monkeys can play no possible part in the etiology of yellow fever. Such a place is Curaçao, where there are no monkeys, but where yellow fever is said to be endemic and where certainly from time to time epidemics occurred, notably when warships from Holland containing non-immunes visited the island. At the same time, wild monkeys may conceivably act as a reservoir of the virus, be this Seidelin's bodies or some unknown parasite, in certain localities; and if such proved to be the case some puzzling outbreaks, like the recent one in Trinidad, would be explained. In any case it certainly seems advisable to direct attention to the possibility, and in this connexion I would cite a passage in a paper by Dr. J. Martinez Santamaria on the Tropical Diseases of Colombia which appeared in the *Journal of Tropical Medicine and Hygiene* of April 1st, 1913. Speaking of yellow fever he says:—

> This occurs endemically and at long intervals along the Atlantic coast, Cucuta, all along the shores of the Magdalena river, and at the Muyo emerald mines. The last focus is important, as it is situated right in the middle of the country and in an uncultivated and isolated zone, with no possible communication with the Magdalena River, from which it is separated by thick and immense forests. The epidemic there is quite independent of the other focus. For the last ten years we have not had a single case in the Magdalena zone, while in Muyo three epidemics have occurred.

I am now on my way to Colombia, where I hope to obtain some more information as regards the possible association of the wild monkey, and more especially the red howler, with the occurrence of yellow fever.

Curaçao.

VACCINATION AGAINST HAY FEVER:

REPORT OF RESULTS DURING THE LAST THREE YEARS.

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IN 1910 and the early part of 1911 the late Mr. L. Noon worked at active immunisation against hay fever by inoculations with a pollen vaccine. He was compelled by an illness which proved fatal to stop this work in the spring of 1911 before it had been actually put to the test in a hay fever season. He published his methods of work up to date in THE LANCET of June 10th, 1911. I was able to give the first results of my colleague's method of treatment as proved by the summer of 1911 in a paper published in THE LANCET of Sept. 16th, 1911, and I now propose to give further results.

Table I., How Compiled.

In the table given below the results are shown in the case of 84 patients with English hay fever who have been inoculated with phleum pratense pollen. The first 18 in the list were inoculated before the summer of 1911; the figures in brackets correspond to the serial numbers in the report of these cases published in THE LANCET of Sept. 16th, 1911. Nos. 19 to 43 were inoculated before the summer of 1912, and Nos. 44 to 84 were inoculated before the summer of 1913. This list of 84 cases is a complete one, and therefore includes cases which received inadequate treatment.

In the case of many patients it was found convenient, after they had undergone the preliminary eye-testing and had received from me the initial inoculations, to have the treatment continued by the local practitioner. In nearly all these cases the treatment was carried out as well as possible, but there were exceptions, which are dealt with under heading No. 2 when dealing with the discrepancy in result.

The value of the symbols by which the various results have been indicated is shown underneath the table, and some further indication of the standard of marking may be gained by comparing the marks here awarded to the first 18 cases inoculated in the year 1911 with the more detailed report of these same results published in the earlier paper.

The results here recorded have in nearly all cases been derived from the patient's own report. For instance, whenever the patient has reported after the hay fever season that the doses "did not seem to make much difference," the result has been recorded by the symbol "0." In the two cases where the "—" sign has been employed there was no suggestion that the treatment had been injurious, and the "0" would, in my opinion, have been more in accordance with fact. Nevertheless, since the reports of the patients suggested that the benefits received from treatment had been a minus quantity, that result has been ruthlessly recorded.

TABLE I.

Cases.	1911.	1912.	1913.	Cases	1912.	1913.	Cases.	1913.
1 (1)	+++	.....	.....	29	0	.....	57	++
2 (3)	0	.....	.....	30	++	.....	58	+
3 (4)	++	.....	.....	31	++	.....	59	+
4 (5)	+++	+++	.....	32	+++	+++	60	++
5 (6)	+++	+++	+++	33	++	.....	61	+
6 (7)	+	.....	.....	34	+	.....	62	+
7 (8)	++	.....	.....	35	++	+++	63	+
8 (9)	++	++	+	36	.....	++	64	++
9 (10)	0	+	+	37	+	.....	65	0
10 (11)	++	+	.....	38	++	+++	66	++
11 (12)	+++	+++	+++	39	++	+++	67	+++
12 (13)	++	.....	.....	40	+	++	68	++
13 (14)	++	++	.....	41	+	++	69	+++
14 (16)	++	+++	.....	42	+	.....	70	++
15 (17)	+++	.....	.....	43	0	++	71	+++
16 (18)	+++	.....	.....	44	.....	+++	72	+
17 (19)	+	++	.....	45	.....	+	73	++
18 (20)	+	++	+	46	.....	+++	74	0
19	.....	+	++	47	.....	0	75	0
20	.....	++	++	48	.....	+++	76	++
21	.....	++	++	49	.....	+++	77	+
22	.....	+	+	50	.....	-	78	++
23	.....	+++	.....	51	.....	0	79	0
24	.....	++	.....	52	.....	+++	80	++
25	.....	+++	+++	53	.....	+++	81	+
26	.....	++	+++	54	.....	+++	82	+++
27	.....	—	.....	55	.....	0	83	++
28	.....	++	+	56	.....	+++	84	+++

The symbols by which the results in each year are indicated have the following values +++ = complete freedom from hay fever, or only the most insignificant symptoms. ++ = hay fever symptoms greatly diminished. + = hay fever symptoms diminished, but only to a slight degree. 0 = symptoms unchanged. — = symptoms worse. ..... = patient not inoculated in that year.

Results.

It will be seen from the table that the average of success shown in the earlier paper has been fairly well maintained in the succeeding years, both with the old cases and with the cases commenced since then. For the convenience of the reader they are here abstracted. The 84 cases have between them experienced 113 hay fever seasons

after—or under—treatment. The results of these summers are as follows:—

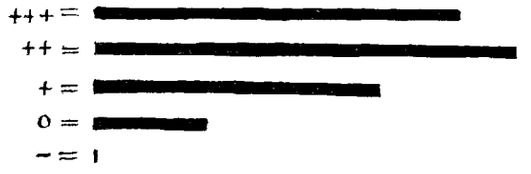
In 34 seasons (30·1 per cent.) the hay fever was completely cured or was so slight as to be insignificant.

In 39 seasons (34·5 per cent.) the hay fever was greatly diminished.

In 27 seasons (23·9 per cent.) the hay fever was admittedly diminished, but only to a slight extent.

In 13 seasons (11·5 per cent.) the hay fever was no better, and of these, two cases reported that they were worse.

This result is recorded in diagram form, thus:—



Or thus:—

The Experiential Method[1] *of Judging the Results.*

Anyone scanning Table I. and bearing in mind the reasons for its diversity of results will probably come to the conclusion that treatment is justified by statistics. They should be warned that (as is inevitable in medical statistics) such cases vary greatly in almost every important particular—e.g., the individual symptoms, the habitat of the patient, severity of the disease, amount of treatment, and the presence of complications.

But few people, and these only in rare circumstances, act on statistics. They act instead on experience, either of themselves or of others; and it seems desirable to consider what, in my experience, makes me convinced that this line of inoculation treatment is emphatically successful. When this is done, all the cases which, from their nature, approximate to the condition of crucial experiments, will come uppermost in the mind, and the other cases which, from conflicting circumstances, were very far from crucial experiments, will have relatively slight influence on the judgment in a general review of past treatment. The dramatically successful cases will affect the judgment powerfully in one direction, and the unmitigated failures will affect the judgment as powerfully in the opposite direction.

All the cases recorded in Table I. with the "+++" sign after them are satisfactory as far as results go and are all eminently quotable. As the eye runs over the cases one remembers the patients' remarks: No. 1, "Scot free"; No. 4, "farming for pleasure"—he who used to fly to the North of Scotland; No. 5, "going for walks to kick his old enemy the hay"; Nos. 7 and 8, invoking blessings and admitting the worth of the treatment, according to their different temperaments; No. 11, talking of "marvellous cures," ..... and so on; all very satisfactory and pleasant, but not so impressive as the cases where the long-continued, pitiable, and even desperate, previous condition made possible a profound change as the result of treatment, and rendered an accidental improvement almost an impossibility. For instance:—

CASE 20.—In awarding this case the "++" and "+++" signs of successful treatment no adequate idea is given of the remarkable difference between the patient's experiences during the two summers after inoculation and the summers of the previous 24 years. It was the worst case of hay fever I have ever met with. This opinion as to the severity of the case is emphatically confirmed by men of great experience of ophthalmic and nose and throat cases.[2] The inflammation of the conjunctival sacs during an attack was sometimes so intense that the conjunctiva peeled off the eyelids, leaving uncovered sore places. The continual dribbling of tears over the cheeks left them excoriated and intensely tender. The sensation of burning in the eyes was so severe that icebags were applied for long periods to give relief. Together with this the constitutional disturbance from the pollen poisoning was great, rendering the man incapable of work; for example, during hot weather in June the feet would become quite bloodless, and hot water bottles had to be applied to the extremities. For 19 years on end the patient, although absolutely dependent financially on his own personal exertions in business, was compelled to leave his work to take care of itself, and go for voyages in an ocean-going ship. Fortunately the severity of his troubles rendered him amenable to long-continued treatment, and after a very systematic inoculation carried on through the whole of the preceding winter and spring, he was able in the summer of 1912 to go on with his work in London in comfort; and in the summer of 1913 he was absolutely immune, going for bicycle excursions through hayfields during the week-ends.

CASE 32.—This case also gives no idea of the severity of the trouble from which the patient has been rendered immune. In this instance the asthma was so intense that the patient's father, who is a medical man, told me that he had been in grave fear of the death of his son from asphyxia and exhaustion. In 1913 the boy was immune except for a slight attack of conjunctival irritation one afternoon during an expedition in the country at the height of the hay fever season.

When one can call to mind such cases and others like them, one is driven to the conclusion that the method of treatment will work marvellously well on occasion. On the other hand, there are the disappointments, some of which are capable of explanation.

Explanation of Discrepancies in Result.

1. In the first place the bad result may be due to the amount of treatment the patient has received. No. 43 will serve as a case in point. In 1912 the patient did not come for treatment till the middle of June, and then only received two inoculations—result "0"; whereas in 1913 he came in March and received eight doses—result "++." It is for this reason that cases treated by me at the Inoculation Department, St. Mary's Hospital, have on the whole given rather better results than private patients because hospital patients will submit to treatment at Christmas or even earlier, if they are advised to do so, while private patients will for various reasons seldom submit to this. On the other hand, it must be admitted that some people demand a "cure" within a week or ten days, and

[1] A. E. Wright on the Pharmaco-therapy of Pneumococcus Infections, and the Methods by which such Therapeutic Problems ought to be Investigated, THE LANCET, vol. ii., 1912, pp. 1633, 1701.

[2] Dr. W. A. Brailey, Mr. Charters J. Symonds, and Dr. H. L. Gregory.

somewhat to the surprise of the inoculator get what they ask for.

2. One reason for a bad result will disappear when the principles of vaccine therapy are better known—e.g., a practitioner who was continuing the treatment of a patient in the country had been supplied with several correct doses, and a letter was received from the patient saying that, "wishing to be in the best possible form at a flower show, the doctor gave me two doses at once." The result was naturally disappointing. (Case No. 47.)

3. Bacterial catarrhs of the air-passages may be an addition to, or a complication of, these pollen poisonings which constitute hay fever. When these two diseases are present together they seem to form a vicious circle; the bacterial catarrh seems to make the patient more prone to pollen poisoning, and the sodden condition of the mucous membranes produced by hay fever is an open invitation to any bacterial infection. No. 2 is a case in point. The patient suffered from a chronic nasal infection and sinusitis, and indeed had been for long inoculated against this with a streptococcus and diphtheroid vaccine. In addition he was found to have hay fever by the eye-reaction test; pollen vaccine failed to give him relief. Such cases are difficult to treat, and it is difficult to say which symptoms are due to the bacterial infection and which to the pollen poisoning. It is for this reason that many men have believed that hay fever is itself a microbic infection, and claim (no doubt with justice) that they have rendered great benefit with a bacterial vaccine. Vaccines made from Friedländer's B. pneumoniæ, streptococci, M. catarrhalis and pneumococci have all been used against hay fever and, it is alleged, with success. Those who would ascribe to bacteria more than a secondary rôle in hay fever should note that most hay fever patients have little or no bacterial infection of the nose passages during the summer, while the bacterial catarrhs which do occur in hay fever patients are not all due to one particular organism.

4. No. 8 is hardly a success, but the circumstances are unusual. It is the case of a university professor who lives practically in a botanical garden full of exotic plants. The inoculations work fairly well so long as he is away from home, but when he returns he collapses. The causal agent of hay fever in Europe is grass pollen and the professor may be considered to be, botanically speaking, outside Europe.

These four points account for a considerable proportion of failures or partial failures in Table I., but after all the explanations there remains an inexplicable residue. No. 29, perhaps, had too little treatment, No. 51, however, should have had sufficient, and No. 55 (a hospital case) had very systematic treatment, and yet seemed to receive no benefit. In the present state of our knowledge such cases may be credited, if we so please, to the idiosyncrasies of the patients.

In reviewing the cases which have shown these differences of result one gains the following impressions:—

Patients with marked constitutional disturbances, including asthma, do better than patients with slight and local symptoms.

Patients with an inherited tendency do better than people without such tendency.

Age makes no difference to the benefit derived from treatment.

How Long Does the Effect of Treatment Last?

Patients naturally wish to know whether they must be inoculated every year, or whether one successful series of inoculations will last for more than one year, or possibly last for ever. Three hay fever seasons have passed since the inoculations were first commenced.

In Table II. the results during the years in which the patients were inoculated is given on the left-hand side of the table, while the after-effects in the years during which the patients were not inoculated is given on the right-hand side of the table. It will be seen that where a patient has been inoculated for one year with complete success

TABLE II.

Case.	During treatment.		No treatment.	
	1911	1912	1912	1913
4	+++	+++		+++
14	++	+++		++
16	+++		+++	+
1	+++		+++	+
15	+++		++	
23		+++		++
13	++	++		+
17	+	++		0
10	++	+		0
12	++		++	0
3	++		+	0
7	++		+	0
36		++		+
24		++		0
31		++		0
33		++		0
6	+		0	0
34		+		0
37		+		0
42		+		0

The cases have the same numbers as in Table I., but are here arranged according to the completeness of the immunisation. The symbols have the same value in both tables.

he has in the next year complete, or almost complete, immunity, but that in the third year he has only slight immunity left. Where patients have been successfully inoculated for two years they have, as might be expected, complete immunity during the third year, and time will show how long this complete immunity will last. Where patients have been only partially immunised for one or two years, little if any immunity is carried over to the year during which they have ceased the inoculations.

Conclusion.

Hay fever treatment by active immunisation with a pollen vaccine, whether judged by statistics or by the experiential method, has succeeded, and the immunity thus acquired seems to last for one year at least after treatment has been discontinued.

Devonshire-place, W.

MUNICIPAL HONOURS FOR MEDICAL MEN.—At the last meeting of the Glastonbury town council Dr. Maurice John Doidge was elected an alderman for the borough.—At the recent election for members of the Stonehouse urban district council Mr. William Edward Manderson Corbett was returned at the head of the poll.—Mr. Alfred Probus Trinder has been elected a member of the Wadebridge urban district council.—Mr. George Lestock Thornton has been elected chairman of the Exmouth urban council.