pain and tenderness will be complained of if the examiner presses with his thumb the upper part of the affected radial extensor muscle.

Adhesions

Traumata to the joint may give rise to a synovitis with a sequelae of local and general adhesions. It may be noted that in many cases of injury and fractures about the elbow joint it takes many months for the movement of full extension to take place. This is due to the oedema of the traumatic synovitis diffusing into the brachialis anticus muscle, there clotting, organising and turning into fibrous tissue. Thus, the muscle is unable to fully relax and permit of full extension.

Dislocations

These are readily recognised by the degree of anatomical displacement. The only fractures I propose to mention are those where the epicondyle becomes nipped in the joint and fissures of the head of the radius. Commonly the elbow joint may sustain an injury which the patient may not take much notice of at the time, but within a few days he notices pain on attempting to extend and rotate the forearm. The examiner may find tenderness of the head of the radius and an X-ray will reveal a small crack of the articular surface. The limitation of extension being due to the traumatic sinovitis inhibiting full relaxation of the brachialis anticus muscle.

Diseases of the Elbow Joint with no Relation to Injury

Osteo-arthritis of the elbow joint is commoner in men than women, especially where the patient is engaged in hard manual labour. It is diagnosed by limitation of movement, pain, and creaking. An X-ray will reveal the typical changes of the disease.

Rheumatoid arthritis is common, resulting in a typical spindle-shaped swelling with wasting of the muscles above and below, with restriction of the range of movement due to spasm and peri-articular thickening. As this joint is not deeply placed, evidence of acute inflammation as shown by heat, redness and swelling may be readily discernible.

Tuberculosis is commoner in adults than children. It is diagnosed by the chronicity of the history, continuous aching, gross wasting of the muscles about the joint, the presence of a doughy swelling, and limitation of movement due to muscle spasm. An X-ray will confirm by the presence of decalcification and erosion of the articular surfaces.

Charcot's disease is commonly manifested in the

elbow joint as this joint is subjected to much trauma. The presence of a gross osteo-arthritis in a patient in whom pain is noticeably absent, when it would be expected in view of the disorganisation, and the X-ray appearances of the joint should make the examiner remember this rare condition. In women, similar appearances suggesting a Charcot disease may be found in sufferers from syringo-myelia.

Epitome

In attempting to give a résumé of the diagnosis of the orthopaedic conditions which affect the joints of the body, I am well aware, within the compass of the space allotted to me, that I have only touched on the fringe of the many conditions that may affect these joints. It is manifestly impossible for me to go into the full physical examination and, in any case, these articles are written for the post-graduate reader. I have therefore endeavoured to give a patchy physical examination but to bring out those special points which experience has taught me will enable a quick differential diagnosis to be made. I have not been able to deal with the numerous conditions of congenital malformations, nerve injuries, rheumatic conditions, or fractures which truly come within the province of the orthopaedic surgeon.

CHRONIC RHEUMATIC DISEASES

By E. FLETCHER, M.A., M.D., M.R.C.P. AND
E. LEWIS-FANNING, B.Sc., Ph.D.

PART IV

A STATISTICAL STUDY OF 1,000 CASES OF CHRONIC RHEUMATISM

By E. LEWIS-FANNING, B.Sc., Ph.D.

Duration of Disease, Length of Treatment, and Results.

Some course of treatment was given to all except twenty of these patients, and perhaps the most interesting aspect of the investigation centres around the results; whether treatment was more successful in certain types, and whether longer treatment would have been more beneficial in one type than another. Since the length of treatment varied from one day to eight years, it was evident at the outset that in comparing the results of treatment in relation to type of rheumatism, allowance must be made for variation in the length of treatment, but the problem was complicated still more by the presence of another variant, duration of

disease at the time when treatment commenced, which also had a wide range, from a few days to forty years. One would logically expect any course of treatment to be most effective where the disease had obtained the least hold. Amongst more chronic cases, one would hope that extended treatment would counteract the effect of longer duration of disease. The analysis in this section was planned to discover whether the results were in fact in accordance with these expectations.

Patients were graded into the three categories No improvement, Improvement, and Symptom free, according to their state of health at the time when they were last seen. The term symptom free is preferred since it was not claimed that any case was 'cured.'

Duration of Disease.

In Table 23, the average duration of disease at commencement of treatment is shown for each type of rheumatism. The figures are given separately according to whether the result of treatment was no improvement, improved or symptom free.

In only two cases did the average duration differ between the sexes to an extent greater than would be likely from the play of chance. The two cases both occurred amongst the 'no improvement' group, where the mean duration for infective arthritis patients was males 21.4, females 44.0 months, whilst for osteoarthritis of the hips the respective values were 72.9 for males and 22.0 for females.

The tabulation given is therefore based on males and females combined.

Taking all types of rheumatism together the average duration at the time treatment commenced was highest amongst those patients who subsequently showed no improvement (35.8 months), and lowest amongst those who were eventually recorded as symptom free (15.7 months). The mean duration for those who showed improvement, but without attaining the symptom-free standard, held an intermediate position (26.3 months). Although this would appear to indicate an association between duration of disease and result of treatment, subdivision by type showed inconsistency in regard to the different types of rheumatism. Furthermore, the variation in length of duration was so great that few of the differences between the result groups were statistically significant. The most that can be said, therefore, is that there is a *suggestion* that patients with short durations have the best prognosis.

It is perhaps worth mention that only in the symptom-free group were the differences between the various types as regards mean duration greater

than would probably arise by chance,* ranging from an average duration of 53 months for gout and 38 months for ankylosing spondylitis to only four months for interstitial neuritis.

Length of Treatment.

Table 24 shows the average length of treatment in months in the same groupings. In only one case was the difference between the sexes found significant (Improved group, type OA (B-K)).

The problem of the relation between length of treatment and chance of recovery would have been simplified if the patients had been classified at regular intervals as to the state of the disease. We do not know at what stage those who eventually became symptom free showed improvement whilst it may be assumed that many of those termed 'improved' had prolonged their period of treatment in the hope of becoming 'symptom free.' All we know is that when last seen the patients were as specified. Under such conditions no such close relationship between result and length of treatment should be expected as between result and duration of disease. For, since the treatment was voluntary, it may be that the 'no improvement' group included many who for various reasons abandoned treatment too soon, in which case the average length of treatment in this group would be less than in the groups showing improved conditions.

Few differences are significant, and generally the results are very inconsistent. No relation, therefore, can be demonstrated from these data between length and result of treatment. In fact only in the group of patients who were eventually recorded as 'symptom free,' can any difference by type of rheumatism greater than might be expected to arise by chance, be shown as regards average length of treatment.† This mean length of treatment was 17 months both for infective arthritis and osteoarthritis of the hip, 15 months for ankylosing spondylitis, and less than 3 months for the miscellaneous groups.

Results of Treatment.

A thousand cases is but a small number by which to measure the results of treatment in different types of rheumatism, if, in addition to differences of type, differences arising by reason of sex, variation in the time patients have suffered from the disease, and variation in the interval of time over which treatment was administered have to be allowed for. To subdivide 1,000 cases into all these groups would be to deprive them of all use for valid statistical deductions. Therefore,

* Analysis of variance.

† *Ibid.*

Length of treatment (months)	Duration of disease (months)											
	0-			6-			12+			All durations		
	F.	S.	% success	F.	S.	% success	F.	S.	% success	F.	S.	% success
0- 6+	21 4	36 21	63.2 84.0	9 3	17 13	65.4 81.2	21 32	31 45	59.6 58.4	51 39	84 79	62.2 66.9
All lengths of treatment	25 82	57 82	69.5	12 42	30 42	71.4	53 129	76 129	58.9	90 253	163 253	64.4
χ^2 P	2.65 0.10			0.57 0.45			0.002 0.98			0.425 0.51		

(S). When these were analysed by the duration of disease when first seen and by length of time they received treatment, 82 had suffered from it for less than six months, 42 for from 6 to 12 months, and 129 for more than 12 months. Of the 82 who had suffered from it for less than six months, 57 received less than six months' treatment, and of these, 36 (i.e. 63.2 per cent) were successes; 25 received more than six months' treatment, and of these, 21 (or 84 per cent) were successes. The value of χ^2 is 2.65, from which $P = 0.10$, so that the difference between the proportion of successes, according to whether length of treatment was less or more than six months, was not more than might be expected to occur by chance. (Ten times in 100 tests would we reach so large a difference by chance.)* By similar argument, in no duration group is the proportion of successes amongst patients who received less than six

* Usually a P of 0.05 is taken as 'significant,' i.e. only if P is less than 0.05 (once in twenty times) is it likely that the proportions observed in the different groups would differ by more than might reasonably be ascribed to chance.

months' treatment statistically different from the proportion found amongst those who received more than six months' treatment. Hence we must conclude that length of treatment is not a factor influencing chance of recovery, or, in other words, that the chance of ultimate improvement was neither materially increased nor lessened by the fact that no improvement was evidenced during the first six months of treatment.

When the tabulation was rearranged (as below) it was found that whether the length of treatment was less than 6 months, between 6 and 12 months, or more than 12 months, the difference between the percentage of successes obtained amongst those who had the disease for less than a year, and the corresponding percentage amongst those who had it for more than a year, was never more than could be ascribed to chance. For example, amongst 135 persons treated for less than six months, 83 suffered from infective arthritis for less than a year when treatment commenced, and in 63.9 per cent of these treatment was successful, whilst amongst the 52 who had suffered from it for more than a year, treatment was successful

Duration of disease (months)	Length of treatment (months)											
	0-			6-			12+			All lengths of treatment		
	F.	S.	% success	F.	S.	% success	F.	S.	% success	F.	S.	% success
0- 12+	30 21	53 31	63.9 59.6	1 7	17 19	94.4 73.1	6 25	17 26	73.9 51.0	37 53	87 76	70.2 58.9
All durations	51 135	84 135	62.2	8 44	36 44	81.8	31 74	43 74	58.1	90 253	163 253	64.4
χ^2 P	0.097 0.76			1.99 0.16			2.55 0.11			3.02 0.08		

Ankylosing Spondylitis (S.A.).*Percentage of Successes*

Length of treatment (months)	Duration of disease (months)				
	0-	12+	All durations	χ^2	P
0- 12+	66.7 (15) 28.6 (7)	83.3 (17) 53.8 (13)	62.5 (32) 45.0 (20)	0.008 0.38	0.93 0.54
All lengths	54.2 (22)	56.7 (30)	55.8 (52)	0.02	0.90
χ^2 P	1.47 0.23	0.0098 0.92	0.90 0.34		

Osteoarthritis (A and Spine).*Percentage of Successes*

Length of treatment (months)	Duration of disease (months)				
	0-	12+	All durations	χ^2	P
0- 6+	80.0 (45) 61.1 (18)	54.1 (37) 65.2 (23)	68.3 (82) 63.4 (41)	5.17 0.003	0.023* 0.98
All lengths	74.6 (63)	58.3 (60)	66.7 (123)	2.97	0.09
χ^2 P	1.53 0.22	0.34 0.56	0.11 0.74		

Osteoarthritis (Groups B-K).*Percentage of Successes*

Length of treatment (months)	Duration of disease (months)				
	0- 6-	12+	All durations	χ^2	P
0-	70.4 (54) 71.4 (42) 66.7 (12) 66.7 (33)	61.5 (52)	66.0 (106)	0.57	0.45
6+	57.9 (19) 78.6 (14)	56.7 (30)	61.9 (63)	0.31	0.58
All lengths	69.0 (87) 67.2 (61) 73.1 (26)	59.8 (82)	64.5 (169)	1.19	0.28
χ^2 P	0.56 0.45	0.04 0.84	0.14 0.71		

Osteoarthritis of the Hips.

Percentage of Successes

Length of treatment (months)	Duration of disease (months)				
	0-	12+	All durations	χ^2	P
0-	25.0 (8)	40.0 (15)	34.8 (23)	0.07	0.80
6+	25.0 (4)	37.5 (16)	35.0 (20)	0.01	0.91
All lengths	25.0 (12)	38.7 (31)	34.9 (43)	0.24	0.63
χ^2	0.50	0.05	0.09		
P	0.48	0.82	0.76		

Length of treatment (months)	All durations, % success	Duration (months)	All lengths of treatment (months), % success
0-	95.2 (42)	0-	89.5 (57)
2+	76.6 (47)	6+	78.1 (32)
All lengths	85.4 (89)	All durations	85.4 (89)
χ^2	4.78	χ^2	1.30
P	0.03*	P	0.25

in only 59.6 per cent. But the difference between these percentages (4.3 per cent) could arise by chance 76 times out of 100, and therefore is not a "real" difference. The most we can say is that since in every length of treatment group the percentage of successes was higher amongst those who had the disease for under a year than it was amongst those who had it for over a year, there was a *suggestion* that duration of disease had some influence, but the numbers in the groups were not sufficient to provide conclusive evidence of this.

The total number of patients with this type of rheumatism was so small as to preclude subdivision in as much detail as for infective arthritis. Only two duration groups and two treatment groups could be made, the values of the chi-square tests for the latter being shown in the last column of the table. Only the total cases in each cell (in parenthesis) and the percentage of successes occurring amongst them are shown (although the tests of course were calculated on the actual numbers of failures and successes). In no case did the results of the tests indicate that the difference between the proportion of successes was outside the realm of chance fluctuation, and hence it cannot be concluded that patients who commenced treatment with a longer history of disease showed less improvement than when treatment was given at an early stage. There is a suggestion that chance of recovery became less after one year

of treatment, but the numbers were too few to permit proof of this.

Of the 82 patients who received *less* than six months' treatment for this type of disease, 80 per cent improved where the disease was of less than a year's duration, only 54 per cent where it was more than a year. Statistical tests showed this to be a real difference unlikely to arise by chance more than once in fifty times ($P = 0.02$). Amongst those who received *more* than six months' treatment, no real distinction was afforded by variation in the length of duration. Neither was any real difference apparent between the percentage of success in either duration group when length of treatment was varied. Hence it seems that duration of disease is the more important factor in this type of rheumatism, the less chronic cases having a better chance of improving during the first year of treatment.

Neither duration of disease nor the length of treatment seemed to influence the chance of recovery of osteoarthritis patients if obesity or hypertension or both were present, for none of the differences between the percentages tabulated above were significant. The chance of recovery was the same at each stage of treatment, no matter for how long they had the disease when treatment commenced.

This is also true of those who had osteoarthritis of the hips and of those who had gout.

Fibrositis.

Of the 113 patients with fibrositis, 90 received over a month's treatment, but only 28 had more than two month's. When treatment commenced 47 had suffered from the disease for less than a month, 31 for between one and six months, and 35 for more than six months. Only six failures occurred amongst the total 113, and even if there were any point in analysing these by duration and length of treatment, they are so few as to preclude satisfactory statistical treatment.

Interstitial Neuritis.

Only 13 failures occurred out of 89 cases, the proportion being too small to permit of subdivision by duration and length of treatment simultaneously. Taking all durations together, it appears that patients who needed more than two months' treatment showed a smaller recovery rate than those who received treatment for a shorter period. The recovery rate fell from 95.2 per cent to 76.6 per cent, a real difference as shown by the value of P.

No real difference is apparent when, considering all lengths of treatment together, the recovery rate of patients who had the disease for less than six months was compared with that amongst those who had it for longer.

We conclude that in interstitial neuritis, length of treatment is a factor affecting the recovery rate, but we are unable to say to what extent this would be qualified if allowance could be made for variation in duration of disease at the time treatment commenced.

Miscellaneous Types.

Since 93 of the 109 patients concerned had less than six months treatment, the data have not been subdivided by length of treatment.

Percentage of successes			
Duration of disease (months)			
	0-	12+	All durations
All lengths of treatment	77.2 (79)	63.3 (30)	73.4 (109)

The difference between the two duration periods is not significant $\chi^2 = 1.49$, $P = .22$.

Infective Arthritis.

B. S. R.

	0- %	5- %	10- %	15- %	20- %	25- %	35- %	45- %	55- %	Total
Success	11 (48)	20 (67)	16 (53)	20 (65)	24 (75)	17 (74)	20 (83)	14 (82)	12 (67)	154 (68)
Failure	12	10	14	11	8	6	4	3	6	74
Total	23	30	30	31	32	23	24	17	18	228

$\chi^2 = 12.651$ $P = 0.13$

Relation between results of treatment and diagnosis.

The chance of success in each specified group, irrespective of duration of disease and length of treatment was examined.

Percentage of successes
(all durations) and (all lengths of treatment)

I.A.	64.4	Gout	52.5
S.A.	55.8	Fibrositis	94.7
OA (A + Spine)	66.7	Int. Neu.	85.4
OA (B - K)	64.5	Miscell.	73.4
OA (Hips)	34.9		

The difference between every possible pair was calculated and tested for statistical significance and it was found that the chance of improvement in the case of fibrositis was higher than in any other type. Interstitial neuritis provided better results than other types except fibrositis. Patients with osteo-arthritis of the hips had the least chance of improvement. The miscellaneous group only gave significantly better results when compared with OA (hips), ankylosing spondylitis and gout. All other differences could have been due to chance fluctuations.

Blood sedimentation rate and result of treatment.

Finally it may be asked whether the height of the blood sedimentation rate gives any indication of prognosis. This problem was dealt with only for those types of rheumatism for which the initial sedimentation rates are tabulated in Table 22.

From the statistical test given below it is clear that the variation in the percentage of successful treatments with blood sedimentation rate is not greater than could arise by chance.

Other types.

For other types the percentage of success according to whether the initial B.S.R. was under or over 15 mm.'s per hour is shown on page 183.

The number of patients suffering from OA (A + Spine), OA (Hips) and fibrositis, and with B.S.R. 15+, was too few to permit of statistical tests of differences between the distribution and it seems clear that the conclusion must be that in no type was there any relation between the initial

	B.S.R. under 15			B.S.R. over 15			χ^2	P
	S.	F.	Total	S.	F.	Total		
S.A.	12 (57) [%]	9	21	15 (52) [%]	14	29	·008	·93
Gout	12 (48)	13	25	8 (57)	6	14	·046	·83
OA (A + Spine) ..	69 (68)	33	102	8 (80)	2	10		
OA (B — K) ..	91 (65)	50	141	14 (67)	7	21	·003	·97
OA (Hips)	15 (38)	24	39	0 (0)	3	3		
Fibrositis	96 (95)	5	101	9 (90)	1	10		

height of the B.S.R. and the result of treatment; hence the initial B.S.R. is no guide to prognosis.

Since in the groups I.A., S.A. and Gout the B.S.R. was also recorded when treatment ended (for all but three patients) it seemed advisable to consider whether there was any relation between the result of treatment and change occurring in the B.S.R. during treatment.

Adopting the customary classification, that B.S.R. 0-4 = normality, 5-14 = doubtful, 15 and over = abnormality, then, neglecting changes which occurred *within* these classes during treatment, three groups were formed according to whether the patient's B.S.R. at the end of treatment fell in a better, a worse, or the same group as when treatment commenced. The composition of the groups was therefore:

Stationary group:		} at both commencement and end of treatment.
Either, Normal doubtful or abnormal		
Improved group:		
Change from	{ doubtful to normal abnormal to doubtful or abnormal to normal.	
Worse group:		
Change from	{ normal to doubtful or normal to abnormal or doubtful to abnormal.	

With this system, the following analysis was made:—

Infective arthritis.

	Stationary	Improved	Worse	Total
Success	82 (64) [%]	65 (82) [%]	7 (39)	154
Failure	46	14	11	71
Total	128	79	18	225
$\chi^2 = 15.3$ P = .0005				

<i>Ankylosing Spondylitis</i>				
	Stationary	Improved	Worse	Total
Success	17 (55) [%]	5 (45) [%]	5 (63) [%]	27
Failure	14	6	3	23
Total	31	11	8	50

Tests not applicable; numbers too small

<i>Gout.</i>	Stationary	Improved	Worse	Total
	%	%	%	
Success	11 (46)	5 (63)	4 (57)	20
Failure	13	3	3	19
Total	24	8	7	39
Tests not applicable; numbers too small.				
<i>Infective arthritis, S.A. and Gout combined.</i>				
	Stationary	Improved	Worse	Total
	%	%	%	
Success	110 (60)	75 (77)	16 (49)	201
Failure	73	23	17	113
Total	183	98	33	314
$\chi^2 = 11.3$ P = .004				

As regards infective arthritis, significant differences occur between the proportion of successful treatments according to whether the B.S.R. improved, worsened or remained stationary (outside the limits prescribed by the classification adopted). The highest degree of success was attained when the B.S.R. improved to such an extent that the patient was transferred from abnormal to normal or doubtful: or from doubtful to normal. As regards ankylosing spondylitis and gout no such definite conclusion is possible owing to paucity of data, but it seems clear taking the three types together that on the whole the chance of success is greatest when the B.S.R. improved to a great extent. Or should one say that where the treatment is successful the B.S.R. is most likely to be greatly reduced?

CONCLUSIONS FROM STATISTICAL SECTION

(1) It is not possible from this sample of rheumatic patients to estimate the incidence of rheumatism amongst the general population of England and Wales, or any region thereof, or amongst the insured population. The size of the population at risk from which the cases were drawn is entirely unknown, and there is evidence that the series is unrepresentative by age of the general population —(patients between ages 15 and 24 are inadequately represented, whilst males at ages above 55 are over represented)—and unrepresentative

by *occupation* of the insured population. Labourers and railway workers are too largely and clerks not sufficiently represented. The females included are dominated by housewives, who are not included in the nationally insured population.

(2) *Sex and diagnosis.*

There is a different distribution of types of rheumatism for the sexes. Only 15 per cent of all male cases, but 30 per cent of female cases were infective or true rheumatoid arthritis. Osteoarthritis, except of the hips, is more prevalent amongst the females than the males, but 9 per cent of male and only 2 per cent of female cases were OA. hips. Gout, fibrositis and sciatica also formed a larger proportion of male than of female cases.

(3) *Sex and age.*

There was no material difference between the age distribution of the male and female patients, either as a whole or for any specific type of rheumatism, except osteoarthritis—group A, where females were on the average five years younger than the males.

(4) *Age and diagnosis.*

The average age of patients varied in the diagnostic groups. Groups having a mean age much lower than the average for all patients were sub-acute rheumatism, rheumatic fever and malposition of the spine. Groups with a mean age above the average were osteoarthritis (unless associated with obesity), and particularly if the hips were affected and periarthritis of the shoulder.

(5) The incidence of rheumatism amongst housewives was the same as that amongst 'occupied' married women in England and Wales.

(6) *Occupation and diagnosis.*

The records were classified into broad occupational groups. From the analysis of these the principal conclusions were, that amongst males, heavy outdoor workers were prone to osteoarthritis, other outdoor workers to interstitial neuritis, indoor workers on materials, such as turners, printers, etc., had an excess of infective arthritis, and other indoor workers, e.g. clerks, an excess of ankylosing spondylitis. Amongst the females it was indecisive whether occupation or age was the more important factor, but there was evidence that those occupied in home and house duties were particularly subject to osteoarthritis, office and shop workers to ankylosing spondylitis, and factory workers and cleaners to fibrositis.

(7) *Abnormal weight and blood pressure.*

Both obesity and hypertension were found to be more associated with osteo-arthritis than with the other types of rheumatism.

(8) *Site and diagnosis.*

The joints, muscles and nerves affected were studied in relation to the type of rheumatism diagnosed, and of these three categories, joints were found to be affected more frequently in females than in males. Joints of the spine were chiefly attacked by ankylosing spondylitis and osteoarthritis; the small joints by infective arthritis, and the large joints by osteoarthritis of the hips, or, if either obesity or hypertension was present, of other parts of the body.

(9) Where muscles or nerves were affected, sex was not a factor in the diagnosis.

(10) Fibrositis was the diagnosis in 80-90 per cent of cases where the muscles were attacked. It was found to affect the muscles of the hands, arms, legs and feet less frequently than muscles of other parts of the body.

(11) Sciatica accounted for 60 per cent of the interstitial neuritis.

(12) *Blood sedimentation rate as a guide to diagnosis.*

The question studied was whether high B.S.R. rates were any criterion in distinguishing infective arthritis, ankylosing spondylitis and gout distinct from osteoarthritis and fibrositis.

The conclusion reached was that only a B.S.R. higher than 50 mm.'s per hour would be a safe criterion for definitely excluding osteoarthritis and fibrositis. If between 20 and 50, such exclusion, though highly probable, would not be certain.

Results of Treatment

(13) The proportion of cases which responded well to treatment were examined for each type, allowing for differences which could be related to variability in the duration of the disease at the commencement of treatment, and in the length of treatment. The conclusions from this section of the analysis were: (a) that in cases of osteoarthritis of the spine and of other parts of the body except the hip, provided neither obesity nor hypertension was present, duration of the disease when treatment commenced was an important factor influencing the recovery rate; (b) that in cases of interstitial neuritis, recovery rate varied with length of treatment, being materially lower when treatment was prolonged beyond two months. The numbers were too small to examine, whether this remained true if allowance were made for variation in duration of disease at the

time treatment commenced. (c) In no other types of rheumatism was there sufficient evidence that chance of recovery was impaired by delayed treatment, or that the chance of recovery was materially changed at any stage of treatment. (d) That the recovery rate was highest in fibrositis and interstitial neuritis (95 and 85 per cent respectively), and lowest (34.9 per cent) in cases of osteoarthritis of the hips. A miscellaneous group comprising 109 cases of various rare types of rheumatism gave a recovery rate for the whole group of 73.4 per cent, but between the remaining types the chance of recovery showed no real difference.

(14) *Blood sedimentation rate as a guide to prognosis.*

Confining attention to the five types—inflective arthritis, ankylosing spondylitis, gout, osteoarthritis and fibrositis—no relation was found between the height of the B.S.R. when treatment commenced, and the chance of successful response to treatment.

It was found, however, as regards infective arthritis (the only type which could be satisfactorily examined as regards change of B.S.R. during treatment) that the chance of recovery or improvement was greatest amongst those patients whose B.S.R. was considerably reduced during treatment. Whether the B.S.R. fell because the patient's conditions improved, or whether improvement was conditional to the fall in B.S.R. is a problem outside the scope of this statistical analysis (23 *et seq.*).

Summary

1. A brief historical survey is followed by an introduction. One of the authors (E. F.) is responsible for the clinical work and the recording of cases, the other (E. L.-F.) for the statistical work and the conclusions reached therefrom.
2. Details of methods of examination and the method of recording cases are given, with a note on the problem of classification.
3. A table giving full details of the 1,000 cases of chronic rheumatism on which the paper was based is set out (Table I).
4. A section deals with the relationship between rheumatic fever and infective arthritis.
5. The two great groups of non-specific arthritis (termed infective arthritis and osteo-arthritis) are discussed in detail from the clinical and radiological angle, and reference is made to the Heberden Lecture of 1939 delivered by one of us (E. F.).
6. The value of the initial height of the blood

sedimentation rate as an indication of prognosis and as an index to progress in treatment is discussed.

7. Factors associated with the different types of chronic rheumatism are set out.
8. A table for the incidence of the menopause is given.
9. An analysis is given of the result of treatment in chronic arthritis both with regard to the duration of the disease and without taking this factor into account.
10. The last section is devoted to the detailed statistical analysis.

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