

PHYSIOLOGICAL INSTABILITY IN CHILDREN.*

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I AM indebted to you for giving me this opportunity to put before you certain tentative conclusions at which I have arrived as a result of working at the problem of physiological instability on a group of 525 children between the ages of 6 and 14. Like so many investigations of this type, it began on a presumption that was not borne out by further experience, and because of this it caused me to revise certain views I held on the subject.

I started the work believing that there was a well-defined group of physiologically unstable children who could be distinguished from physiologically stable children and regarded as a particular constitutional type. At the time I believed these children approximated to the Kretschmerian schizoids. After I had used a stereotyped procedure, including recording body measurements in this and two other investigations over a period of three years, I abandoned this hypothesis in favour of the point of view now put forward by Sheldon. It is possible to pick out certain individuals and to regard them as examples of an extreme physical type, or as having a high level of physical stability or instability. There is no well-defined group, however, which can be regarded as containing a definite clinical entity. In fact, if a sufficient number of individuals are assessed in respect of any characteristic or collection of characteristics, when the results are plotted and examined it is unlikely that any special groupings will be revealed.

I propose to begin by describing the background of the work, then to give you an account of the stages by which it developed and the reasons why I was compelled to abandon the original theory and, finally, to discuss certain of the tentative conclusions at which I have arrived and the bearings they appear to have on certain problems of psychiatry.

The work began when I was engaged in neurological hospital practice. I was conducting the physical examination of children attending the West End Hospital's Child Guidance Unit. I was impressed by the close association between mental ill-health and physical debility, particularly in children and in later adult life. Many of the children I examined appeared to belong to the so-called allergic diathesis, and it seemed to me at that time a statistically significant group of them were Kretschmerian schizoids. At the time in question certain of my colleagues were seeking to establish as a clinical entity the pre-schizoid child, and the fact that many of these children appeared to belong to this group acted as an incentive to take my inquiries further.

These observations naturally awakened my interest in the diagnosis of schizophrenia, and in the differential diagnosis between neurosis and psychosis.

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I discussed the problem with a number of psychiatrists. At that time most of them took the view that neurosis and psychosis were two distinct disease entities. Nevertheless, whereas they described a number of symptoms of which they made a differential diagnosis, they were unable to give a simple differential pathology.

I was well aware that a neurologist was able to make his diagnosis at the post-mortem if at no other time. The psychiatrist, I discovered, by virtue of the nature of the diseases under his observation, could not confirm or refute his diagnosis even after death, and he was frequently committed to changing the label he applied to his patients during the time in which they remained under his observation.

In 1935 the London County Council offered me the direction of one of the five nutrition centres they were opening in the School Medical Service as a result of Sir John Boyd Orr's statements about the state of nutrition of the English population. They were established to ascertain whether or not this alleged state of sub-nutrition did in fact exist among a representative section of the London school-children.

The clinics were given a second function. Experience had shown that many children below the average standard of health, when referred by the school doctor to the hospital pediatrician, were referred back to them as free from disease. These children were also sent to the clinics to discover whether or not they were suffering from a state of sub-nutrition and, if not, to be investigated with a view to discovering the cause of their debility.

It will be seen that from the nature of the inquiry the children referred were not an unselected group from the community. This fact from the standpoint of my investigation had both its advantages and its disadvantages. The group cannot be used to establish any norm for the general population. Any deduction made from it, therefore, can only be regarded as applying to the limited group selected in this particular manner. Nevertheless, the method of selection brought to the clinic a large number of children suffering from the particular conditions in which I was interested. It presented these conditions more frequently and therefore more clearly than at the routine examination of children in schools, or for that matter in the examination of a group of sick children attending a hospital outpatients.

Before opening the clinics a conference was held between certain of the County's medical administrators and the five physicians who had been appointed to take charge of them and a standardized form of inquiry was drawn up. Arrangements were made to place at the disposal of the physicians facilities for pathological investigations and for the hospitalization and convalescence of the children. The physicians were also granted other facilities through which the diet of the children could be supplemented, if necessary substantially altered, and the living conditions changed. In fact, as experience later revealed, it was possible through these many facilities, when necessary, to alter the course of a child's life quite materially.

In 1935 little or no work of this type had been done either in England or abroad. Therefore it was not possible to borrow and use a ready-made technique. I personally began by using almost unmodified the form that had

been devised before the clinics opened. By the end of 1936, however, I standardized a procedure and used it in respect of every child referred to the clinic

In this way a record was kept in the case of each child of the presence or absence of the characteristics in which I was interested. Some details of the procedure are given on sheet 1. It divides itself roughly under five headings :

- (a) Details as indicated on the nutrition centre forms.
- (b) History with dates and a note as to degree of severity of specific illnesses and operations, with special reference to bronchitis, recurrent bronchitis, rheumatism and the acute exanthemata.
- (c) History of the manifestations of physical and psychological instability.
- (d) Routine medical examination of the child.
- (e) Standardized body measurements.

SHEET 1.

STANDARDIZATION PROCEDURE ADOPTED IN 1936.

History.

- (a) Details as indicated by nutrition centre forms. (Copies to be circulated.)
- (b) History with dates and note as to degree of severity of specific illnesses and operations, with special reference to bronchitis, recurrent bronchitis, rheumatism and the acute exanthemata.
- (c) History of the manifestations of physical and psychological instability, including bilious attacks, tram/train sickness, headaches, migraine, asthma, heat bumps, urticaria, eczema, colonic spasm, lenteric diarrhoea, angio-neurotic oedema, chilblains, Raynaud's syndrome, Milroy's syndrome, epilepsy, fainting, enuresis (nocturnal, diurnal), incontinence, nail-biting, nightmares, sleep-walking, tics, blepharitis, dermatitis.

Examination.

- (d) Routine medical examination of each child, including an assessment of such body responses as dilatation of pupils, dermatographia, erythema, blushing, urticaria, habit spasms and nervous movements, cold or hot extremities, perspiration, chilblains, nail biting, neuro-cardiac instability, dermatitis, blepharitis.
- (e) Standardized body measurements including height and weight ; circumference of head, neck and chest, expiration, inspiration, abdomen, pelvis, palm and calf ; length of hand and leg.

Various factors led me to take a history of this type. Children whom I had seen during the year fell roughly into three groups :

- (a) children who came from poor homes in which they received inadequate care, an inadequate diet and little or no attention ;
- (b) children who had had a severe acute or chronic debilitating illness and had never been adequately convalesced ; and
- (c) children who showed marked physical or psychological instability, or both.

This third group, which included at least a third of the children referred to the clinic, were similar in constitution to those I had particularly noticed at the West End Hospital Child Guidance Clinic.

At the time when I adopted this procedure I still believed that the pre-

tubercular, pre-rheumatic child and the pre-schizoid child were one and the same person, and I was hoping to collect evidence to establish this as a mind-body diathesis with its foundations in the inheritance.

By 1938 I had used this method of investigation in two other inquiries as well as at this clinic and I had examined over 600 children ; and it began to dawn on me that the hypothesis from which I had started—that there was a clinical entity, “the unstable child”—was, in fact, not valid. This made it necessary for me to evaluate the work in a different way to that I had anticipated. The problem became a more complex one, and I felt the need to extend the range of my investigations.

In 1938 I added to the standardized procedure a teacher's estimate of the temperamental characteristics of each child seen at the clinic. The teacher was asked to express his opinions freely about the child, and at the same time to underline one or other of a list of opposite characteristics, whenever he was of the opinion that one of them applied to the child in question. In this way I hoped to get some information about various emotional factors which appeared to me to be related to the physiological instabilities.

In 1939 the London County Council granted me the assistance of a bio-chemist and the facilities of his laboratory, and I was planning to try and discover whether or not, by the careful selection of cases of extreme instability and extreme stability, it would be possible to bring to light underlying biochemical differences. At the same time I made arrangements to take clinical photographs and cinematographic pictures. The work had to be abandoned, however, on account of the war. I mention these potential developments in that they would all appear to be essential when work along these lines is repeated in a more highly systematized manner.

The stage of development of this work will only allow me to place before you certain tentative conclusions. Many of these can be seen through sheets 3 and 4 of the folders that have been distributed.

SHEETS 3 AND 4.

STATISTICAL ANALYSIS OF CERTAIN RESULTS.

Sheet 3 (boys) and 4 (girls) contain a statistical analysis of certain results :

Column A contains A₁, incidence of each characteristic in total group of children, and A₂, the percentage incidence of certain characteristics in the total group.

In the following columns the frequency is given of each characteristic in the group of children who have one of the specified characteristics :

Under B₁ is given the frequency with which the various characteristics turn up in those children for whom there was a history of periodic vomiting. Under B₂ is given the percentage incidence of certain characteristics to the total number of children suffering from periodic vomiting. Under B₃ is given the percentage incidence of such characteristics among the remaining group of children after excluding those suffering from periodic vomiting.

Under C₁, 2, 3 dermatographia is dealt with in this manner.

Under D₁, 2, 3 severe examples of dermatographia are dealt with.

Under E₁, 2, 3 cases of recurrent bronchitis and pulmonary catarrh (cases in which the so-called allergic factor would appear to be dominant).

Under F₁, 2, 3 cases of colonic spasm.

Under G₁, 2, 3 cases of nocturnal enuresis.

Under H₁, 2, 3 habit spasms and nail biting.

SHEET 3.—Boys.

	Total group. A.207.	Periodic vomiting. B.79.	Dermatograpia. C.26.	Severe dermatograpia. D.41.	Recurrent bronchitis. E.49.	Colonic spasms. F.31.	Nocturnal enuresis. G.48.	Habit spasms. H.55.
Constipation	14	8	8	..	4	3	7	5
Headaches	36	30	25	12	15	14	9	15
Tram sickness	47	27	33	10	14	8	7	16
Periodic vomiting	79	..	58	19	30	24	21	29
Chilblains	28	18	17	7	6	8	11	11
Heat bumps	52	27	39	14	21	12	11	17
Lienteric diarrhoea	8	6	7	2	4	7	2	3
Colonic spasms	31	24	24	7	13	..	10	13
Fainting	11	8	10	6	2	3	2	3
Bed-wetting	48	21	33	11	14	10	..	12
Migraine :								
Definite	6	6	6	4	1	3	2	3
Doubtful	3	3	2	0	2	1	1	2
Bronchitis :								
(1) In infancy	44	20	31	7	..	6	11	12
(2) Recurrent	49	30	39	13	..	13	13	20
(3) Total	93	50	70	20	..	19	24	32
Pulmonary catarrh	33	22	28	8	..	9	10	13
Asthma	7	7	5	2	6	2	1	4
Blepharitis	14	1	8	2	2	1	3	5
Dermatitis	21	7	11	2	5	5	8	3
Nail-biting	46	23	36	11	16	10	7	..
Habit spasms	14	5	12	5	4	3	5	..
Dilatation pupils :								
Slight	65	27	43	17	20	16	13	21
Severe	23	13	15	5	5	5	6	6
Blushing :								
Slight	42	16	27	10	9	8	9	16
Severe	7	2	4	2	3	1	3	5
Dermatograpia :								
Slight	85	39	..	..	26	17	22	30
Severe	41	19	..	..	13	7	11	14
Erythema :								
Slight	35	4	27	6	5	5	11	8
Severe	59	27	48	22	17	8	21	20
Neuro-cardiac :								
Slight	39	15	30	12	15	6	10	14
Severe	10	9	0	4	0	2	3	3
Kyphosis	8	2	6	1	0	1	2	3
Scoliosis	8	2	6	3	1	0	1	3
Rachitic deformity chest :								
Slight	96	51	68	20	30	16	26	31
Severe	18	7	13	7	3	3	2	3
Total	114	58	72	44	33	64	52	61

SHEET 4.—Girls.

	Total group. A. 204.	Periodic vomiting. B. 60.	Dermatographia. C. 130.	Severe dermatographia. D. 32.	Recurrent bronchitis. E. 26.	Colonic spasms. F. 28.	Nocturnal enuresis. G. 48.	Habit spasms. H. 68.
Constipation	29	14	15	9	4	6	6	10
Headaches	31	15	14	7	5	5	7	12
Tram sickness	74	36	36	19	12	14	19	27
Periodic vomiting	60	29	43	10	11	13	19	20
Chilblains	36	18	12	8	1	7	7	13
Heat bumps	48	16	31	8	8	11	11	20
Lienteric diarrhoea	6	3	5	0	3	3	2	4
Colonic spasms	28	14	13	6	6	4	8	11
Fainting	15	8	13	3	1	4	3	6
Bed-wetting	48	23	18	7	7	8	3	18
Migraine :	3	2	3	1	1	1	1	1
Definite	3	1	3	1	0	1	0	0
Doubtful	68	16	42	10	4	13	12	24
Bronchitis :	23	10	13	2	2	4	7	10
(1) In infancy	91	26	55	12	11	17	19	34
(2) Recurrent	14	7	5	3	2	3	2	10
(3) Total	7	5	12	3	1	3	1	4
Pulmonary catarrh	15	5	5	0	2	3	1	5
Asthma	19	8	9	1	5	3	6	5
Blepharitis	59	29	14	10	8	8	19	5
Dermatitis	12	5	7	1	3	4	4	5
Nail-biting	76	29	54	10	10	6	19	27
Habit spasms	20	7	15	9	4	6	5	7
Dilatation pupils :	42	12	30	10	5	7	7	18
Slight	9	2	10	9	4	2	4	5
Severe	94	35	59	1	10	12	19	32
Blushing :	32	12	20	3	5	7	7	11
Slight	52	13	36	14	6	2	14	15
Severe	35	16	36	15	6	9	11	14
Dermatographia :	43	10	30	13	5	7	10	22
Slight	7	2	5	1	3	2	4	1
Severe	20	4	13	4	2	2	5	6
Erythema :	23	8	18	13	4	3	4	4
Slight	82	35	48	18	12	7	14	25
Severe	11	12	8	1	1	1	5	3
Neuro-cardiac :	93	46	56	43	13	28	44	48
Slight	20	4	13	4	2	2	5	6
Severe	23	8	18	13	4	3	4	4
Rachitic deformity chest :	8	3	5	3	2	3	4	4
Slight	82	35	48	18	12	7	14	25
Severe	11	12	8	1	1	1	5	3
Total	93	46	56	43	13	28	44	48

1. The children referred to the clinics showed an unexpectedly high incidence of a number of instabilities. Over 30 per cent. had periodic vomiting; about 15 per cent. gave a history of recurrent attacks of colonic spasm. Nearly 25 per cent. gave definite evidence of neuro-cardiac instability. In spite of the fact that all the children were under the age of 14, 9 gave a definite history of migraine, and 6 others a strongly suggestive history. Fourteen gave a history of asthma.

The group also showed a high incidence of recurrent bronchitis, and in many of these there was little doubt but that a so-called allergic factor played an important part in the recurring attacks. Over 18 per cent. had recurrent bronchitis, and in about two-thirds of these cases the allergic factor appeared to be important.

Thirdly, deformities of the chest which are usually regarded as rachitic (although I do not know any evidence to establish whether or not these deformities develop in the first years of life or throughout childhood) were severely present in over 14 per cent., and occurred in 55 per cent. of the cases.

From this it would seem that if doctors are asked to select cases of sub-nutrition or debility from among the school population, they automatically include a large percentage of those suffering from (a) physiological instabilities, (b) minor recurrent infections, and (c) deficiency diseases.

Then again 23 per cent. of the cases gave a history of bed-wetting, 25 per cent. evidence of nail-biting and about 6 per cent. of habit spasms. These facts, together with the previous ones, suggest that a high percentage of these children would find their way to the Child Guidance Units if the opportunity presented itself. In fact, at the present time the function of these two clinics overlaps, and there would appear to be an urgent need for them to function under the same roof and in close association.

It is interesting to notice two differences between the sexes, although it would be incorrect at this juncture to draw any deductions from them. The number of girls suffering from constipation is precisely double the number of boys.

Secondly, whereas throughout the list of instabilities there is either equality between the sexes or a slightly higher incidence among the boys, in the case of bronchitis the figure for one or two attacks of bronchitis in infancy is much higher for girls than boys, yet the figure for recurrent attacks throughout childhood is much higher in boys than girls; and with these cases the allergic factor, as estimated clinically, would appear to be of greater importance in boys than girls.

2. I have regarded it as premature to work out the correlation between the incidence of these various instabilities in particular children. I have, however, worked out the percentage incidence of many of these instabilities in the group of children suffering from periodic vomiting, and the percentage incidence of these instabilities in the remaining group of children. On sheets 3 and 4, in the centre column under B, the percentage incidence of the various instabilities in the cases of periodic vomiting is given, and in the third column the incidence of these characteristics in the remaining group of children.

You will notice that differences such as 30 per cent. in the group who had periodic vomiting (group B) suffered from headaches, as against 10 per cent. in the remaining group; 34 per cent. have tram sickness as against 17 per cent.; 30 per cent. have colonic spasm as against 10 per cent.; 10 per cent. were subject to fainting as against 2.3 per cent. All the cases of doubtful and clinically definite migraine and all the cases of asthma suffered from periodic vomiting. In all these cases there would appear to be a positive correlation between periodic vomiting, on the one hand, and these various instabilities on the other. This group of instabilities appears to be significantly related in the case of girls, although, as throughout these investigations, the relationship between instabilities and between instability and physical type is more apparent in the group of boys than the group of girls. This has also been noticed by Sheldon.

The percentage incidence of severe dermatographia and severe erythema is slightly higher in the group who suffer from periodic vomiting than in the remainder of the children; if there is a positive correlation, however, it is not a high one. These observations confirm the inter-relationship I have repeatedly observed clinically between periodic vomiting, train sickness, colonic spasm, fainting, migraine and asthma. On the other hand, they suggest that those children subject to severe blushing and other severe vaso-motor skin changes belong to a different body constitution, in which the association with ketosis would appear to be almost a matter of chance. Clinically, therefore, there are at least two independent groups of instabilities in children.

Of equal interest is the relationship between periodic vomiting and recurrent bronchitis—38 per cent. of the children who had periodic vomiting as against 13 per cent. in the remainder—and between periodic vomiting and chest deformities of the so-called rachitic type. In recurrent bronchitis there is a definite infective factor that is now known to clear up with penicillin inhalations. This observation, however, strongly suggests that the chances of successful invasion of the bronchi depend to a considerable extent upon constitutional and metabolic factors, and through these, in the second place, upon emotional factors.

A similar change of perspective is necessary in relationship to rickets. Whereas it has been customary to regard this condition as due to a vitamin deficiency together with a failure of the calcium-phosphorus balance, this investigation supports the point of view that it can be partly attributed to constitutional factors and is related to periodic vomiting. When a community is placed on a diet which is barely adequate in its mineral and vitamin content, this constitutional factor will determine which of the children will develop obvious deformities. In fact it would indirectly suggest that the constitutional factor responsible for periodic vomiting, migraine, asthma and recurrent bronchitis can be influenced by a change of diet—a matter clearly born out by clinical experience.

This became so apparent that I have come to regard constitution, diet, mild chronic infections and emotional factors as closely inter-related factors in the production of many clinical pictures. For this reason the treatments we have used are drastic changes of diet, convalescence of up to and more than

one year, when necessary a change of school, or even the rehousing of the family. We also changed the methods by which the children were handled by re-education in the clinic, and through the work of a team of trained and voluntary social workers in collaboration with the teachers. The results of this work have shown the extent to which diet and behaviour patterns might well be classed among the hereditary factors in the sense that they are handed down from one generation to the next almost unmodified. Tradition can develop a permanence that rivals the permanence of the other products of human ingenuity such as houses and monuments.

3. The third question to which I would like to direct your attention is how these instabilities are distributed among this group of children, and the relationship between this distribution and the physical type of the child. The instabilities distribute themselves in a remarkably even manner. This is to be seen from sheets 3 and 4 in the Tables. I think I was in error in including bed-wetting in the vertical scale. The method of scoring I have used is somewhat arbitrary, but until a method based upon biochemistry or some other more exact measure is available it would seem the only starting-point through which to approach the problem. Tables I, II and III all suggest that the instabilities that have been recorded and scored do not group themselves, but spread themselves evenly between the two extremes of a high level of instability and its complete absence. There is, in fact, no such person as the unstable child, except as an abstraction. Every child, however, has his own particular instabilities or physical Gestalt, which can only be properly examined through a battery of investigations not dissimilar to those used by Eysenck in investigating personality.

There is a demonstrable relationship in the case of these boys between a high level of instability and the ectomorph of Sheldon. This was brought to light by a graph on which each boy was plotted twice, once in respect of his height and weight, and a second time in respect of the length of leg and the circumference of the chest. The boys whose instability score was severe, that is to say 4 or more on the vertical scale, distributed themselves towards the side of the graph that placed them among the thin children. The length and direction of the lines joining the two points which were plotted also show that they tend to be proportionately long in the leg. There is only a tendency, however, for children of this build to be unstable, and for unstable children to group themselves in this way; many of them do not conform to this finding, and in particular it was difficult to show the relationship between instability and physical type in girls. Clinically there would appear to be a clinically unstable group of girls among the endomorphs which have complicated the graph quite seriously. A great deal of further work requires to be done if these relationships are to be seen clearly.

When I attempt to evaluate this work I find starred out in my mind one child in whom there appeared to be an aggregation of misfortune—a tall, thin girl with periodic vomiting, later migraine, colonic spasms with intermittent diarrhoea. Her diet was deficient in minerals and vitamins and grossly excessive in starches, her home was overcrowded and dirty, with inadequate sleeping accommodation. The result was a child, in bed each

TABLES I, II AND III.

Estimated frequency with which physiological instabilities have turned up in individual children.

Tables I (Boys) and II (Girls).—

<i>Horizontal Scale.</i>		Scoring method.	
Clinical evidence of—		Severe.	Slight.
1. Blushing	. . . . .	2	I
2. Dilatation pupils	. . . . .	2	I
3. Dermatographia	. . . . .	2	I
4. Erythema	. . . . .	2	I
5. Neuro-cardiac instability	. . . . .	2	I

<i>Vertical Scale.</i>		Score.
History of—		
1. Headaches	. . . . .	I
2. Tram sickness	. . . . .	I
3. Periodic vomiting	. . . . .	I
4. Chilblains	. . . . .	I
5. Heat bumps	. . . . .	I
6. Lienteric diarrhoea	. . . . .	I
7. Colonic spasm	. . . . .	I
8. Fainting.	. . . . .	I
9. Bed-wetting	. . . . .	I
10. Asthma	. . . . .	I
11. Recurrent bronchitis	. . . . .	I

TABLE I.—Boys.

	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Total.
0	17	11	13	2	7	4	1	..	I	..	..	56
1	12	9	6	10	4	3	2	..	..	..	..	46
2	3	8	3	6	9	6	5	2	..	..	..	42
3	3	6	3	3	3	3	..	2	I	..	..	24
4	I	3	3	3	4	3	2	I	..	..	..	20
5 . . . . .	..	2	I	3	..	3	..	I	..	..	..	10
6 . . . . .	..	..	3	2	I	..	I	I	..	..	..	8
7 . . . . .	..	I	..	..	..	..	I	..	..	..	..	2
Total	36	40	32	29	28	22	12	7	2	..	..	208

TABLE II.—Girls.

	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Total.
0	9	15	8	7	4	I	..	..	..	..	I	45
1	9	8	6	16	3	4	2	I	..	..	..	49
2	6	7	12	6	8	2	4	2	..	..	..	47
3	4	2	5	11	5	2	..	I	I	2	..	33
4	I	4	3	2	7	2	I	..	I	..	I	22
5	I	3	..	..	..	I	..	..	..	..	..	5
6 . . . . .	..	2	..	I	..	..	..	..	I	..	..	4
7 . . . . .	..	..	..	..	..	..	..	..	..	..	..	..
Total	30	41	34	43	27	12	7	4	3	2	2	205

TABLE III.—Totals of Vertical and Horizontal Scales.

	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Boys	17	23	25	19	27	20	21	15	20	7	8	2	2	2	..
Girls	9	24	22	24	35	20	29	13	14	5	4	I	3	..	2
	26	47	47	43	62	40	50	28	34	12	12	3	5	2	2

TOTAL: Boys 208, Girls 205 = 413.

winter with bronchitis, developing a marked deformity of the chest with marked scoliosis and kyphosis; intermittently when her diet gave rise to ketosis she was extremely irritable, and rebelled vigorously with tempers and sulking against parents and teachers. Her picture could only result from an aggregation of a number of independent factors, but nevertheless is known to me as an outstanding example of a definite clinical entity. She spent a year in a carefully controlled country environment on a regulated diet and returned a different child, although we had to continue to regulate her life to prevent her relapsing. This history is now familiar to us all as the background of many of our physically and mentally ill adult patients.

Most of us were brought up to believe that one disease meant one pathology and, therefore, one cause. This point of view appears to work excellently when considering a disease like pneumonia, and led to striking chemo-therapeutic advance. It worked less well with asthma, recurrent bronchitis, migraine and mucous colitis, and has proved unhelpful in the study of mental illness. I have found it quite bankrupt in work in a clinic of the type of this survey.

This survey, therefore, represents part of a general trend in medicine which is of outstanding importance to the psychiatrist. Professor Himsworth has pointed out that the physician is now compelled to think in a different way. Each disease entity is the product of multiple factors operating within the individual and within his society. These individual factors are very different from the end-result which they produce. Their association is sometimes causal and at other times accidental. Nevertheless, it is only by the study of the contribution made by each of them that the end-result is to be understood.

I have found that a psychophysical approach of this type to the problem of mental ill-health has a high clinical and therapeutic value.
