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REA, BY JOHN LINDSAY STEVEN,
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AN ANALYTICAL STUDY OF CERTAIN OF THE CLINICAL PHENOMENA OBSERVED IN 112 CON- SECUTIVE CASES OF CHOREA.

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IN this paper I propose to give the results of an analysis of the chief clinical phenomena noted in connection with 112 consecutive cases of chorea minor (St. Vitus' dance—Sydenham's chorea), of which I have preserved more or less extensive notes in my case-books. It is possible that this analysis may not throw very much fresh light upon the disease; but the larger the number of carefully recorded cases subjected to statistical investigation, the more accurate is our knowledge of the phenomena of the disease likely to become, and this has been the chief reason which has induced me to prepare this analytical review of my notes. The cases were seen in the dispensary of the Glasgow Royal Infirmary, in the out-patient room of the Royal Hospital for Sick Children, Glasgow, and latterly in my wards at the Royal Infirmary. In the laborious work of examining the records and reducing them to statistical form I have gratefully to acknowledge the valuable help I have received from my colleague at the Sick Children's Hospital, Dr. Alice McLaren, and from my house physician at the Infirmary, Dr. Hugh McLaren. It is perhaps not without importance in an inquiry of this kind that all the cases dealt with have been personally examined and recorded by myself. The results of

the inquiry are likely to be more uniform, and the defects and omissions of the observer more easily detected and allowed for than if the cases analyzed had been recorded by a multiplicity of observers, each with his own peculiar methods of note-taking and examination. I desire also at this point to make it clear that I do not intend to discuss the phenomena of the so-called choreiform affections—tic, habit-spasms, post-hemiplegic chorea, Huntington's chorea—all of which I believe to be totally different, both in clinical course and pathological nature, from the chorea minor of childhood. To discuss these affections along with Sydenham's chorea is, in my opinion, likely to give rise to confusion of thought and to disappointment in treatment.

In presenting the results of my analytical study, I shall arrange the 112 cases in two groups:

A. 87 Cases observed in the Out-patient Room.

B. 25 " " Wards.

Obviously the information at my command was greater in reference to the cases admitted to the wards than it could be in connection with the out-patients. The phenomena of the disease which have been investigated in this inquiry are the following: (1) sex, (2) age, (3) number of attacks, (4) duration of attacks, (5) cause of attacks, (6) family history, (7) association with rheumatism and other morbid states, (8) condition of the heart, (9) condition of the urine, (10) distribution and severity of the movements, (11) time under observation.

A. 87 OUT-PATIENT CASES.

(1) *Sex.*

Of these cases 23 were males and 64 females, *i.e.* about 26·5 per cent. were males and 75·5 per cent. were females. This proportion of females to males is somewhat greater than that given by Osler, who found that in 554 cases about 70 per cent. were females. He remarks that his proportion of females is lower than that given by many authors.

In 31 per cent. of the cases more than one attack of the disease was recorded, a percentage which shows strikingly enough the great tendency chorea has to recur, and the figures show that three, four, and five attacks are not at all uncommon. This percentage of recurrences is less than that given by Osler, who had 41 per cent. of recurrences in 410 cases analysed with special reference to this point.

(4) *Duration of Attacks.*

It is more difficult to show the results of our inquiry into this point in a tabular form. In the first place, it is to be noted that the table only deals with the duration of the attack for which the patient was under treatment, and, secondly, that in 18 out of the 87 cases no information has been preserved in the records. In 36 of the cases I obtained definite information, and in 33 partial or indefinite information, as shown in the table.

A. No information, - - - - - 18 cases.

B. Definite information :

One month's duration and under,	-	7 cases.	} 36 cases.
Two months' ,, ,,	-	11 ,,	
Three ,, ,, ,,	-	13 ,,	
Six ,, ,, ,,	-	4 ,,	
Twelve ,, ,, ,,	-	1 case.	

C. Indefinite or partial information :

One month's duration and under,	-	16 cases.	} 33 cases.
Two months' ,, ,,	-	5 ,,	
Three ,, ,, ,,	-	2 ,,	
Six ,, ,, ,,	-	3 ,,	
Twelve ,, ,, ,,	-	1 case.	
Twenty-four months' duration and under,	-	2 cases.	
Congenital, - - - -	-	1 case.	
Very chronic, - - - -	-	3 cases.	

—
Total, - - - 87 cases.

More than half of the cases lasted under two months, and 15 out of the 69 under three months. No doubt it would have been interesting could the effect of treatment on the duration of the disease have been estimated and tabulated, but this was impossible. The figures, however, show that there is a spontaneous tendency towards the disappearance of the movements.

The following table shows the duration of the individual attacks in 27 cases in which there was more than one attack of the disease:

Duration of the attacks in 27 cases in which there were more than one.

1st attack.	2nd attack.	3rd attack.	4th attack.	5th attack.	6th attack.	No. of Attacks.
4½ months.	Unknown.	...	...	...	...	2
5 months.	Unknown.	...	...	...	...	2
3 years.	Unknown.	...	...	...	...	2
2 months.	Unknown.	...	...	...	...	2
Some months. }	3 months.	...	...	...	...	2
3 months.	Unknown.	...	...	...	...	2
2 months.	3 months.	...	...	...	...	2
Unknown.	2¼ months.	...	...	...	...	2
3½ months.	3 months.	...	...	...	...	2
2 months.	1½ month.	...	...	...	...	2
1¾ month.	Unknown.	...	...	...	...	2
Slight.	Unknown.	...	...	...	...	2
1 month.	6 months.	...	...	...	...	2
1¾ month.	Unknown.	...	...	...	...	2
3¼ months.	Unknown.	...	...	...	...	2
Unknown.	3 weeks.	...	...	...	...	2
Unknown.	2 months.	1 month.	...	...	...	3
Unknown.	Unknown.	1¼ month.	...	...	...	3
1¼ month.	1¾ month.	3 weeks.	...	...	...	3
3 months.	2 months.	3 months.	...	...	...	3
Unknown.	Unknown.	Unknown.	5 months.	...	...	4
Unknown.	Unknown.	Unknown.	18 months.	...	...	4
4 months.	{ Some months. }	3 months.	Unknown.	Unknown.	...	5
3 months.	1¾ months.	Unknown.	2½ months.	3 months.	...	5
Unknown.	Unknown.	Unknown.	3 months.	Unknown.	...	5
Unknown.	1¼ month.	Unknown.	Unknown.	1¼ month.	...	5
Unknown.	Unknown.	3½ months.	1 year.	1½ month.	1 month.	6

(5) *The Cause of Attacks.*

The association with acute rheumatism and the doctrine that chorea is but one of the many possible manifestations of

the rheumatic diathesis in childhood will be referred to in another part of this paper. Apart from this, however, I have endeavoured from my notes to gain information as to what might be called the emotional factors in the causation of St. Vitus' dance. In only 30 out of the 87 cases have definite statements as to the causation of the attacks been recorded. In at least 26 of these 30 cases the exciting cause may be classed under the heading "Emotional." The four remaining cases were attributed by the parents to the effects of accidental falls, three of the falls being on the head. The following table indicates the different kinds of emotional disturbance to which the chorea was attributed:

Fright, - - - - -	14 cases.
Over-work, - - - - -	2 „
Mental excitement or distress, - - - - -	3 „
Grief, - - - - -	1 case.
Worry over school examinations, - - - - -	3 cases.
Punishment at school, - - - - -	2 „
Scolding, - - - - -	1 case.
	—
Total, - - - - -	26 cases.

(6) *Family History.*

In the 87 cases there were 31 in which no definite information as to the family history was recorded, leaving 56 in which the family history had been inquired into. In these 56 cases information as to the presence of rheumatism, chorea, or nervous disease in other members of the family was specially sought for. In 30 cases the family history was negative as regards any of these diseases. In 26 cases positive information was obtained, the details of which may be stated as follows: In 18 cases rheumatism had attacked other members of the family; in 11 chorea had occurred; and in 5 some other form of nervous affection. In three of the cases investigated, rheumatism, chorea, and nervous disease had occurred in other members of the same family and in two rheumatism and chorea.

The result of this part of our inquiry, then, is to demonstrate that in almost 50 per cent. of the cases in which the point was specially investigated, a family tendency to rheumatism, chorea, or some other form of nervous disease could be very distinctly made out.

(7) *Association with Rheumatism and other Morbid States.*

The results of the inquiry under this heading are seen at a glance in the following table:

No definite information,	-	-	-	-	6 cases.
No history of antecedent rheumatism,	-				46 „
History of antecedent rheumatism,	-				26 „
History of various antecedent diseases,	-				9 „
					—
				Total,	- - 87 cases.

It is thus seen that there was no history of antecedent rheumatism in 55 out of the 81 cases in which the matter was inquired into. I believe, however, that the relationship between rheumatism and chorea is much closer than these figures would seem to indicate. It has frequently happened to me to observe a well-marked attack of articular rheumatism follow, often after a considerable interval, an attack of chorea. It seems to me, therefore, that the teaching of Dr. Cheadle, that chorea is but one of several of the manifestations of the rheumatic state in childhood, is strictly borne out by clinical facts. It is because of this intimate association with the rheumatic diathesis that we are justified in regarding Sydenham's chorea as a disease *sui generis*, as a disease quite different both in its clinical manifestations and its pathogenesis from Huntington's hereditary chorea and the various forms of choreiform affections. The adoption of the name "infectious chorea" (*infectiöse chorea*) to signify chorea minor by Professor Wollenberg of Hamburg may be mentioned in support of the opinion of the essential pathology of St. Vitus' dance which I am now advocating.

Of the other morbid states noted to have been associated

with the chorea, in 9 of the cases the following are the particulars:

Bronchitis, - - - - -	2 cases.
Diseased bone, - - - - -	2 „
Convulsions, - - - - -	1 case.
Adenitis, - - - - -	1 „
Idiocy, - - - - -	1 „
Headaches, - - - - -	1 „
Psoriasis, - - - - -	1 „
Total, - - - - -	9 cases.

(8) *Condition of the Heart.*

In 50 of the 87 cases the heart was stated not to have been affected; and in 5 no definite information as to the condition of that organ was recorded. In 32 cases there was evidence of an abnormal condition of the heart, and the following table shows the state of the cardiac sounds in these:

Accentuated second sound at base, - - -	5 cases.
Prolonged first sound at apex, - - -	5 „
Systolic murmur at apex, - - -	16 „
Presystolic and systolic murmurs at apex, -	3 „
Systolic and diastolic murmurs at apex, -	2 „
Irregularity of cardiac sounds, - - -	1 case.
Total, - - - - -	32 cases.

These figures show that in 39 per cent. of the cases examined the cardiac condition was abnormal, and if we exclude those in which the second sound was accentuated we get about 31 per cent. in which it may be admitted there was definite evidence of valvular disease.

(9) *Condition of the Urine.*

An analysis of the urine was made at least once in 45 out of the 87 cases at present under review, and gave the following results:

Albumen was detected in - - - - -	4 cases.
Albumen was not detected in - - - - -	41 „
Total, - - - - -	45 cases.

A note of the specific gravity was recorded in 40 cases.

The average sp. gr. was	-	-	-	-	-	1018.5.
The maximum was	-	-	-	-	-	1033.
The minimum was	-	-	-	-	-	1004.

The reaction of the urine was noted 33 times :

Reaction acid,	-	-	-	-	-	26 cases.
„ alkaline,	-	-	-	-	-	3 „
„ neutral,	-	-	-	-	-	4 „
						—
Total,	-	-				33 cases.

The result of this part of the inquiry is to show that in chorea there is on the whole little tendency to derangement of the renal function. One might expect that in a disease characterized by long-continued and often excessive muscular action the specific gravity of the urine would be increased from an excess of waste products being present, but I have not found this to be the case.

(10) *Distribution and Severity of the Movements.*

It is somewhat difficult to show in a satisfactory manner the results of the examination of the records with regard to this point. As to the distribution of the choreic movements, however, some idea may be obtained by classing them under the headings of General, Right-sided, Left-sided. In two cases there was no information.

General,	-	-	-	-	-	39 cases.
Right-sided (chiefly),	-	-	-	-	-	25 „
Left-sided (chiefly),	-	-	-	-	-	21 „
						—
Total,	-	-				85 cases.

The only way in which an indication, and that only approximately, of the severity of the choreic movements can be expressed is by classing the cases under the terms severe, moderately severe, and slight. In 5 cases there was no record of this point.

Movements severe,	-	-	-	-	-	23 cases.
Movements moderately severe,	-	-	-	-	-	35 „
Movements slight,	-	-	-	-	-	24 „
						—
Total,	-	-				82 cases.

The table shows that cases of moderate severity predominate, and this is probably the usual rule. Of course, as has been said, the statements under this heading can only be approximate, but on the whole the number of cases classed as severe may be taken as unusually high.

(11) *Time under Observation.*

In the work of tabulating the cases an attempt was made to show the time each case had been under observation, but in the end it was found that only the most general statements could be made under this heading. Indeed, all that can be done is to show how many made more than one visit to the dispensary. 31 cases were seen only once; 56 cases made several visits, very many of them having been under treatment for a month or more.

B. 25 CASES OBSERVED IN THE WARDS.

(1) *Sex.*

Of the cases observed in my wards at the Glasgow Royal Infirmary 5 were males and 20 were females, *i.e.* 1 male to every 4 females, as compared with about 1 to 3 in the cases observed in the out-patient room. Here again, then, the rule that chorea is much more frequently met with in girls than in boys is abundantly confirmed.

(2) *Age.*

Arranging the ward cases, like the out-patient ones, in five-yearly periods, we get the following table:

5 years and under,	-	-	-	-	-	0 cases.	
6 to 10 years,	-	-	-	-	-	9 „	
11 to 15 years,	-	-	-	-	-	11 „	
Over 15 years,	-	-	-	-	-	5 „	
					—		
				Total,	-	-	25 cases.

Here, as in the former table, it is seen that by far the greatest number of cases occur between the ages of 5 and 15. In the ward cases the proportion over 15 years of age is slightly higher than in the dispensary cases, which, had the proportion been equal, should have given 17 instead of 12 above this age. In the wards there were no cases seen under the age of 5, as against 6 seen under this age in the series of 86 dispensary cases. Both sets of figures then go to prove that under the age of 5 and over that of 15 for a first attack chorea is a rare disease. Of the 25 cases met with in the wards only one of the 5 patients over the age of 15 was suffering from the first attack of the disease; 3 were in the second, and 1 in the third attack, the first attack in all of the cases having occurred a number of years before. The girl suffering from her first attack was between 16 and 17 years of age, and was pregnant.

(3) *Number of Attacks.*

The annexed table shows the number of attacks in the 25 ward cases :

One attack,	-	-	-	-	-	-	-	11 cases.
Two attacks,	-	-	-	-	-	-	-	9 „
Three „	-	-	-	-	-	-	-	3 „
Four „	-	-	-	-	-	-	-	2 „
								—
							Total,	- - 25 cases.

In 56 per cent. of the present series, as against 31 per cent. of the former, more than one attack of the disease had occurred. We saw that Osler had 41 per cent. of recurrences in 410 cases analysed with reference to this point. In my ward cases the percentage is distinctly greater, but if we take the average of dispensary and ward cases we get 43 per cent. of recurrences, a very close agreement with Osler's results.

(4) *Duration of Attacks.*

In 24 of the 25 cases definite information on this point has been recorded, and is shown in the table :

One month's duration and under,	-	-	-	1 case.
Two months'	„	„	-	5 cases.
Three	„	„	-	8 „
Six	„	„	-	7 „
Twelve	„	„	-	2 „
Three years'	„	„	-	1 case.

An examination of this table shows that a considerably larger proportion of the ward cases lasted more than two months, as compared with those seen in the dispensary, and this probably means that the cases admitted to hospital were on the whole more severe. Here also, though perhaps not so strikingly as in the dispensary cases, the spontaneous tendency to cure is demonstrated, as considerably more than half of the cases lasted three months and under.

The following table shows the duration of the individual attacks in 14 cases in which there were more than one :

Duration of the attacks in 14 cases in which there were more than one.

1st attack.	2nd attack.	3rd attack.	4th attack.	No. of attacks.
Unknown.	5 months.	...	...	2
4 or 5 months.	5 months.	...	...	2
3 months.	3 months.	...	...	2
Unknown.	3 years.	...	...	2
12 weeks.	13 weeks.	...	...	2
8 months.	12 months.	...	...	2
6 months.	5 months.	...	...	2
Some months.	6 weeks.	...	...	2
7 weeks.	8 weeks.	...	...	2
3 months.	3 months.	3 months.	...	3
10 weeks.	8 weeks.	8 weeks.	...	3
4 or 5 months.	10 weeks.	1 month.	...	3
4 months.	A short time.	A short time.	9 weeks.	4
3 months.	6 weeks.	6 weeks.	7 months.	4

(5) *The Cause of Attacks.*

The following table shows the results of the inquiry into the cause of the attacks of chorea in the 25 ward cases:

No cause could be assigned in	-	-	-	16 cases.
Fright	„	„	-	7 „
Punishment at school assigned in	-	-	-	1 case.
Pregnancy assigned in	-	-	-	1 „
				Total,
				25 cases.

The figures in both of my series of cases go then to show that emotional causes, such as fright, are perhaps not so frequent as one would expect in chorea.

(6) *Family History.*

In 23 out of the 25 hospital cases notes of the family history with special reference to the presence of rheumatism, chorea, or nervous disease in other members of the family have been preserved.

In 11 of the cases the family history was quite negative as regards this point.

The following table shows the result as regards the remaining cases:

Rheumatism in family,	-	-	-	-	11 cases.
Chorea in family,	-	-	-	-	1 case.
Nervous disease in family,	-	-	-	-	0 „
					Total,
					12 cases.

The proportion of cases in which a family tendency to rheumatism or chorea was present is slightly greater in this than in the former series (dispensary cases), but the difference is not great. In the ward cases the mother had suffered from rheumatism in 6, the father in 4, a brother in 1, and a sister in 1. In some of the cases, however, rheumatism had attacked several members of the same family. A mother and some of her children had been attacked in 2 cases; the father and mother in 2 cases; a father and son in 1 case. The mother was the only member of the family attacked in 3 cases, and

the father alone in 2 cases. We see then, as in the previous analysis, that in about 50 per cent. of the cases a distinct tendency to rheumatism in the family can be made out in chorea. This, I think, lends strong support to the opinion of Cheadle that chorea is essentially a rheumatic manifestation.

(7) *Association with Rheumatism and other Morbid States.*

Definite information on this point was obtained in the whole series of cases admitted into the wards, and is tabulated as follows:

No history of antecedent rheumatism,	-	8 cases.
History of antecedent rheumatism,	- -	11 „
History of subcutaneous fibrous nodules,	-	1 case.
History of other morbid states,	- - -	5 cases.
Total,		25 cases.

In the present series of cases a distinctly larger proportion (almost 50 per cent.) had a definite rheumatic history. The history of fibrous nodules may be regarded as evidence of the presence of rheumatism. My experience with regard to the occurrence of nodules in rheumatism or chorea in childhood is that the phenomenon is decidedly rare in Glasgow, and Osler tells us that the condition is also rare in the United States. I have been on the outlook for it for many years, but the case here included in the table is the only one in which I have met with it.

The following table shows the other morbid states which were associated with the chorea in the present series of cases:

Bronchitis,	- - - - -	1 case.
Albuminuria,	- - - - -	1 „
Scarlet fever,	- - - - -	3 cases.
Total,		5 cases.

It is well known that rheumatism frequently complicates scarlet fever, and therefore it is not surprising that we should find a history of its association with chorea in a certain number of cases.

(8) *Condition of the Heart.*

In my 25 hospital cases the heart was found to be definitely affected in 15, and not affected in 10 cases, again a distinctly larger proportion of cardiac affections than was met with in the series of dispensary cases. The details of the cardiac affection may be stated as follows:

Systolic murmur at apex, - - - -	10 cases.
Systolic murmur at apex and pulmonic area,	1 case.
Diastolic murmur at pulmonic area, - -	1 „
Irregularity of cardiac sounds, - - -	2 cases.
Pericarditis, - - - - -	1 case.
Total, - - -	15 cases.

In 5 of the cases distinct increase of the cardiac area to the left was also noted, and in 7 no increase of the cardiac area could be made out.

In the hospital cases we have a proportion of exactly 60 per cent. in which there was unmistakable valvular affection of the heart associated with the chorea, as compared with 31 per cent. of the dispensary cases. This may be taken as evidence of the greater severity of the affection in patients admitted into the wards. If we take the average of both series of cases we get a percentage of 45 in which cardiac disease was associated with the chorea, a sufficiently large proportion to establish a very close clinical and etiological relationship between the two conditions.

(9) *Condition of the Urine.*

The urine was found to be normal in 20 cases, and abnormal in 1. As regards 4 of the cases there was no information.

In the series of ward cases albumen was only discovered in 1, that of the young girl who was found to be pregnant. In her case a few granular tube-casts were also detected. On her second admission, the chorea having recurred with the advent of her second pregnancy, there was no albumen in the urine, which was normal in all respects.

In 20 of the ward cases a note of the specific gravity of the urine was preserved. In 11 of these cases only one observation of the specific gravity of the urine was recorded, but in 9 of them a series of consecutive daily observations, varying from 20 to 54 days, was made.

In the 11 cases where the specific gravity was noted on only 1 occasion the average density was 1022, the maximum being 1032, the minimum 1015.

Of the 9 cases in which a series of daily observations of the specific gravity was made, the following are the particulars:

- | | | | |
|--------------------------------------|---|---|--------|
| 1. Average of 20 daily observations, | - | - | 1016. |
| Maximum, 1023. | | | |
| Minimum, 1010. | | | |
| 2. Average of 23 daily observations, | - | - | 1013. |
| Maximum, 1018. | | | |
| Minimum, 1010. | | | |
| 3. Average of 23 daily observations, | - | - | 1017. |
| Maximum, 1024. | | | |
| Minimum, 1011. | | | |
| 4. Average of 28 daily observations, | - | - | 1022. |
| Maximum, 1039. | | | |
| Minimum, 1015. | | | |
| 5. Average of 25 daily observations, | - | - | 1022. |
| Maximum, 1030. | | | |
| Minimum, 1014. | | | |
| 6. Average of 33 daily observations, | - | - | 1021. |
| Average of first 16 observations, | | | 1026. |
| Average of second 17 observations, | | | 1017. |
| 7. Average of 42 daily observations, | - | - | 1014. |
| Average of first 21 observations, | | | 1015. |
| Average of second 21 observations, | | | 1012. |
| (2nd admission, 54 observations, | | | 1015.) |
| 8. Average of 28 daily observations, | - | - | 1013. |
| 9. Average of 25 daily observations, | - | - | 1025. |

The average specific gravity of the urine in this series of 9 cases in which extended daily observations were made is 1016, a result which clearly shows that the specific gravity

of the urine in chorea is on the whole rather below than above the normal point.

The reaction of the urine was noted in 20 out of the 25 ward cases, and in all of them it was found to be acid.

Here again, then, as in the dispensary cases, it is seen that there is no special derangement of the renal function associated with chorea.

(10) *Distribution and Severity of the Movements.*

The following table shows the distribution of the choreic movements :

General, - - - - -	16 cases.
Right-sided (chiefly), - - - - -	5 „
Left-sided (chiefly), - - - - -	4 „
	—
Total, - - - - -	25 cases.

As regards the severity of the choreic movements the hospital cases were classified as slight and severe.

Movements slight, - - - - -	10 cases.
Movements severe, - - - - -	15 „
	—
Total, - - - - -	25 cases.

Here, again, the table shows that, as compared with the dispensary series, the cases admitted into the wards are altogether of a more severe type.

(11) *Time under Observation.*

In cases admitted to the wards it is much easier to obtain accurate information as to the length of time the patients were under observation, and this is shown in the following table :

One month and under, - - - - -	9 cases.
Two months „ - - - - -	11 „
Three months „ - - - - -	3 „
Four months „ - - - - -	2 „
	—
Total, - - - - -	25 cases.

Of cases that were admitted to the wards on more than

one occasion, the following table shows the time the patients were under observation:

Two months and under,	-	-	-	3 cases.
Three ,, ,,	-	-	-	1 case.
				4 cases.
			Total,	

The first of these tables may be compared with the first given under Section (4) of the present series, when it will be seen that on the whole the treatment in hospital tends to shorten the duration of the attacks, although no absolute comparison of the two tables can be drawn.

It is not my intention to comment further upon the facts which have been tabulated in the foregoing pages. My object has simply been to show in a statistical form the frequency with which the well-recognized clinical phenomena of the disease occur in a fairly large series of consecutive cases. On the whole it may be admitted that the tabulated results of my personal experience confirm the teaching of other observers with regard to the clinical history of chorea.

It is generally taught that psychological disturbance, more or less severe, is a frequent accompaniment of chorea. My records upon this point contain no information that could have been made use of in the present inquiry. Certainly in my dispensary cases mental symptoms never prominently obtruded themselves; and even in some of my most severe cases observed in the wards the mind remained perfectly clear throughout. I do not wish it to be understood that in any sense I am asserting that mental symptoms do not occur in chorea, because in all probability, had the point been more definitely inquired into, a considerable number of cases presenting psychological phenomena might have been discovered. A case of *chorea insaniens* I have never seen; and my experience of chorea leads me to agree entirely with the latter part of the following statement, quoted from Osler: "Psychical disturbance is rarely absent in chorea; fortunately in the majority of cases it is slight in degree."

When this paper was commenced I had intended to include the subject of treatment, but this must be left for a future contribution.



