the true individual'. He described five main personality groups - the rebellious, the phlegmatic, the pessimistic, the optimistic and the restless apprehensive types.

Schulz (1942) in a study of emotions in tuberculous patients also concluded that tuberculosis accentuates the emotional maladjustments that were present prior to the disease, and that maladjustment was determined by childhood and adolescent circumstances and habit formations.

An early investigation into precipitating emotional factors was made by Breuer (1935) who studied 100 consecutive sanatorium patients. He found that psychic factors were a cause in 34 per cent of them. The types of psychic disturbances he described were - occupational maladjustment (3); constitutional (9); parental mishandling in early life (8); and mental difficulties (11). There were 4 psychotics. A psychic factor was common in progressive cases with a poor prognosis.

Another early report is that of Moreland (1938), quoted by Merrill (1952), who was impressed with the number of broken engagements that preceded the onset of tuberculosis.

Pearson (1946) also mentions the strong impression of one of his colleagues/



colleagues that a recent broken engagement or unsatisfactory marriage often preceded the illness. He also felt that frustrations and disappointments or discouragements (the latter especially among adolescents) were apt to precipitate the disease.

In discussing personality, he refers to the popular association of genius with phthisis, mentioning among others - Schiller, Keats, Elizabeth Browning, R.L. Stevenson, Anton Tchekow, D.H. Lawrence - and considered they were all 'rebels'. He thought, however, the trait was secondary to the disease.

Day (1946 and 1951) was also struck by the fact that broken romances or unhappy marriage preceded the illness in a larger number of cases than chance would warrant. Unhappiness caused by an uncongenial job or 'deadening family life' were other preceding life situations. He also noted that although young adulthood, the time at which tuberculosis is commonest, is the time of strongest physique, it is also the time of greatest emotional stresses, the time for 'weaning' from the security of home life. He decided that nearly one-third of his sanatorium patients were 'sick in mind as well as in body'. He thought that more tuberculosis patients than in the general population showed obsessive compulsive traits and that their overactivity contributed to their breakdown. Reference has already been made in the Introduction to Day's Hunterian Society Oration (1952) in which he referred to the importance of preceding emotional factors but considered impossible the task to prove this by controlled investigation. More recently (1955), he has reiterated this view and his frustration at the difficulty of this task can be seen by this quotation - "There is unmistakable evidence that emotions can affect the course of this disease.....if they work during the flowering of the disease, surely we may reasonably infer that they were working at its germination." Having pointed out his failure and that of everyone else to reveal a specific premorbid personality, he turned to the opposite view and tried to find out why certain people among his own acquaintances and famous characters in literature were immune to tuberculosis. He postulated the presence of the Pneuma - the Spirit - as the reason for this immunity/

immunity and put forward a concept of an indivisible triad - Pneuma, Psyche and Soma (Spirit, Mind and Body). Day's observations, interesting as they are and backed up in many instances by well-illustrated descriptions, are either impressionistic or based on observations lacking control series and the value of his work suffers accordingly.

A psychosomatic approach to the etiology of pulmonary tuberculosis was made by Friedman, Kastlin and Kooperstein (1946). They studied 100 consecutive Army cases within a few months of the onset and early in the course of the disease. In doing so they felt that factors which develop by a long period of chronic illness were eliminated. This must be criticised on the grounds that the patients, having been diagnosed some months previously, were conditioned to a long illness with threat to life. The authors concluded that the personalities showed obsessive-compulsive traits but that the upsetting condition of Army life during war and combat duty - separation from home, anxiety about the family, battle conditions including fear of death, which were common to all - were not significant factors. They found a negligible amount of associated neuropsychiatric affections and a negligible family history of psychosomatic illness. In their notes on the personal histories of the patients they record that 36 were married, of whom 9 were divorced and 3 had unhappy marriages. Unfortunately, this does not appear to have been followed up nor is any information given about the love lives of the single men. It is interesting to note that the authors made an unsuccessful attempt to obtain their information by means of written questionnaire and so used the method of personal interview.

Another study was that of Galpin (1948) who found evidence that worry and discouragement played a part in the onset of tuberculosis. By simple 'superficial' investigation he found that 90 out of 200 patients gave some such history. Out of 100 women between the ages of 15 and 20 years he found - bereavements (30); work discouragement (11); examination difficulties (1); and accidents/

accidents (1) - as preceding events. He also noted a high incidence of certain 'nervous traits' among his patients, e.g., stammering, nail biting, bed-wetting, worrying nature, 'Mother's darling', retiring nature, and considered their personality to be of the compulsive obsessional type.

Benjamin, Coleman and Hornbein (1948) studied 16 cases of pulmonary tuberculosis both from the point of view of preceding emotional situations and personality. For the latter they attempted to use controls - medical students and other 'normal' groups. Working in a hospital where there is a known special interest in the psychiatric attitude to tuberculosis, the group is probably not strictly unselected. They found no specific premorbid personality, but in all except three of the patients dependency conflicts or striving were obvious. In at least two cases they felt the dependency may have contributed to the onset. They also found that in 50 per cent of their cases severe emotional conflicts precipitated by actual life situations were present at or shortly before the onset. They felt that inhibition of conscious hostility exerted an unfavourable influence.

Daniels and Davidoff (1950) reported a personality study of 20 patients in a Veteran's Hospital in 1947-48. The investigation was carried out by a psychiatric team. One patient was psychotic, three had 'schizoid' personalities, two had evidence of long standing psychoneuroses and two were 'almost psychopathic'. Reconstruction of the premorbid personality revealed a tendency towards swings in mood with depressive reactions being most common. They found that behaviour in hospital was a reflection of earlier behaviour patterns and emphasised the importance of taking a good personal history, not only for this reason but also because of the psychotherapeutic effect this had in some cases. This study deals with a rather specialised group of the tuberculosis population.

Cohen (1950) in a short study emphasised the lack of proof of the relationship between emotional disturbance and acute exacerbation of disease, a relationship which many workers believe to exist. He described four cases, in three/

three of which a broken romance or marriage was the precipitating factor and in one of which a mixture of financial worries and anxieties about close relatives preceded the onset. Todd (1951) also thought that good evidence in favour of emotional factors precipitating tuberculosis was not easy to find.

The possibility of several personality types being susceptible to tuberculosis was suggested by Fantl (1950) who thought that no proof had been adduced of a specific premorbid tuberculous personality. Likewise, Betz (1951) and Kursteiner (1952) could find no evidence of specific tuberculous personality. Prout (1953) also felt that there was no specific tuberculous personality and that emotional factors or stress, by lowering resistance to infection, could occur in a variety of personality types. His observations, like those of the three previous authors, are impressionistic and largely based on the observations of others.

Westermann (1951) investigated 300 female tuberculosis patients from the point of view of emotional traumata (like the views of two of the preceding authors (Betz and Kursteiner), the details have been abstracted from the Tuberculosis Index as they are from the foreign (non-English language) literature). His patients were equally divided into three groups according to the extent of the disease. In only 16 cases could he relate psychological trauma to the original breakdown or to unexpected deterioration. In 5 cases such a trauma was followed by an improvement and in 11 cases it had no influence on the course of the disease. He concluded that psychological trauma only affected those of unstable personality.

Stern (1952) in a review of 'psychic' causes of tuberculosis, described in Tuberculosis Index, concluded that there was no specific premorbid personality and no specific precipitating life-situation. He did, however, accept the importance of precipitating emotional situations, which he thought varied greatly in objective intensity. He stressed the importance of deprivation of affection in childhood.

A different approach to the importance of personality was made by Lovett Doust (1952). He investigated 272 mental hospital patients with a variety of psychiatric disorders, using 354 healthy comparable controls, in a study designed to show that personality factors play a part in determining the resistance of the individual to disease in general. He started from the post-morbid mental condition and carefully investigated the illnesses to which they were prone before the development of mental illness. In general, his results were positive in that psychiatric patients had significantly more previous illnesses than the controls, and psychotics more so than neurotics or psychopaths; particular mental conditions tended to be associated with disorders of particular body symptoms, e.g., depressions were associated with gastro-intestinal disorders, schizophrenia with locomotor and cardio-vascular disease. There was no significant finding for tuberculosis.

Knobel (1954) (also abstracted from non-English work) emphasised that the onset of tuberculosis occurs at a significant point in the life history of the patient. He describes the tuberculous as having a 'schizothymic constitution' showing paranoid trends, having an apparent hypo-affectivity, poor self assertion and are resentful, showing a persistence of primary narcissism. It is not clear if he is referring to the premorbid or post-morbid state.

An interesting point on the question of psychological trauma has been raised recently by Rosenbluth and Bowlby (1955) who enquired into the social and psychological background of tuberculous children. They found a tremendous need in many of the families of these patients to talk about their anxieties, their problems and the complexity of the feelings and attitudes aroused. The actual impact of the disease on a member of a family may thus act as a psychological trauma to other members of the same family.

Several authors have from time to time reviewed the literature and a summary of their findings in relation to this section of the Review is now described:-/

described:-

Dunbar (1946) in a survey of the literature from 1910-1945 reveals the paucity of scientifically accurate work in the psychosomatic approach to tuberculosis and complains that too much of the work is based on 'a priori assumption'. She pointed out, however, that despite the lack of proof many authors recognised the important part played by emotional factors in the onset, course and prognosis of the disease, and stressed the necessity for psychotherapy in tuberculosis. With regard to emotional specificity she observes that "it will never be found in events in the external world such as economic hardships, deaths in the family, or physical defects, except in terms of.....the anxiety of the organism and in its defences, the type of defences developed against inner and outer dangers." She considered there were indications of specific psychic components in some of the diseases hitherto investigated.

Berle (1948) also reviewed the literature to date and considered that current as well as ancient ideas concerning tuberculosis and (among other things) the psychopathology of tuberculosis and the possible influence of emotional factors on the course of the disease 'are impressionistic and need to be re-evaluated'. Examples of emotional factors, such as unhappy or illicit love affairs or family difficulties are quoted from the literature but no controlled studies. Several personality types are drawn from the literature - the selfish and egoistical, the regressive, the obsessional compulsive, but all in her view unsubstantiated. She considered there were no special personality characteristics. She emphasised that 'undue emotional strain' recognised for thousands of years as influencing the course of the disease, cannot be properly understood unless the "physiologic accompaniments of emotional stress are included in a detailed study of the problem of virulence."

Another review of the English language literature up to 1949 was made by Merrill (1953). He too pointed out there are many references to the importance of psychosomatic factors in tuberculosis but none on a scientific basis. He thought/

thought that nearly all studies of personality types using psychological tests found 'statistically valid differences' in the personalities of tuberculous patients as compared with the general population, but there is no indication that studies actually using controls were carried out. He described the personality type as obsessive compulsive, showing a strong need for affection and with a tendency to overwork to gain the love they needed. He pointed out, however, that the literature did reveal much controversy on whether or not there was a specific personality common to tuberculosis.

Hodgins (1951) reviewed some of the literature published during the previous quarter Century with particular reference to etiology and pathogenesis. He confirms the observations made in other reviews at that time, that emotional factors may precipitate the onset of tuberculosis, but he refers to no controlled observations. Likewise, the evidence for a specific premorbid personality is conflicting and even among those who favour a specific personality there is disagreement over the type. Similarly, there is disagreement over the view that excess libido is a personality trait. No experiments using controls are reported. The publications on which his observations are based have almost all been referred to in this Review.

Reference has previously been made in the Introduction to Derner's (1953) publication. In this he summarised the literature and concluded there was no unique personality type. He referred to a work, unobtainable by me, by R.E. Barker, B.A. Wright and M.R. Gonick (1946) who reviewed the literature between 1920 and 1946 and concluded there was no unique tuberculous personality. 19 out of 40 authors believed there was no unique personality. Varied emotional disturbances were found, basic anxiety being common. He himself investigated 32 sanatorium patients between the ages of 18 and 40 years, using 32 comparable controls. He concluded that there was no unique personality but that there was a wide variety of disturbed behaviour. He thought it likely that there was a basic inter-relationship/

inter-relationship between emotional difficulties and the onset of tuberculosis, but his study did not approach the nature of the relationship and the role of emotional factors in the onset and relapse, and this he considers warrants further investigation.

(e) Studies relating Personality to Behaviour which precipitates Tuberculosis:

Reference has previously been made to Wittkower's views on this subject especially among his 'Self-drivers' who, he thought, allowed themselves to be driven into over-activity so predisposing to their onset ('no work demands are too much for them') and by going back to work too soon after recovery and working too hard could bring about relapse. Likewise, a resumption of former pleasures could cause relapse, or leaving hospital irregularly before proper recovery because of home worries, guilt at inactivity (Self-drivers), the need for love and affection (Overtly insecure), or just because they are rebellious.

Weiss and English (1943) considered that loss of appetite, leading to the undernutrition which favours the onset of tuberculosis, resulted from some emotional states. They also stressed that anxiety, by preventing adequate sleep and rest, could predispose to the disease; and that the 'shallow respiratory excursion' which occurs in certain neuroses may play a part in the onset.

Galpin (1948) argued that the existence of food fads and aversions could lead to a temperament predisposing to tuberculosis in the following way. He found an aversion to fat and green vegetables in a compulsive-obsessional personality type to be an outstanding feature. Certain children, he argued, were most likely to succeed in avoiding fat and green vegetables - the firstborn, the only and the youngest child, the one with most illnesses, or the only girl in a family of boys or vice versa - the most common groups in which he found tuberculosis. Having got away with it in childhood, they developed a temperament which led them to imagine they/



they could get away with a lot so that when faced with a real difficulty they did not know properly how to handle it. They reacted by depression, self pity and resentment, lost interest in food, and a state of malnutrition already present because of food fads was aggravated.

Fantl (1950) also suggested that personality traits could predispose to tuberculosis in the following ways. Some react to stress by not eating or sleeping and becoming over-active, some by over-eating, fatigue and a tendency to sleep sometimes culminating in catatonia, factors, no doubt, which 'lower resistance'.

Emotional factors lowering the resistance to tuberculosis was also discussed by Merrill who put forward these theories - (a) Theory of Energy Balance: people with neurotic tendencies use an excessive amount of energy; resistance to tuberculosis depends on the total amount of energy available to the organism and the channeling of that energy into the healing processes; (b) Anxiety, which Weiss and English consider to have a predisposing effect on tuberculosis by preventing adequate sleep and rest, is expressed through the Autonomic nervous system which has been shown (Cannon) to have an effect on bacterial resistance; (c) The Cardio-vascular Theory: being over-workers they rest insufficiently, use the upright posture excessively which, by reducing the blood flow to the upper parts of the lungs, favours the onset of tuberculosis.

All these views, except some of Wittkower's observations, are theories based on impressions and as they are so obviously incapable of experimental proof are merely put forward as interesting observations. Wittkower's observations on Self-drivers has been discussed.

(f) Studies relating to Tuberculosis and Insanity:

A link between tuberculosis and insanity has been held to exist since the days of antiquity and this has been referred to in the Historical Review. Considerable/

Considerable interest and considerable disagreement has continued to be shown by observers in this Century.

Among early writers, Munro (1926) expressed the view that there may be a constitutional link between tuberculosis and insanity from the point of view of inheritance. On the other hand, Wolepor (1929) thought there was no definite relationship between insanity and phthisis and particularly between dementia praecox and tuberculosis, believing that the high incidence of tuberculosis among them was due to their prolonged hospitalisation. He criticised a commonly held view that 'neurasthenia' was characteristic of phthisis.

Berle (1948) agreed with this view of prolonged hospitalisation of the schizophrenic rather than a specific lack of resistance in this type of patient being the dominating factor (a view with which Dermer (1953) agreed). Likewise, Dunbar (1946) did not think that the evidence in the literature in the previous twenty-five years showed sufficient evidence to correlate tuberculosis with certain mental states.

Fantl (1950) supported the view that mental illness did not predispose to the disease by the observation that in certain American States, where mental hospitals are run on the open-air principle, the incidence of tuberculosis is no higher than in the general population. Also in a study in New York it was found that in a certain area all the patients with newly diagnosed tuberculosis were physicians, nurses and attendants who worked in a mental hospital and poor hygiene conditions were blamed.

On the other hand, Merrill appears to think there may be something in the relationship and points out that not only is there alleged to be a relationship between tuberculosis and insanity, especially schizophrenia, but also between tuberculosis and genius and genius and schizophrenia.

Hendeles (1952) pointed out that tuberculosis is highest in long-term mental cases but thinks that a belief is growing, in the light of clinical evidence/

evidence, that the relationship between tuberculosis and schizophrenia, which used to be regarded as direct and simple, is a complex one with an interplay involving environmental and constitutional factors.

Morland (1952) gives as his impression that increasing opportunities for infection of mental patients might lead to a mortality two or three times that of the general population, but doubts if it is sufficient to explain mortality rates seven or eight times the normal rates. He believes that further study may show that the state of mind of the mental patient plays an important part in lowering resistance to tuberculosis.

Grigg (1955) has made an extensive review of the literature on tuberculosis in the mentally ill from ancient to modern times. He believes there is a definite relationship between tuberculosis and schizophrenia and this is expressed in the following quotation from his publication ..... "the findings of H. Löw (1917), confirmed by Lempp (1921), Ostmann (1926), and especially by E. Chiaramonti (1948), who analysed the results of 3,750 autopsies (1922-46), are still valid: schizophrenics have a higher tuberculosis death rate than any other category of psychotics, both absolutely and relatively, regardless of age or length of stay (side by side) in the institution ....."

A full study of the relationship between tuberculosis and insanity is not strictly included in the subject of this thesis. A brief summary only of some of the literature, therefore, has been given.

(g) Some General Points from the Literature in Relation to Management and Treatment:

Despite the lack hitherto of convincing proof of the importance of etiological factors, many authors have been sufficiently impressed to stress the importance of a psychosomatic approach to the treatment and rehabilitation of tuberculous/

tuberculous patients. Psychological help is not put forward as a substitute for modern treatment but as an addition. The efficiency and success of orthodox modern treatment methods of tuberculosis are not within the scope of this thesis, but most writers on the psychosomatic aspects agree that as an adjuvant these have a definite place.

Both Day (1946, 1951 and 1953) and Harz (1944, 1950 and 1955), in descriptive case histories, have illustrated the importance of psychiatric help in treatment, and have indicated the psychological cause of failure of what should have been successful orthodox treatment.

Harz (1950) in a study of the patient's reaction to illness, also has stressed the necessity for an adequate personality investigation of the patient early in his stay in sanatorium with special reference to such factors as the life situation at onset, the factors of personal strain, the reaction in the past to threatening illness, the family's attitude to tuberculosis, etc.,

Reference to Wittkower's plea for a consideration of psychological factors in after-care has also been made. In connection with this plea, Coburn (1955) revealed that 35-50% of tuberculous patients do not complete institutional treatment and he believes this to be due to a failure to handle their emotional problems.

Galpin (1948) stressed the importance of psychological and psychiatric assessment of the patient with regard to discouragement at the onset, the personality and the attitude of the patient to the disease.

Daniels and Davidoff (1950) thought the actual taking of the personal history had a psychotherapeutic effect in certain cases, an observation previously noted by Halliday (1938) in some cases of bronchial asthma.

Berle (1948) was sufficiently impressed with the importance of emotional factors as to suggest that the chest physician's training should include a training in psychology, a view echoed by Anderson (1951) and Hendricks (1951).

Hurst, Henkin and Lustig (1950) made some recommendations for the handling of a chronic illness like tuberculosis. These included - (1) Orientation of the patient to his illness; (2) Evaluation of organic and psychological factors and their interaction; (3) A plan for treatment to include organic and psychosocial factors; (4) A phase of social re-adaptation with regard for psychosocial as well as organ limitations. Similar observations on rehabilitation have been put forward by Coleman, Hurst and Hornbein (1947).

**D I S C U S S I O N .**

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DISCUSSION.Part Played by Antecedent Emotional  
Factors in Pulmonary Tuberculosis.

The First Investigation has shown that Emotional Factors precede the onset of tuberculosis in a highly significant number of cases (64%) compared with a series of controls consisting partly of patients suffering from varying chest ailments and partly of patients with chest symptoms but no disease (almost 27%). If one excepts the small group containing psychosomatic diseases, the difference between the tuberculosis group and each separate control group (as well as the 'N.A.D.' group) is significant. These findings are repeated in the two subsequent Investigations. In view of the slight differences in the conditions of these Investigations, they are given separately but it is significant that in the Second Investigation of 214 tuberculosis patients (including the 20 'chronics' described in the Appendix), 61% showed similar emotional factors preceding the onset. This number would probably have been higher were it not for the initial distrust and the large numbers dealt with in the first weeks. The Third Investigation, also using controls, gives a similar incidence - 70% of tuberculosis patients showing antecedent emotional factors against 24% of the controls. Altogether in these Investigations 303 tuberculous patients were investigated, of whom 188, or 62%, showed preceding emotional factors, and out of 179 controls, 47, or 26.2%, showed emotional factors. All the figures are statistically significant for both sexes. Similarly, the incidence of emotional factors preceding relapse in tuberculosis is significantly higher than the incidence of emotional factors in those who do not relapse - 75.3% against 11.6% - and of all cases in the series studied, 4 out of 5 tuberculosis cases with emotional factors relapsed.

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The type of emotional factor has been shown in well over 90% of all emotional factors to be due to a Break in a Love Link. It has also been shown that in most cases the broken love link resulted from a Break (or seriously threatened break) in an Engagement, Romance or Marriage. The presence of other emotional factors such as financial worries, worrying difficulties at work and religious worries are so infrequent that they do not appear to play a significant part either in the onset or relapse. By and large, sexual difficulties were infrequent, but were noted as occasional contributing factors to the break-up of a marriage. Sometimes the illness itself precipitates such difficulties, as when the necessity to delay pregnancy was complicated by religious scruples. In no case could I interpret such sexual difficulty as being of primary importance.

In general, these findings establish on a scientific basis certain of the impressions and observations that have been described in the Review of the Literature. They differ from Wittkower's observations in that he found financial and work worries to play a part, especially in the Self-drivers, and found little evidence of emotional factors causing relapse. They differ fundamentally also from Wittkower's conclusions in that, unlike Wittkower's conclusions, reaction patterns are shown to have no specific psychological significance in the onset (though they may play a part in determining the course of the disease).

#### Personality Trait in Pulmonary Tuberculosis.

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Although the series in the Third Investigation is small, the results are striking and confirm Wittkower's finding that an 'inordinate need for affection' is common to all these patients. The findings in this Investigation were based on - (1) a clearly measurable factor - evidence of deprivation of affection/



affection in childhood such as has been listed and the findings of this deprivation in 60% of tuberculosis patients against 16% of the controls is highly significant statistically, even in this small series; (2) the personal relationship of the patients with other members of the family, especially the parents, and people in general, as well as their reactions to situations which arose in their life; and (3) the impact of their personality on the observer, as revealed in speaking of their love relationships. The finding that 100% of the tuberculosis patients against 16% of the controls showed a personality which could be recognised as tuberculous and in whom an 'inordinate need for affection' was found, is highly significant statistically. Of the 4 patients among the controls who showed the personality trait, 1 showed negative skin tests (Case 3 of Third Investigation) and 1, aged 19, had an emotional factor of very recent origin (threat to marriage) and which was quickly settled and, in any case, which was too soon to have an effect. Both these cases I consider to be potential tuberculous cases unless tragedy is averted in the first case by B.C.G. vaccination and in the second case by psychological care. Of the 2 other cases, both were males over 45 and there is no obvious reason, other than a high inherent resistance, why they apparently escaped tuberculosis. One suffered from bronchitis with emphysema and one from pneumoconiosis. 2 of these 4 cases showed no evidence of deprivation of affection in childhood.

The Investigation into Personality Trait, taken by itself - that is, taken apart from the first two investigations into precipitating emotional factors - may be regarded as of doubtful value, lacking as it does a quantitative assessment such as might be obtained by psychological testing, and depending as it does on subjective evaluation. It must be stressed, however, that the Personality Trait Investigation is a CONFIRMATORY one dovetailing with the results of the first two Investigations, the findings of which strongly suggested the personality/

personality trait 'inordinate need for affection' already described by Wittkower and others. These first two Investigations are quantitative and by no means subjective. It must also be stressed that the Personality Investigation involved the use of controls and the assessment of the trait was made blindly, as it were, from a mixed unselected group of patients attending the clinic for the first time and in whom only a minority were subsequently found to be suffering from tuberculosis. Such an assessment is not strictly subjective. Lastly, the evidence of Deprivation of Affection in Childhood is a strictly measurable quantity which dovetails with the findings of the Personality Trait.

INTERACTION OF EMOTIONAL FACTORS AND PERSONALITY TRAIT.Psychological Specificity in  
Pulmonary Tuberculosis.  

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The clue to the personality trait was given by the nature of the precipitating factors which strongly suggests that in the onset of tuberculosis these are interdependent. The frequency with which a specific life situation associated with the specific personality trait precedes the onset of tuberculosis confirms this. It is not suggested that this combination is always followed by tuberculosis - other factors which must certainly be present are the organism and a lowered resistance - and in the absence of infection, or where the inherent resistance is high, tuberculosis will not develop. But it is suggested on the evidence which has been given in the Investigations that the combination of the life situation and the personality trait leaves the door wide open for the development of clinical tuberculosis. The combination of both is necessary - a broken love link in a personality which is not unduly sensitive to such a break does not appear to lead to susceptibility (as described in Case 8 of Third Investigation series) and likewise the absence of precipitating factors in a sensitive personality will obviate the onset of the disease. To put this another way - ANY SITUATION WHICH DEPRIVES OR SERIOUSLY THREATENS TO DEPRIVE A PERSON WITH AN INORDINATE NEED FOR AFFECTION, OF THE AFFECTION HE SO BADLY NEEDS, OPENS THE DOOR WIDE TO THE DEVELOPMENT OF CLINICAL TUBERCULOSIS. THEREFORE, IN A PERSON WHOSE NEED FOR AFFECTION IS GREAT, THE BREAK IN A LOVE LINK BY AGGRAVATING THE NEED, IS LIKELY TO LEAD TO TUBERCULOSIS.

This inter-relationship, though apparently specific for tuberculosis, does not explain why tuberculosis per se develops and much deeper studies, both psychoanalytical/

psychoanalytical and physiological, will be required if this is to be explained.

The concept postulates a certain specificity for the emotional set-up predisposing to tuberculosis. Hitherto, in view of the lack of significant psychological findings in the etiology of pulmonary tuberculosis, it has not previously been possible to put forward a concept of specificity (i.e., specific emotional factors) for tuberculosis. However, the possibility has been alluded to by Dunbar (1945) and Alexander and French (1948) though this has been in terms referring to psychosomatic diseases in general. Kubie (1954) does not like the concept of specific personality types (or profile) because he thinks there is too much confusion - he does not know whether they are talking about conscious, preconscious or unconscious personality trends, life stresses and the like, but he does think that in psychoanalytical studies specific symptoms may arise towards the end rather than the beginning of the causal chain, i.e., the specific cause may be superficial.

If the concept of specificity, as put forward above, is true for tuberculosis then it seems likely that a similar specificity of interaction between personality trait and precipitating emotional factors might exist for the psychosomatic diseases. It is, therefore, proposed to examine from this point of view some of the literature dealing with some of the psychosomatic diseases.

#### Specificity in Bronchial Asthma and other Allergic Conditions (Hay Fever, Urticaria, Eczema).

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A number of investigators have described an outstanding common personality trait in BRONCHIAL ASTHMA to be A FIXATION TO A MOTHER-FIGURE AND THAT LIFE SITUATIONS (ACTUAL OR IN FANTASY) WHICH THREATEN THIS RELATIONSHIP TEND TO PRECIPITATE ATTACKS. References to this are made by Weiss and English (1943), Gerard/

Gerard (1948) who considered surprise to be an important factor when there was threat of estrangement, Rosenbaum (1950), Wittkower (1952 a) and Saul and Lyons (1954) who reveal that 'Mother Fixation' was first pointed out as early as 1922.

Among the precipitating factors mentioned are impending separation from the mother-figure by pregnancy, the birth of younger children, by sibling jealousies, and by acts or the temptation to commit acts which, if known, would cause maternal disapproval. Obviously other factors such as bereavement, illness in the family, unhappy marriage, loss of employment, dislike of occupation, etc., where these involve a break or threatened break in the relationship with a mother-figure or substitute, could be precipitating factors and it is not surprising that Halliday (1938) found such a diversity of life situations in his cases.

Several of these authors (Weiss and English, Wittkower, Saul and Lyons) and, in addition, Seitz (1954) also believe that OTHER ALLERGIC CONDITIONS have in common with asthma the same personality trait and precipitating life situations. The allergic conditions referred to (though not all by each author except Wittkower) are HAY FEVER, URTICARIA AND ECZEMA.

To account for the somatic manifestations Wittkower assumes that they are 'constitutionally predisposed' to the particular disorder they develop. Saul and Lyon think that, similar to tuberculosis, asthma is a partial regressive tendency to return to an intra-uterine state when the respiratory tract was not used for breathing. They think the same principle underlies the skin allergies and explain it "by the relation of skin as well as respiration to the mother in utero". Similarly, they say hay fever can be explained by the same principle.

#### Specificity in Peptic Ulcer.

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Rosenbaum (1954) has pointed out that Alexander and his colleagues in

1934 were the first to claim that patients with ulcer have a specific type of emotional conflict and, although such a concept has been supported by some clinical studies, the role of specificity of emotional reaction in patients with peptic ulcer and other psychosomatic diseases was still not settled.

Nevertheless, it is generally accepted that the outstanding personality trait in peptic ulcer is a preoccupation with security, especially economic, occupational and financial (Halliday, 1948). In an investigation into 200 peptic ulcer patients and a comparable control series of 100 hernia cases, Davies and Wilson (1937) found this basic personality trait to be common to peptic ulcer patients and found precipitating factors in a significantly higher proportion than in the hernias to be such as threatened security - financial difficulties, changes at work, illness of a breadwinner. Sexual problems and domestic troubles were conspicuous by their absence. Similar precipitating factors were found with relapses. Rosenbaum (1954) in a previous investigation, found that ulcer symptoms were precipitated in patients when the supporting figure failed them.

There is, therefore, evidence IN PEPTIC ULCER OF A SPECIFIC INTER-RELATIONSHIP BETWEEN A PERSONALITY TRAIT WHOSE PREOCCUPATION IS WITH MATERIAL SECURITY AND PRECIPITATING FACTORS WHICH THREATEN THIS SECURITY.

#### Specificity in Rheumatoid Arthritis.

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The outstanding common personality trait in rheumatoid arthritis has been described by several authors, among them Halliday (1942), Johnstone, Shephard and Alexander (1948) and Ludwig (1954), as a masochistic need to serve. The ARTHRITIS TENDS TO RECUR WHEN THE OPPORTUNITY FOR MASOCHISTIC SERVICE IS DENIED AND SUBSIDES WHEN SELF SACRIFICE IS AGAIN DEMANDED BY FAMILY CONDITIONS

(Johnstone/

(Johnstone et al and Ludwig). Precipitating events denying masochistic service can obviously refer to almost any life situation. Thus all the authors found a wide diversity of life situations, e.g., Halliday found anxiety over finance, misbehaviour of relatives, fears of loss of a love-object, frustration at being jilted, paranoid resentment against superiors; Johnstone, Shephard and Alexander found birth of a child, miscarriage, bereavement, changes in occupation, changes in marital situation or sex relationship, disappointment in an interpersonal relationship; and Ludwig found death of the mother followed by threat of the father to remarry, separation from husband by his entry into military service, separation from family during World War II, emotional rejection by husband, entrance to College, marriage to an unstable demanding spouse, disillusionment in a suitor following a long engagement.

These life situations superficially do not appear to have anything in common; they have been noted in a variety of psychosomatic affections and a few in my own investigations among tuberculosis patients. But interpreted in terms of the outstanding personality trait, this significance becomes apparent; the break with the spouse is not a broken love link, it is a denial of the masochistic need to serve; and similarly with the others. The strong interaction between the personality trait and the precipitating life situation is thus well illustrated here.

#### Specificity in Chronic Non-Specific Ulcerative Colitis.

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Mushatt (1954) has reviewed the literature on personality traits and precipitating factors in this disease. The general opinion appears to be that the outstanding feature is more in the nature of a psychosis and takes the form of/

of pathological grief or sorrow. Ruptured human relationships were found to be the most frequent precipitating factor, e.g., loss of a meaningful person by death, separation, rejection or disillusionment, loss of part of one's body, changes in status, failure at examination, i.e., 'bereavement' in its widest sense. The author's experience with 8 cases confirmed these findings. He did not, however, consider their personality structure nor their vulnerability to ruptured human relationship to be specific for ulcerative colitis and thought they occurred, among other conditions, in asthma, rheumatoid arthritis and peptic ulcer. The specific inter-relationship of personality trait and precipitating factors in these conditions has already been discussed. It appears to me that if the life situations are interpreted in terms of the outstanding personality feature - pathological grief - they can be seen to be factors which would aggravate the basic grief. Similar life situations may precipitate a variety of psychosomatic and related diseases and by themselves are not specific, but acting on the particular personality trait of a particular psychosomatic affection the combination assumes a specific character. Thus IN ULCERATIVE COLITIS IT IS SUGGESTED THAT ANY FACTORS WHICH ACTIVATES THIS BASIC PATHOLOGICAL GRIEF PATTERN MAY PRECIPITATE ULCERATIVE COLITIS.

#### Specificity in Other Psychosomatic Diseases.

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It is not intended to review all the psychosomatic diseases but brief reference will be made to four others:-

##### Hyperthyroidism:

Lidz (1954) has pointed out that an outstanding feature of these patients is/



is a tendency to form a mother-love relationship, usually with a younger sibling, as a protection against fear of isolation; i.e., fear of isolation is an outstanding trait. ANY THREAT POINTING TO ISOLATION MAY PRECIPITATE THE CONDITION; so that a common predisposing factor is a threat against or from the sibling or other person with whom the bond exists.

Migraine:

Weiss and English (1943) have pointed out that the sufferer from migraine is usually a highly intelligent, forceful person with unusual ambition. SITUATIONS WHICH FRUSTRATE THE AMBITION ARE LIKELY TO PRECIPITATE AN ATTACK. (This is paralleled in hypertension - a disease characterised by constriction of blood vessels - like migraine).

Coronary Artery Disease:

Dunbar (1943), and quoted by Halliday (1948), says that the main personality trait is the need to try to attain or maintain a role of authority or being on top. Unremitting work in an attempt to achieve this is the chief preoccupation. FEAR OF FAILURE OR THREAT OF FAILURE IN THIS OBJECT MAY, THEREFORE, BE THE PRECIPITATING FACTOR.

Diabetes Mellitus:

Not much work has been done on the psychosomatic aspects of this disease, but Lidz (1954), in reviewing the small literature available, indicated that the most prominent personality trait is related to a need for affection and attention. No careful studies of the incidence of emotional factors preceding diabetes have been carried out, but of those which have been mentioned most relate to disruption of the home, especially in children, or which awaken the feeling of being deserted and homeless. There are factors there not unlike those noted in tuberculosis.

In all these cases the interplay of precipitating factors on personality traits is shown.

#### CONCLUSIONS ON SPECIFICITY.

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THESE FINDINGS SUPPORT THE VIEW THAT IN MANY PSYCHOSOMATIC DISEASES AND RELATED DISEASES, SUCH AS PULMONARY TUBERCULOSIS, THERE IS A SPECIFICITY OR INTERPLAY BETWEEN PERSONALITY TRAIT AND PRECIPITATING FACTORS FOR EACH AFFECTION. The psychological trauma appears to create a physical matrix favouring the development of the disease not only in pulmonary tuberculosis but in many psychosomatic affections.

It is not suggested that particular precipitating factors are specific for each affection, but it is not surprising that certain life situations do occur more frequently in particular affections. For example, where there is an inordinate need for affection, as in tuberculosis, it is not surprising that broken romance or broken engagement is common; where there is a need for material security, as in peptic ulcer, it is easy to see why financial instability is a common precursor. Many life situations, however, are common to various psychosomatic or psychosomatic-like disorders. A broken engagement or marriage may be simply a broken love link or may be the removal of a figure representing material security or removal of a mother substitute, or the means of frustrating ambition, etc., according to the outstanding personality trait. Halliday (1948) has shown that a feature of the psychosomatic affections is that the same person can at different times take a variety of psychosomatic illnesses. The same person must, therefore, contain various personality traits if this theory of specificity is correct. The one which predominates will depend on a number of factors/

factors, the chief of which are inherent and environmental. The successful physical treatment of one psychosomatic illness thus may well leave open the door to another.

So we can find a specific simplicity underlying the apparent complexity of life situations in any one psychosomatic disorder and see why they are common to the diversity of psychosomatic disorders.

It is appropriate at this point to refer to my criticism of Wittkower's method of interpreting life situations in terms of his reaction patterns. As has already been emphasised, his various reaction patterns are common to other psychosomatic affections, e.g., peptic ulcer. A particular life situation common to two or more affections in a particular reaction type (e.g., Rebellious or Self-drivers), also common to other affections, would evoke, if one follows Wittkower's method, the same disease. There is no reason why they should not evoke the same disease - unless the outstanding personality trait is considered to be of major importance in the interplay with the precipitating factors.

PSYCHOSOMATIC ASPECTS OF PULMONARY TUBERCULOSIS.

Halliday (1948) in his concept of a psychosomatic affection laid down a seven-point formula of distinguishing features common to most of the psychosomatic affections. These have generally been accepted as the criteria for placing an illness in this category. They are summarised as follows:-

1. In a high proportion of cases an emotionally upsetting event precedes the illness or its recurrence.
2. Particular personality types tend to be associated with each particular affection.
3. In most of these disorders there is a marked disproportion in sex incidence.
4. Different psychosomatic affections tend to alternate with one another or, less frequently, appear simultaneously in the same individual.
5. A history of the same or allied disorders occurs in a high proportion of close relatives.
6. The course of the illness tends to be phasic with periods of crudescence, intermission and recurrence.
7. The prevalence is related to psychological and social changes in the communal environment.

He excludes pulmonary tuberculosis from the list of psychosomatic affections for three reasons. Firstly, the presence of the tubercle bacillus is essential in the development of the disease. Secondly, in contrast to the psychosomatic affections, the incidence of pulmonary tuberculosis declined between the/

the two world wars. Lastly, it shows only partial compliance with the seven articles of the psychosomatic formulation, e.g., there has never been any marked disproportion in the sex incidence; a positive family history, though frequently obtained, is at least partly attributable to the increased liability to infection. Nevertheless, he points out that the psychosomatic approach provides information of etiological importance in many of the chronic illnesses including tuberculosis.

It is proposed to examine pulmonary tuberculosis more closely in the light of Halliday's concept.

The necessary presence of the organism is acknowledged. Emotion as a precipitating factor and personality types have been discussed and their importance stressed. They must be accepted as fulfilling the requirements of a psychosomatic disorder.

#### Sex Incidence:

In general, there is a slightly higher incidence of tuberculosis in females compared with males in those under 35. For those over 35 the incidence is higher in males. In total there is little appreciable difference. (Report of the Scottish Health Services Council's Committee on Tuberculosis, 1951).

Halliday points out that disproportion in sex incidence, although a feature of most psychosomatic affections, is not necessarily constant for each disorder at all times, because of alterations in the sex incidence. In this connection, it is apt to point out that in this country as well as in America there is a change from the situation fifty and more years ago when the victims were mainly claimed from females, aged 15 to 30, the chief sufferers now being males over 45 (N.Y. State Department of Health, 1953: Annual Report: Division of Tuberculosis). Others have also pointed out the change in age incidence of maximum frequency at onset from young females (15-30); to older males (over 45) (Pagel, Simmond and Macdonald (1953), Keers and Rigden (1953) in contrast to the psychosomatic/

psychosomatic affections.

### Associated Affections:

Since my Investigations were at first exploratory, particular attention was not given to the incidence of psychosomatic affections either among the tuberculosis patients or controls. That other psychosomatic diseases do occur in the tuberculous is shown by Pagel, Simmond and Macdonald who mention bronchial asthma, bronchitis, hyperthyroidism and heart disease. There is no evidence that these are more common in tuberculosis patients than in the general population. There is evidence, however, that in patients with DIABETES MELLITUS there is a greater incidence of tuberculosis than among the general population (Keers and Rigden; Pagel, Simmond and Macdonald).

In a follow up of the results of partial gastrectomy for PEPTIC ULCER, Anderson, Gunn and Watt (1955) found definite evidence of an increased liability to tuberculosis. They found an incidence of 16 out of 481 (3.3%), of whom 8 had died of tuberculosis, and believe this to be definite evidence of an increased liability to tuberculosis in such patients. Pagel, Simmond and Macdonald point out that peptic ulcer rarely occurs during the tuberculosis patients stay in sanatorium.

Halliday believes that alternation substitution or sequence of psychosomatic affections is more usual than their simultaneous occurrence, and mentions the grouping of asthma, eczema, migraine and enuresis. From the literature referred to above, it would appear that tuberculosis and diabetes and tuberculosis and peptic ulcer tend to be grouped together.

Certainly, tuberculosis has associated psychosomatic affections.

### Family History:

The well-known increased incidence of tuberculosis in family contacts is/

is attributed at least in part to the greater liability to infection, though it is also thought there may be an inherent tendency. The anxiety and worry in other members of a family where tuberculosis occurs has been referred to by Rosenbluth and Bowlby (1955) and it may be that the enforced separation entailed, or threat of death, or actual death of a member of the family may act as precipitating factors in these contacts, or may help shape their personality to susceptibility by deprivation of affection in childhood.

#### Phasic Manifestations:

It is recognised that tuberculosis is a disease liable to crudescence, intermission and recurrence.

#### Psychological and Social Changes in the Communal Environment in Relation to Prevalence:

This is a very broad subject and it is proposed to deal only with some aspects which are concerned with the subject of this thesis:-

##### (i) Effect of War on Tuberculosis.

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In all countries at war there is an increased incidence of tuberculosis. This was shown in the two world wars of this century. In some countries (e.g., Scotland) the incidence continued to rise for some years after the war since when there has been a slow decline. Because of the fact that the mortality declined while the incidence rose during the Second World War years both in England and Wales, though not in Scotland, and in the United States, it has been thought by some that the increased incidence was artificial rather than real and was due to improved and earlier diagnosis. The more rapid decline in mortality was probably due to improved treatment methods which during the years 1930-40 showed considerable steps forward in collapse measures and surgery, so that despite the mortality figures/

figures the incidence, as shown by notification, did represent a true rise (Gilmour (1952) also Report of the Scottish Health Service Council's Committee on Tuberculosis (1951)).

Records show that the prevalence of pulmonary tuberculosis has been diminishing since the middle of the last Century, interrupted this Century only by the two World Wars. During the years of depression (1930-36) the incidence continued to drop in Scotland despite the fact that Scotland was a 'distressed area' (Report of the Scottish Health Service Council's Committee on Tuberculosis). Unemployment was rife and money short. Food, especially the more expensive first-class protein, was in short supply. Housing conditions then were no better than during the war, especially among the lower classes, and overcrowding was common. Yet the incidence of pulmonary tuberculosis continued to fall. The increased incidence of tuberculosis in war time is generally blamed on - (a) malnutrition, especially in relation to protein and fat; (b) the black-out, increased war time travel and overcrowding favouring the spread of infection; (Report of the Scottish Health Service Council's Committee on Tuberculosis (1951); and (c) fatigue due to long working hours lowering the resistance. Yet most of these factors were present in the years of depression; indeed, it is probable that malnutrition then was much more severe in the years of depression than during the war when rationing and good wages ensued fair shares. If fatigue were a major cause one would expect a greater incidence among the older age groups, which was not the case; the increased trend in the over 45 males had been evident for a long time previously. It must be admitted that black-out conditions and increased war time travel in public vehicles would increase the spread of infection, but there is no evidence, if one compares the war years with the years of depression, that the factors commonly blamed for lowering resistance - malnutrition and fatigue - were, in fact, the major causes.

If one compares the psychological factors which were present in the years/



years of depression with those present in the war years there is a striking difference. The years 1930-36 were years of communal frustration and material insecurity but there was no particular threat to personal or family relationships. The war years also showed communal frustration and insecurity but the threat to personal and family relationships was as great as could be. There were the separations and break-up of families enforced by War Service, either at home or abroad; there was the fear of bereavement of loved ones; there were the hastily contracted and unhappy marriages, as evidenced in part by the high divorce rate which followed; there were the broken engagements and romances caused by war time opportunities and separations. Always separations or breaks or serious threat of break in love bonds, common to the whole nation. When one remembers that the children who suffered deprivation of affection by similar conditions in the First World War were in the 20-25 age groups at the start of the Second World War, the increased liability to tuberculosis is obvious. Indeed, it is probable that if the improvement in the anti-tuberculosis services and in treatment had not been appreciable, the effects of tuberculosis might have been much greater during the Second World War. As it was, some of the countries where break-up of community and family life was greatest showed the greatest rise, e.g., in Greece and in Poland. In Warsaw the incidence was said to have increased from 154 (per 100,000) pre-war to 500 in 1944. In the Netherlands the rise in 1944 over the pre-war figure was 70% (in Amsterdam 150%). Denmark and Norway were the only occupied countries not to show a rise and this has been ascribed to their being able to maintain good anti-tuberculosis services and an adequate protein and fat diet. It is also true to say that being occupied early in the war and quickly, mass disruption of the communal life was at a minimum.

It is, therefore, seen that in war time the incidence of emotional factors predisposing to tuberculosis is at a peak as are the factors favouring spread of infection, compared with peace time. Those with the characteristic personality/

personality trait will, therefore, be vulnerable. One must also ponder whether the severity of the war time emotional traumata acting on the average individual with the ordinary basic need for affection which is present in everybody, might be sufficient to penetrate the threshold of his tolerance. In other words, can an exceptionally severe trauma acting on an ordinary need for affection also leave the door open to tuberculosis in the same way as, for instance, an extremely virulent strain of tubercle bacillus acting on a patient with average natural resistance.

(ii) Tuberculosis and Race.

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It is well known that primitive peoples who have never met the tubercle bacillus develop a rapidly fatal form of the disease when they do. White races opening up new territories introduce the bacillus. In the course of time those races are said to develop some immunity. The American Indian is the outstanding example of such a primitive people and, though they are said to be developing some racial immunity, their mortality in Canada in 1945 was 665 per 100,000 compared with 41 for the rest of the country (Wherrett, 1947). Likewise, the Maoris of New Zealand in 1945 had a mortality rate 250 per 100,000 against 34 in Europeans (Taylor, 1947). The American Negro, living side by side with the white man, has a mortality rate varying from three to five times as high as among the white population (Cobbett, 1924, - quoted by Pagel, etc.,). In British Guiana the majority of inhabitants were brought as slaves from Africa and remained free from tuberculosis until brought in contact on his emancipation with the European, since when the disease has been rife (Gilmour).

There is no doubt that the primitive peoples have no resistance and are especially vulnerable to the tubercle bacillus. But in all these races the advent of/

of the white man has either caused disruption of his home or the native has been removed from his home. In all cases there has been disruption of the home with the inevitable break in the natural love bonds. The disruption happens at the same time as the organism is introduced so that the door to tuberculosis is left wide open and nationally these races become especially vulnerable. Although living side by side with the whites, these coloured people are only tolerated, their homes are not their own; with the passage of time it has been noted that they tend to develop some immunity, just as with the passage of time they tend to adapt to the changed circumstances.

Halliday (1948) refers to a survey by Donnison of the incidence of psychosomatic affections for Africa and Asia which shows that such diseases as peptic ulcer, hypertension, exophthalmic goitre and diabetes began to appear in the primitive races as their social system became disrupted by the dominance of the white man. Primitive peoples, Halliday explains, have different social systems from modern peoples. When the white settlers (the colonists, the traders, the missionaries and industrialists) invaded the territories of the primitive peoples the social patterns of these peoples were disrupted leading to 'social disequilibrium' and eventually, by further weakening of the psychological bonds of their social pattern, to 'social disintegration' so that the genetic stock of the affected communities tended to become extinct, as happened with the aborigines of Australia and the Red Indians of North America. With the onset of social disintegration psychosomatic affections must certainly have appeared. Halliday stresses the fact that, according to ontogenetic theory, the social bonds are derivatives of the interpersonal bonds which begin to appear in the third phase of infancy "when the double-stranded drive to be actively noticed and approved as a person and to take possession of or give love to another person provides the basis for the formation of affectionate personal relations". Thus it is seen how the disruption of the social systems of these primitive peoples resulted basically/

basically in a disruption of the love bonds. The love bond within the family can be paralleled by the bonds of a community to its own native land.

The JEWISH RACE is said to have a high resistance to tuberculosis.

When one considers that the Jews as a race are dispersed all over the world, this at first sight seems contradictory to the theory of racial susceptibility I have put forward. The Jews, however, have a very strong family life and a very strong communal life. When the Jews migrated from Central Europe to this country they did so for the most part in family units and groups of people from the same place tended to migrate together. Further, wherever they settled they formed their own community in which all later settlers joined. And in each city of each country to which they went a link was maintained. A strong, closely-knit family life is a basic feature of Jewish traditions. Indeed, the Jewish culture has not greatly altered since earliest days and remains alive with each dispersed community, integrated though they are with the peoples among whom they live. Thus the tendency for a break of the love bond either in individuals or as a race is minimal.

### (iii) Tuberculosis and Migration.

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If the break in a love bond is a precipitating factor in tuberculosis then one would expect a higher incidence of tuberculosis among nations from which emigration is greatest. If one considers Great Britain and Ireland, the following facts emerge. Ireland is the country from which emigration, especially to the United States, but also to Scotland and England, is greatest and is also the country in which the incidence of tuberculosis is greatest (1939 - Eire 113; Northern Ireland 84). Scotland comes next in order of emigration and in 1939 had a rate of 70. England and Wales are lowest as exporters of population and in/

in 1939 the incidence was 62. Thus the rate of emigration is in inverse proportion to the incidence of the disease.

It might at first sight be thought that countries which accept large numbers of immigrants would be liable to a high tuberculosis rate since they are accepting people who are breaking their links with the home country. It is, therefore, worth examining the rates of some of the countries to which people from the United Kingdom and Ireland emigrate and compare them with the incidence in the parent country. The figures quoted are mortality rates for 1939 and are abstracted from Pagel, Simmond and Macdonald (1953):-

United States	.....	47 (per 100,000).
Canada	.....	53 "
New Zealand	.....	60 "
Australia	.....	40 "
South Africa	.....	40.4 (in 1935; 1939 figure not given but was probably much lower).

The corresponding figures for the home countries have already been shown to be 70, 113, 84 and 62 for Scotland, Eire, Northern Ireland and England and Wales respectively. The main immigrants are from the United Kingdom and Ireland although the United States absorbs many Europeans. The rates of the country accepting immigrants are appreciably lower than the home countries. The reason for this is partly that people emigrate in families (but even so love bonds are broken) but chiefly because the type of person who emigrates is generally the type to whom the break in a love bond does not mean so much. In the main, he goes voluntarily either to better himself or to satisfy a pioneering spirit or a spirit of adventure. In other words, the personality traits of the voluntary emigrant do not as a rule include an inordinate need for affection.

In the United States there is a variety of nationalities among the white population/

population living side by side. It is worth examining the tuberculosis rates for these different nationalities. These too are abstracted from Pagel, Simmond and Macdonald (quoted from Drolet, 1935). The figures given are for 1931 and the Table shows the incidence for each nationality in America compared with the corresponding figure for their home country:-

	Incidence in U.S.	Incidence in Country of Origin.
Italy	69	112
Scandinavia	90	125
England	63	89.8
Ireland	140	130

Only the Irish in the United States show a higher incidence than at home. One reason for this is probably due to the fact that as a race the Irish have a strong bond for their home country and only leave it for economic reasons. This is well illustrated in the nostalgia for the home country expressed in so many Irish songs. At that time there was certainly a great deal of poverty in Ireland and those who emigrated did not do so in the pioneering or adventurous spirit so much as for economic reasons. So that many were in the position of being forced to leave their own country.

In Scotland there is a high incidence in the West Highlands where work for the young person is not easy to find and many leave their homes for the cities. Not only is the incidence high in the West Highlands but those who migrate to the cities also show a high incidence of disease. The migration from these areas is mostly for economic reasons and the increased incidence both among those at home and those who leave home is similar to and apparently have the same causes as the Irish in the United States.

(iv) Tuberculosis Among Displaced Persons.

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The problem of the displaced person is similar to the problem of the emigrant except that the displaced person has left his country of origin unwillingly either during the War or as the result of the changes in their countries brought about by the War. If the theories I have been describing are correct, one would expect a higher incidence of tuberculosis among these people than among corresponding groups of people in the region in which they have settled. Posner (1951) examined the incidence of pulmonary tuberculosis in 1950 in two compact communities of male foreign agricultural and industrial workers and compared them with British male factory workers in the same region. One of the two communities was composed of Poles and the other of Latvians. It was found that the incidence among Poles was three to four times greater and the incidence among the Latvians more than ten times greater, than among the corresponding factory groups of British workers. Comparison between the rates for displaced Poles in this country and in Polish Displaced Persons' Camps in Germany showed approximately similar figures. Comparison with factory workers in Poland showed a much higher incidence in the latter, though the figures were not really comparable as the figures for Poland were immediate post-war when the effects of ravages of occupation and War were still near the peak. Figures from Latvia were not available. These figures can be better appreciated by the following comparison. In 1930-31 the incidence of tuberculosis among Poles (VOLUNTARY emigrants) in America was 46 compared with an incidence of 63 among English emigrants in the United States (from Pagel, etc.). In 1950 the incidence of tuberculosis among Poles (Displaced Persons - INVOLUNTARY SETTLERS) in England was about 220 compared with 40-50 among the comparable English workers. Thus Poles who had left their country unwillingly living in England in 1950 had three or four times the incidence of corresponding Englishmen. Poles who had left their country voluntarily living in America in 1930 showed an incidence of about 20% less than English/

English immigrants. Posner pointed out that some of the displaced persons must have had lesions when they entered this country though this does not invalidate the gross disparity.

These figures which have been given are derived from various sources and some are approximate. They are not given as scientific proof. They are given to show that the trend among displaced persons is what one might expect if one takes into account the influence of emotional factors involving the break or threatened break in a strong love bond.

The disruption of the basic love bonds inhibits the vital drives, removes the raison d'être, leads to listlessness, lethargy and apathy, whether in an individual or a community. Tuberculosis too exhibits these symptoms; tuberculosis too follows the break of a love bond - has not the seed then found the right soil?

#### (v) Tuberculosis in Mental Hospitals.

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In view of the general high incidence of tuberculosis in mental hospitals throughout the world, it is appropriate to discuss this as a psychosocial problem.

The high incidence of tuberculosis among the insane has been variously described as being due to increased opportunity for infection by prolonged hospitalisation and to a common inherent etiological factor between tuberculosis and insanity, as described in the Review of the Literature. Certainly, it is agreed that there is a high incidence of tuberculosis among the insane and, as Grigg has shown in his extensive review of the literature, especially among the schizophrenics. As has been mentioned, Morland (1952) considers that increased opportunity for infection might account for an incidence two or three times greater than the general population but doubts if it is sufficient to explain a mortality seven or eight times greater. He thinks the STATE OF MIND of the mental patient plays an important part in lowering resistance to tuberculosis. Hendeles (1952) and/



and Grigg (1955) are among others who believe that increased infection opportunity is only part of the answer.

If one applies to the insane the principle of etiology established in this thesis, Morland's views are given strong support. It is not simply that mental patients, being segregated in hospital for prolonged periods, are thus exposed to the trauma of separation from loved ones and that those with an inordinate need for affection will suffer most; though certainly this will play a part. It is mainly due to the STATE OF MIND brought on by the disease. Thus in schizophrenia the keynote of the condition is general emotional apathy, characterised by loss of natural affection - a general loss of emotional reaction. The disease itself by destroying or causing the loss of natural affection causes the BREAK IN A LOVE LINK and so leaves the door open to tuberculosis, especially when the spread of infection is facilitated by overcrowding.

THE MECHANISM OF  
EMOTIONAL FACTORS  
CAUSING TUBERCULOSIS.  
The Psycho-physiological Pathway.

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THE MECHANISM OF EMOTIONAL FACTORS  
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By what means does organic disease result from emotionally upsetting events.

Rhinencephalon and Autonomic Nervous System.

The generally accepted view is that psychosomatic disorders result from imbalance between the sympathetic and parasympathetic components of the autonomic nervous system resulting in such factors as overactivity of the unstriated muscle fibre of the viscera, the ducts and the blood vessels and in disturbances of the secretory glands. Halliday points out that there are also probably immunological and haematological effects. There is a close inter-relationship not only in origin but also anatomically and physiologically between the autonomic nervous system and the endocrine glands, changes in one being reflected in changes in the other. The endocrine glands and autonomic nervous system are controlled by the hypothalamus via the pituitary (Cleghorn, 1954). MacLean (1954) has described the importance of the rhinencephalon or 'visceral brain' situated deep in the temporal lobe and which has close association with the neopallium and the hypothalamus. Cleghorn sums up MacLean's description of the function of the 'visceral brain' thus - "it equilibrates external and internal perceptions, dominates affective behaviour, integrates emotional states and unconscious affective drives, in fact determines whether or not impulses shall be inhibited or released into the hypothalamus." The temporal lobe, therefore, is the area of the brain essential for psychosomatic affections, the area which links the emotions via the hypothalamus and pituitary to the/

the autonomic nervous system and endocrine glands and leads to organic disease.

General Adaptation Syndrome (G.A.S.) of Selye.

By his experiments on rats, Selye (1950, 1953 and 1954) has shown that severe stressors acting on a body produces a generalised adaptation syndrome with enlargement of the adrenal cortex, involution of the lymphatic organs, eosinopenia and diminished ability to respond to topical irritation with inflammation, that is to say, there is an increase in the antiphlogistine hormones, A.C.T.H., and the glucocorticoids, (cortisone), as opposed to proinflammatory hormones, S.T.H., and desoxycorticosterone, (mineralocorticoids). Mild stresses can also evoke the manifestations of glucocorticoid excess (diminished inflammatory response) by causing increased tissue sensitivity to the corticoids. Selye (1954) considers that chronic malnutrition, emotional stimuli and most mild stressors act through this 'anti-inflammatory corticoid conditioning' effect. If the stress is unduly prolonged response is said to become exhausted, lesions appear and are attributed to abnormalities in the adaptation process.

Selye (1950) includes pulmonary tuberculosis in the 'diseases of adaptation' and considers the effect of the stress to be interference with the response of the host in the formation of the encapsulating fibrous tissue.

Pagel, Simmond and Macdonald state that cortisone appears to lower resistance to tuberculosis in humans, e.g., during treatment for rheumatism isolated cases have been reported who have developed progressive tuberculosis. Similarly in experimental animals, tuberculous lesions have shown extension and increased activity during cortisone therapy.

Cleghorn (1954) cites two principal objections to Selye's 'Theory in its application to man'. The first is that D.C.A. (desoxycorticosterone acetate), the injection of which has produced the diseases of adaptation in the rat, is not a secretory/

secretory product of the adrenal cortex in man or animal. The second is that it is difficult to understand just how the hormones (the glucocorticoids) which are the response to stress causes the lesions characteristic of the disease.

There is, therefore, still a great deal to be explained before Selye's Theory can be fully accepted, but it appears to provide a basis for some understanding of the physiological aspects of many of the psychosomatic and related diseases including tuberculosis.

These aspects of the mechanism of emotion do not explain why any particular disease develops as the result of certain emotional traumata, or even why particular organs are involved. Whatever the psycho-physiological pathway may be, the reason for a particular affection resulting from particular emotional traumata in predisposed people will need investigation on a much deeper plane, including psychoanalytical and physiological methods, if ever it will be elicited.

THE PSYCHOSOMATIC  
APPROACH TO THE  
MANAGEMENT  
OF TUBERCULOSIS.



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The relative merits of the efficacy of various methods of treatment - whether by bed rest alone or combined with chemotherapy, collapse measures, or surgical measures - is not under discussion here. It is, however, necessary to examine how the findings of these Investigations can be used as an adjunct to the management of tuberculosis.

Assessment of Patient:

It is clearly necessary that a careful psychological assessment of each patient be made on diagnosis. The taking of a personal history in itself is beneficial to many patients, not only by allowing them, as Halliday (1938) says, 'to get it off their chest', but also in helping to re-orientate themselves to their illness. It is also possible to help solve some of the obvious problems elicited from them which have precipitated their illness, e.g., the arranging of alternative accommodation where in-law trouble has threatened a marriage, or advice on the careful handling of romance or engagement complicated by religious differences. Indeed, Marriage Guidance may well be a potent help in the prevention of relapse as well as in the treatment of the disease, if it can re-establish a shaky marriage.

It is also important that the reaction patterns of the patients be known and taken into account not only in treatment but also in rehabilitation. For this purpose Wittkower's classification of reaction patterns, previously described, forms a sound basis and their importance in treatment, after-care and rehabilitation has already been described in the Review of the Literature.

### Assessment of Contacts:

Education of the patient's family to the illness is just as important as educating the patient. Many patients face difficulties on returning home due to the attitude to the disease, based on ignorance, of some members of the family. The home environment must be put right, not only in the physical aspects of avoiding overcrowding and promoting good physical hygiene, but in the promotion of good mental hygiene. A happy home environment is certainly of benefit to the patient.

Rosenbluth and Bowlby (1955) have drawn attention to the psychological problems which beset a household in which tuberculosis is diagnosed, and of the necessity for many of these people to be able to discuss their problems with someone who understands them.

It is, therefore, very necessary that the Health Visitor should be aware of the importance of psychological factors and be able to apply that knowledge to the handling of the family background.

Contacts are normally kept under routine radiological observation every 3, 6, 9 or 12 months, according to a number of factors, the object being to detect a developing lesion as early as possible. If, however, a psychological assessment of each contact was made and, if necessary, appropriate psychotherapy applied, it should be possible to prevent disease developing at least in a proportion of cases.

It is, therefore, just as important to assess each contact psychologically as it is to assess each patient. And it is equally important to assess the family as a whole psychologically.

### Method of Treatment:

Where it is found that a patient requires psychological treatment, this treatment must be carried out in addition to the orthodox physical methods of treatment of tuberculosis. Psychological treatment is an adjuvant.

Glover (1954) in discussing the treatment of psychosomatic affections by psychoanalysis, considers that if a patient with psychosomatic disease also has neurotic/



neurotic or psychotic symptom formations or sexual or social inhibitions or perversions then psychoanalysis is indicated. For the most part, however, he thinks that psychosomatic cases are best dealt with by short-term exploratory and abreactive methods which he considers should be based on psychoanalytical principles.

Margolin (1954) describes what he calls 'superficial psychotherapy' which he defines as "a commonsense approach consisting of kindness, tolerance, indulgence, allaying of anxiety by any available trial-and-error means, demonstrative friendliness and reassurance, deliberate omniscient and omnipotent behaviour in the doctor for the purpose of enhancing the patient's confidence, total somatic care in terms of nutrition, medication, hygiene and agreeable environment. The deliberate induction of insight into unconscious mental process in the patient is not attempted." This is the common method used in the U.S., for psychotherapy in psychosomatic patients and he maintains there are many reports of its efficacy. The success of the method, he points out, is a reflection of the personality of the physician. As an advance on this, he describes a form of psychotherapy which he calls 'anaclitic therapy' with a psychoanalytical basis, the term being used to designate the 'transference behaviour" which repeats certain conditions of the infants relationship with its mother.

Whatever the method of treatment, it is obvious that a greater understanding and knowledge of psychological principles is necessary in the Chest Physician for the complete treatment of his patient. A case of tuberculosis needs to be considered and treated not only as a patient but as a person.

#### The Place of the Sanatorium in Treatment:

For many years now the sanatorium has been regarded as the optimum place for treatment of tuberculous patients. Treatment in sanatorium, however, involves two important breaks in the family of a patient - (1) it separates the patient from his family; and (2) it separates the family from the patient, especially children from/

from a parent.

The danger to a patient by deprivation of affection in childhood caused by prolonged temporary or permanent separation from a parent, has been shown in the results of the Third Investigation.

The danger to a patient in aggravating his inordinate need for affection by removing him from his loved ones, is also obvious from the results of the First and Second Investigations.

The danger to other members of the family whose personality (by heredity) has a good chance of being characterised by an inordinate need for affection, is also increased by the separation.

It is, therefore, necessary to re-orientate our views on the necessity for sanatorium treatment. Recently, Stradling (1955) has investigated the results of sanatorium treatment compared with domiciliary treatment followed up after five years and concluded that sanatorium treatment had no more beneficial effect on the clinical course of tuberculosis than management at home by adequate clinic organisation. Forgacs (1955) has shown too that short-term treatment - patients only being admitted for active treatment for up to three months - is no less effective than prolonged stay in sanatorium. My own figures taken from Table XII (page 49) comparing the relapses in those treated in sanatorium and those at home show for -

Group 1 (Bed rest only)	- Relapses in Domiciliary Treated Patients	- 12/24 (50%).
	Relapses in Sanatorium Treated Patients	- 21/31 (67.7%).
Group 2 (Bed rest & chemotherapy)	- Relapses in Domiciliary Treated Patients	- 4/15 (26.7%).
	Relapses in Sanatorium Treated Patients	- 7/33 (21.2%).

Adding/

Adding the two groups together we find -

In Domiciliary Treated Patients a Relapse Rate of 16 out of 39 (41%).

In Sanatorium Treated Patients a Relapse Rate of 28 out of 64 (43.8%).

There is, therefore, no significant difference in the two groups. The patients in the domiciliary treated group were kept at home mainly because of shortage of beds.

Thus, so far as ultimate relapse is concerned, there is no real difference between the result of treatment at home or in hospital.

Sanatorium treatment is definitely indicated if -

- (1) There is overcrowding, or
- (2) The psychological background is unsatisfactory for home treatment;
- (3) Special treatment methods are necessary, e.g., collapse therapy or major surgery;

and possibly in certain other patients.

In the absence of these, due consideration must be given to the relative dangers of - (1) Infection at home, especially of children, and (2) Early or late psychological trauma, especially of children; and the needs for sanatorium treatment weighed carefully in the light of these factors.

It must be emphasised that an increase in domiciliary treatment and based on a Chest Clinic, as implied here, would necessitate a vast increase in the Chest Clinic staff and it would be most desirable that Health Visitors and Chest Physicians be given some guidance on a proper psychological outlook.

In other words, there would have to be re-orientation on the proper place of sanatorium treatment for tuberculosis and re-orientation in the organisation functions and staffing of the Chest Service in the light of the altered circumstances.

Likewise/

Likewise, the wisdom of segregating infants and children from parents for the purpose of B.C.G. vaccination must be seriously questioned. It has been my practice in the past three years to vaccinate in many cases without such segregation and there have so far been no cases of tuberculosis among those vaccinated.



SYNOPSIS.

No investigation using controls has hitherto been carried out into emotional factors preceding the onset or relapse of cases of pulmonary tuberculosis. Only one investigation, using controls, into premorbid tuberculous personality type has been carried out and the results of this were negative.

In the series of three Investigations described, control cases were used and all the results subjected to statistical testing. The material, methods and conditions of the Investigations are described in detail. These show the care that has been taken to ensure unbiased results. All the cases, tuberculosis and controls, were unselected.

The total number of cases included in the First Investigation - into Emotional Factors preceding Onset - is 198. Of these 64 were subsequently diagnosed as suffering from pulmonary tuberculosis. The remaining 134 controls included 46 who had no abnormality and 14 who had psychosomatic affections.

The number of cases included in the Second Investigation - into Emotional Factors preceding Relapse - is 194, of whom 73 had relapsed. The other 121 were used as controls. In addition, there were 20 'chronics', described in the Appendix.

69 patients are included in the Third Investigation and 24 of these were subsequently found to have pulmonary tuberculosis, the remainder being the controls. The findings of this Investigation are used to corroborate the findings of the First Investigation. An unselected 45 of these patients are used in a modified investigation into personality trait, 20 subsequently proving to be tuberculous and the remaining 25 acting as controls.

The RESULTS of all the Investigations are summarised as follows:-

1. Emotional factors precede the onset of cases of tuberculosis in a significantly higher proportion as compared with controls. For the First Investigation the figures are 64.1% and 26.9% respectively, and for the Third Investigation 70.8% and 24.4% respectively. For the Second Investigation the comparable incidence preceding ONSET for all the tuberculosis cases is 60.8%
2. The emotional factor characteristically preceding the onset in cases of tuberculosis as compared with controls is Break in a Love Link, and its occurrence is statistically significant. The figures for tuberculosis cases and controls (including psychosomatic cases) respectively in the First Investigation are 57.8% and 22.0%, and in the Third Investigation 70.8% and 24.4%. In the Second Investigation the comparable figure preceding ONSET for all tuberculosis cases is 57.2%
3. Of the Breaks in a Love Link, the outstanding type is a Break or Threatened Break in a Romance, Engagement or Marriage. The figures for tuberculosis cases and controls respectively in the First Investigation are 32.8% and 6.7% of all cases - the difference being statistically significant, and in the Third Investigation 29.2% and 15.6% - the figures being not quite significant statistically but showing the same trend. In the Second Investigation the comparable incidence preceding the onset is 33.5%.
4. Patients over 35 with an emotional factor preceding onset - especially a Break in a Love Link - appear to have a poorer prognosis than those under 35.
5. The outstanding personality trait, common to all the tuberculosis cases, is

an/

an 'inordinate need for affection'. The high incidence in tuberculosis cases compared with controls, 100% and 16% respectively, is statistically significant.

6. Deprivation of Affection in Childhood occurs significantly more often in tuberculosis cases compared with controls - 60% and 16% respectively, the difference being of statistical significance.

7. The incidence of emotional factors preceding the ONSET was significantly higher in those who subsequently relapsed compared with those who did not - 68.5% and 56.2% respectively; Break in a Love Link occurring in 64.4% and 52.9% respectively - not quite significant statistically but of the same trend.

8. The incidence of emotional factors occurring after recovery from the initial lesion was significantly higher in those who relapsed when compared with those who did not relapse - 75.3% and 11.6% respectively. This was specially so for females and specially so for those under 35.

9. The type of emotional factor preceding relapse was again characteristically Break in a Love Link, occurring significantly often in 68.5% of those who relapsed and only in 11.6% of those who did not. Break or Threatened Break in a Romance, etc., also occurred significantly often in those who relapsed - 50.7% compared with 4.9% of those who did not relapse.

10. A contact history had no special relationship with the incidence of emotional factors in any of the three Investigations.

11. The extent of the initial lesion had no significant relationship with the incidence of emotional factors preceding the onset in all the Investigations nor preceding/



preceding relapse in the Second Investigation. But when the incidence of emotional factors after recovery for those who subsequently relapsed and those who did not was compared with the extent of the initial lesion, there was an obvious downward trend from the smaller to larger lesion groups.

12. The use of chemotherapy has significantly reduced the incidence of relapses. But when relapses do occur in those treated with chemotherapy, the incidence is significantly higher in those with emotional factors. There appears to be a tendency for relapses to occur later in those treated with chemotherapy and, when this happens, the incidence of emotional factors is again found to be significantly high.

The LITERATURE concerning psychological factors preceding the onset and relapse of tuberculosis is reviewed and attention drawn to the absence of controlled investigations. Particular attention is paid to the work of Wittkower whose contributions to the subject are greater than most. Criticism of his work is mainly directed against his lack of controls and his interpretation of life situations in terms of reaction patterns instead of the personality trait - the 'inordinate need for affection' - which he found in his patients and which is confirmed in the controlled Investigations of this series.

Pulmonary tuberculosis is examined as a PSYCHOSOMATIC DISEASE in the light of Halliday's sevenfold criteria. Halliday excluded it from the list of psychosomatic affections mainly because it is caused by a specific organism. Nevertheless, it has most of the characteristic features of these affections as is shown by a consideration of these criteria, based on the three Investigations:-

- 1. Emotional/

1. Emotional factors are shown to precede the onset in a high proportion of cases.
2. The outstanding personality trait is shown to be an 'inordinate need for affection'.

The inter-relationship and interplay between the preceding emotional factors and the personality trait is stressed, and the theory advanced that this is specific, psychologically, to tuberculosis. A comparable interplay between the preceding life situation and personality trait is shown to occur in many other psychosomatic affections, and the theory advanced that THE INTERPLAY BETWEEN LIFE SITUATION AND PERSONALITY TRAIT IS SPECIFIC FOR EACH AFFECTION.

3. There is no marked disproportion in sex incidence in cases of pulmonary tuberculosis.
4. Pulmonary tuberculosis is shown to have two ASSOCIATED PSYCHOSOMATIC AFFECTIONS with which it tends to alternate or less often coincide - DIABETES MELLITUS and PEPTIC ULCER.
5. The high family incidence of pulmonary tuberculosis is well known, though this is usually attributed to greater facility for infection.
6. The disease is recognised to be PHASIC.
7. Its prevalence is related to changes in the communal environment considered psychologically and socially. Some of these PSYCHOSOCIAL ASPECTS are specially considered.-

(a) WAR:

The incidence of emotional factors predisposing to tuberculosis is shown to be at a peak in wartime, as are factors favouring the spread of infection. These are put forward as being responsible for the high wartime rate of tuberculosis.

(b) RACE/

(b) RACE:

When primitive peoples have first met infection introduced by the white man, it has been accompanied by DISRUPTION OF THEIR SOCIAL SYSTEM with consequent BREAK IN THE LOVE BONDS. This, it is pointed out, is a factor contributing to the poor resistance these primitive races show.

(c) MIGRATION:

INVOLUNTARY MIGRATION, that is to say, migration for economic reasons, as distinct from VOLUNTARY MIGRATION or migration in the pioneering or adventurous spirit, is more likely to increase the incidence of tuberculosis in a nation or part of a nation, because of the BROKEN LOVE LINKS which accompany the separation. Voluntary emigrants are unlikely to be derived from those with an 'inordinate need for affection'.

That is to say, INVOLUNTARY MIGRATION affects both those who go and those who remain. VOLUNTARY MIGRATION affects only those who remain.

(d) DISPLACED PERSONS:

These are really INVOLUNTARY EMIGRANTS, and attention is drawn to the higher incidence of tuberculosis among them than was the case before the War in corresponding groups of VOLUNTARY EMIGRANTS.

(e) MENTAL HOSPITALS:

The high incidence in Mental Hospitals, which occurs mostly among schizophrenics, is shown to be due in the main to the NATURE OF THE MENTAL DISEASE, which by DESTROYING, OR CAUSING THE LOSS OF, NATURAL AFFECTION, causes the BREAK IN THE LOVE LINK predisposing to tuberculosis.

The PSYCHO-PHYSIOLOGICAL PATHWAY is shown from the literature to extend from the rhinencephalon or 'visceral brain' in the temporal lobe via the hypothalamus and/

and pituitary, to the autonomic nervous system, imbalance of which results in psychosomatic disorder. The possible application of Selye's General Adaptation Syndrome to the mechanism of psychosomatic illness is also discussed.

The MANAGEMENT of tuberculosis from the PSYCHOSOMATIC VIEWPOINT is discussed. It is stressed that any psychological treatment which may be thought to be necessary should be additional to the ordinary appropriate orthodox treatment. The importance of psychological assessment of the patient and his family is stressed. Some possible methods of psychological treatment are mentioned - short term exploratory abreactive methods, 'superficial psychotherapy' and 'anaclitic therapy' with a psychoanalytical basis.

The place of the sanatorium in treatment is discussed and attention drawn to the Breaks in Love Links both to the patient and his family - especially children - caused by removal of a patient from his home. Since in many cases home treatment may be as effective as sanatorium treatment, the dangers of infection to others must be carefully weighed against the dangers of psychological trauma to the patient or other members of the family - unless there are definite indications for sanatorium treatment. The chief indications for sanatorium are - (i) Special treatment (e.g., surgery or collapse) necessitating admission; (ii) Poor home conditions; (iii) Unfavourable psychological background.

Likewise, the wisdom of segregation for the purposes of B.C.G. vaccination is questioned.

A P P E N D I X.

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APPENDIX.FIRST INVESTIGATION.

1. Total number of Patients - 198: Tuberculosis 64; Controls 134.

2. Age Group at DIAGNOSIS:

AGE GROUP.	TUBERCULOSIS.			CONTROLS.		
	Males	Females	Total	Males	Females	Total
15-25	7	15	22	5	11	16
26-35	8	17	25	20	11	31
36-45	5	-	5	15	6	21
Over 45	9	3	12	60	6	66
Total	29	35	64	100	34	134

3. Marital State on DIAGNOSIS:

Tuberculosis: 28 single (11 males and 17 females);  
36 married (18 males and 18 females).

Controls: 26 single (14 males and 12 females);  
108 married (86 males and 22 females).

4. Occupations/

4. Occupations at DIAGNOSIS:

OCCUPATION.	TUBERCULOSIS.	CONTROLS.
Skilled or semi-skilled workers	14	22
Unskilled workers	18	28
Miners	3	36
Domestic (including housewives)	18	20
Police	-	1
Business	1	3
Clerical	4	10
Student	2	2
Professional or Supervisory	4	12
Services	-	-
Unemployed or Retired	-	-

APPENDIX.SECOND INVESTIGATION.

1. Total number of Patients: Relapses 73; Non-Relapses 121; Total 194.

2. Age Group at ONSET:

AGE GROUP.	RELAPSES.			NON-RELAPSES.		
	Males	Females	Total	Males	Females	Total
15-25	15	33	48	25	45	70
26-35	7	11	18	13	18	31
36-45	1	4	5	9	5	14
Over 45	2	-	2	3	3	6
Total	25	48	73	50	71	121

3. Marital State at ONSET:

Relapses: 42 single (14 males and 28 females);  
31 married (11 males and 20 females).

Non-Relapses: 71 single (31 males and 40 females);  
50 married (19 males and 31 females).

4. Age/



4. Age Group at RELAPSE:

AGE GROUP	MALE	FEMALE	TOTAL
15-25	12	24	36
26-35	7	15	22
36-45	3	9	12
Over 45	3	0	3
Total	25	48	73

5. Marital State at RELAPSE:

38 single (14 males and 24 females); 35 married (11 males and 24 females).

6. Occupations at ONSET and RELAPSE:

OCCUPATION	RELAPSE		NON-RELAPSE
	At Onset	At Relapse	
Skilled or semi-skilled workers	13	10	29
Unskilled workers	19	15	33
Miners	1	-	2
Domestic (including housewives)	17	27	30
Police	1	1	1
Business	-	-	2
Clerical	5	9	11
Student	7	1	7
Professional or Supervisory	5	2	2
Services	5	-	3
Unemployed or Retired	-	8	1

7. 'FURTHER' RELAPSES: Age Group at Further Relapse.

AGE GROUP	MALE	FEMALE	TOTAL
15-25	2	2	4
26-35	3	5	8
36-45	1	2	3
Over 45	-	1	1
Total	6	10	16

8. Marital State at FURTHER RELAPSE:

7 single (3 males and 4 females); 9 married (3 males and 6 females).

APPENDIX.CHRONIC GROUP.  

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During the investigation of the relapses, 20 patients were found in whom the disease continued chronic after all appropriate treatment had been applied, i.e., cavitation had persisted and the prospect of complete recovery was remote. They had been originally diagnosed from 4 to 14 years previously. As all were attending the clinics they were, for the most part, fairly good chronics. Bad chronics were either under treatment at home or still in hospital, so the group is not representative of all chronics. For the sake of completeness, details of their emotional situations are summarised. In view of the small numbers they have not been broken up as have the other groups.

There were 12 males and 8 females.

Extent of Disease at Onset:

Group I - 1; Group II - 4; Group III - 14.

Emotional Factors at Onset:

12 (60%) had emotional factors preceding onset, similar to other groups. Of these 7 were males and 5 females. Of the males 4 were in the 15-25 age group, 1 in the 36-45 age group and 2 over 45. Of the females 2 were in the 15-25 age group, 2 in the 26-35 group and 1 over 45. 5 males and 3 females were unmarried; 7 males and 5 females were married.

Chronic/

CHRONIC GROUP - TABLE A.

TYPE OF EMOTIONAL FACTOR	MALES	FEMALES	TOTAL
1. Broken Romance, Marriage, etc.,	5	3	8
2. Break with family due to Marriage	-	1	1
3. Break with family other than Marriage cause	1	-	1
4. Enforced Separation	-	1	1
5. Bereavement	-	-	-
6. Illness with threat to Life	-	-	-
7. Unfulfilled desire for Family	-	-	-
8. Sexual Worries	-	-	-
9. Work Worries	1	-	1
10. Religious Worries	-	-	-
11. Financial Worries	-	-	-
Total with Emotional Factors	7 (58.3%)	5 (62.5%)	12 (60%)
Total with no Emotional Factors	5 (41.7%)	3 (37.5%)	8 (40%)
Grand Total	12	8	20

It will be seen (Chronic Group - Table A) that 6 out of 12 males (50%) had an emotional factor in the Broken Love Link group preceding onset and, of this, 5 out of 12 (41.7%) were in Category 1 (Broken Romance). 5 out of 8 females (62.5%) had a Broken Love Link, 3 of these (37.5%) being in Category 1. Altogether there were 11 out of 20 patients (55%) with a Broken Love Link, and 8 out of 20 (40%) were in Category 1.

All these figures show a similar pattern to the corresponding figures in the/

the major Investigations.

10 (50%) were over 35 at onset and of these 4 (40%) had emotional factors and 6 (60%) none. This difference is not statistically significant.

CONTINUING OR NEW EMOTIONAL FACTORS.

CHRONIC GROUP - TABLE B.

TYPE OF EMOTIONAL FACTOR	MALES	FEMALES	TOTAL
1. Broken Romance, Engagement or Marriage	2	1	3
2. Break with family due to Marriage	1	-	1
3. Break with family other causes	1	-	1
4. Enforced Separation	-	-	-
5. Bereavement	1	1	2
6. Illness with threat to Life	-	1	1
7. Unfulfilled desire for family	-	-	-
8. Sexual Worries	-	-	-
9. Work Worries	-	-	-
10. Religious Worries	-	-	-
11. Financial Worries	1	-	1
12. Unwanted: No family ties	1	-	1
Total with Emotional Factors	7	3	10
Total with no Emotional Factors	5	5	10
Grand Total	12	8	20

6 of the 12 males (50%) had a Break in a Love Link, of which 2 (16.7%) were in Category 1.

3 of the 8 females (37.5%) had a Break in a Love Link, of which 1 (12.5%) were in Category 1, i.e., a total of 9 out of 20 (45%) had a Break in a Love Link,

of/

of which 3 (15%) were in Category 1.

The numbers are too small for statistical assessment.

The percentage of patients with Continuing Emotional Factors (50%) is less than the percentage before relapse (75%) and the difference is statistically significant. Emotional Factors do not appear to be so potent a cause of chronicity as of relapse. 75% of the patients had advanced or moderately advanced disease at diagnosis and it is likely that the nature of the disease in these cases rendered them unsuitable for radical treatment and predisposed to chronicity. Indeed, it is quite possible that the absence of significant emotional factors in half of them was responsible for them being good rather than bad chronics or even for their survival.

APPENDIX.

## THIRD INVESTIGATION.

1. Total number of Patients - 69: Tuberculosis 24; Controls 45.

2. Age Group at DIAGNOSIS:

AGE GROUP	TUBERCULOSIS			CONTROLS		
	Males	Females	Total	Males	Females	Total
15-25	3 (2)	10 (9)	13 (11)	4 (3)	10 (7)	14 (10)
26-35	2 (2)	2 (2)	4 (4)	2 (1)	8 (5)	10 (6)
36-45	1 (1)	3 (3)	4 (4)	4 (2)	3 (2)	7 (4)
Over 45	1 (0)	2 (1)	3 (1)	12 (4)	2 (1)	14 (5)
Total	7 (5)	17 (15)	24 (20)	22 (10)	23 (15)	45 (25)

Figures in parenthesis are the numbers given personality study.

3. Marital State at DIAGNOSIS:

Tuberculosis: 14 single ( 3 males and 11 females);  
10 married ( 4 males and 6 females).

Controls: 15 single ( 5 males and 10 females);  
30 married (17 males and 13 females).

4. Occupation/

4. Occupation at DIAGNOSIS:

OCCUPATION	TUBERCULOSIS	CONTROLS
Skilled or semi-skilled workers	6	8
Unskilled workers	7	10
Miners	1	5
Domestic (including housewives)	7	15
Police	-	-
Business	-	1
Clerical	2	5
Student	-	-
Professional or Supervisory	-	1
Services	1	-
Unemployed or Retired	-	-



ACKNOWLEDGMENT.

I regret that owing to a misunderstanding my Thesis as originally bound did not include an acknowledgment of my deep indebtedness to Dr. Peter McKinlay, Chief Medical Statistician to the Department of Health for Scotland, who encouraged me to continue my investigations by reason of my early figures and who scrutinised my statistical work.

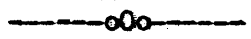
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