

director, Major George Lamb, I.M.S., upon the work of the year. It is hoped that a further memoir upon rabies will be soon published.

A TELEGRAM from the Governor of Mauritius to the Secretary of State for the Colonies states that 3 cases of plague with 3 deaths were reported during the week ending May 21st. For many months weekly despatches received at the Colonial Office from Brisbane have reported that town free from plague. Some hundreds of rats and mice have been examined weekly but none have been found infected with plague since Sept. 15th, 1908. One infected rat was found at Machay six weeks ago. A telegram from the Governor of Hong-Kong to the Secretary of State for the Colonies states that 13 cases of plague with 11 deaths were reported during the week ending May 23rd.

WE may remind our readers that the exhibition of the National Association for the Prevention of Consumption and other Forms of Tuberculosis will be opened on Wednesday, June 2nd, at the Art Gallery, Whitechapel, at 3 P.M., by the President of the Local Government Board.

WE regret to announce the death of Dr. William W. Ireland, which occurred on May 17th at Musselburgh in his seventy-seventh year. We hope to publish a note of his distinguished career as alienist and author in our next issue.

SMALL-POX AS IT AFFECTS LONDON : RETROSPECT AND FORECAST.

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AMONG the infectious diseases which are apt to prevail in London there is perhaps none in which the study of its epidemic cycle appears to yield more definite information to the epidemiologist than in small-pox. The cyclical variation in the prevalence of the disease in the metropolis was noted by Dr. B. A. Whitelegge and other observers, but the important fact that the epidemic cycle of small-pox had increased in length was first pointed out by the medical superintendent of the metropolitan small-pox hospitals in the annual report of the Metropolitan Asylums Board for the year 1898. In that report Dr. T. F. Ricketts, writing in the beginning of 1899, when the hospital was empty, ventured to predict that a very considerable outbreak of small-pox would probably occur in London within three years of the time at which he wrote. The epidemic which began in the early autumn of 1901 and reached its height in the late spring of the following year formed a remarkable demonstration of the accuracy of his forecast.

Dr. Ricketts's prediction was based on a study of the behaviour of the disease in London during the preceding 15 years. Beginning from the epidemic year 1884, he showed that a remarkably steady decline in the prevalence of the disease had taken place throughout the five succeeding years, that an increase in prevalence had then appeared and had steadily augmented during four years until the apex of the wave was reached in the year 1893. Therefore, beginning with the year 1884, the epidemic cycle of small-pox appeared to have lengthened and to have assumed a nine years' period. It was this observation, associated with the fact that the five years of declining prevalence had been repeated from the year 1894 to the year 1898, that appeared to afford good reasons for presuming that in 1899 London was again entering on a period of increasing activity in small-pox.

The following table shows the figures on which these conclusions were based. For the purposes of this review it is

continued down to the year 1907, giving the most recent figures available.

Year.	Number of small-pox cases admitted to hospital.	Year.	Number of small-pox cases admitted to hospital.
1884	6363	1896	190
1885	6164	1897	70
1886	99	1898	5
1887	56	1899	18
1888	63	1900	66
1889	5	1901	1743
1890	22	1902	7916
1891	63	1903	355
1892	325	1904	449
1893	2376	1905	53
1894	1117	1906	27
1895	941	1907	2

The figures given in the table are taken from the annual reports of the Metropolitan Asylums Board, and it is to be noted that they do not refer to notified disease but are corrected for error in diagnosis. They show clearly that the declining phase which occurred from 1884 to 1889, and again from 1893 to 1898, has been repeated from 1902 to 1907. It seems reasonable to assume that the rising phase will also recur.

There is one point of importance which must be noted in making deductions from a comparison between the current cycle and its predecessors. During the year 1908 only one case of small-pox was admitted to the metropolitan hospitals. London has therefore had the unprecedented experience of two years of almost complete freedom from the disease. The fact affords reasonable grounds for congratulation. It may foreshadow a further increase in the length of the cycle and the consequent postponement of the culminating epidemic. On the other hand, it is possible that this prolonged interval of quiescence may be followed by a more rapid epidemic diffusion than has been experienced in former periods. The speculation is an interesting one, and particularly so at the present time, when evidence is accumulating that seems to justify the expectation that small-pox in London is again entering on a period of renewed activity. Outbreaks of the disease have occurred in Bristol and in other provincial towns; and in London, after a period of complete immunity from attack extending over many months, cases have been notified during the last few weeks in widely separated districts.

Whether the cyclical prevalence of small-pox is the effect of cyclical variation in virulence, or depends more on the gradual accumulation of unprotected individuals in the community, seems impossible to determine. Possibly both conditions are operative. But the practical point to be noted in the present-day epidemiology of the disease is that at certain well-defined periods small-pox acquires an enhanced striking power. This increased power of attack, whether it be an attribute of the disease or of the community it attacks, tends to show itself not only in a greater capability of spreading, but also in an increased case severity, so that the rising wave of small-pox is associated with a high mortality, and conversely the occurrence of a severe type of disease seems to be good presumptive evidence of gathering epidemic power. Similarly, a decreasing case severity would seem to indicate that the culminating point has been reached, and that the wave is about to decline, since during this decline the more virulent types of attack become more and more rare.

An increasing capability of spreading and an increasing case severity were noted by Dr. Whitelegge in connexion with the epidemic period which culminated in the outbreak of 1871. Dr. W. H. Hamer, in the Milroy Lectures of 1906, referring to the outbreak of 1901-02 and the subsequent decline of the small-pox wave, says:—

A striking contrast is presented in London by the 1901-02 small-pox case mortalities of 34.6 and 10.3 per cent., and the 1903 small-pox with case mortalities of 5 and 0.29 per cent. in unvaccinated and vaccinated respectively.

It seems difficult, then, to escape from the view that, vaccination apart, there are no possible measures practicable in London which can be depended upon to prevent the spread of small-pox when its convenient season approaches. The disease continues to improve its grasp in spite of all attempts to loosen it. The same methods which appeared

to be entirely successful during the inter-epidemic period now seem of little avail.

The high degree of efficiency which preventive organisation in London has reached is evidence that no available measures are neglected in dealing with an outbreak of small-pox. But the experience of 1901-02 clearly shows that such efforts were unsuccessful in preventing the occurrence of an epidemic. Are the prospects of success better or worse now than they were in 1901? They are probably no better.

Let us consider what happened in that year. The evidence furnished by the annual report of the Metropolitan Asylums Board for 1901 is striking. The course of events showed very clearly the power which small-pox has of suddenly taking possession not only of a street or small area but of a large district. The disease within a very short time of its first appearance attacked almost every borough in the metropolitan area. For example, on Jan. 1st, 1901, one patient was under treatment in the hospital, and up to the end of June nine cases in all had been admitted. In July 14 appeared, in August 82, in September 167, in October 272, in November 438, and in December 761 were admitted to the hospitals.

Take the experience of one borough in 1901. No cases were admitted from the borough during the first seven months of the year, but in the last five months it supplied 240, beginning in August with the contribution of 42 cases, or one-half of the total number admitted during that month from all London.

The point may be emphasised in another way. In March and April, 1901, no case of small-pox occurred in London. In May one union sent cases, in June three, in July six, in August 14, and in September, when the outbreak was first acknowledged to be assuming epidemic proportions, 25 metropolitan unions out of a total of 32 were contributing cases. In 1901-02 the epidemic ran its course and abruptly declined, as its nature is, in the summer of the latter year.

It is clear from the above monthly returns that the spread of small-pox in London was hardly under control after the month of August, 1901. Can greater success be hoped for during the period of increasing power on which the disease has now probably entered? A comparison between the present condition of London and its condition at the beginning of the last epidemic period, in regard to certain of the factors on which the spread of small-pox depends, would seem to indicate that the outbreak of the disease which is probable during the next few years may spread more rapidly and pass more quickly beyond control than was the case in 1901. Among these factors the state of the population in regard to vaccination and revaccination holds the leading place.

(a) *Primary vaccination.*—In the report of the Public Health Committee of the London County Council for 1907 Sir Shirley F. Murphy, dealing with London's vaccination returns, makes the following comments:—

In respect of vaccination London compares unfavourably with the provinces, and has, indeed, done so for many years. These figures afford reason for thinking that in 1905 there were over 100,000 unvaccinated children under five years of age in London. The existence of so large a proportion of unvaccinated children in London is necessarily always a standing danger, although considerable intervals of time may elapse without actual injury resulting.

It is unlikely that the state of the population in respect of vaccination has undergone any radical change since the year to which Sir Shirley Murphy refers. But we have now to face the fact that the relaxation of our vaccination laws during recent years has probably not tended towards a more efficient protection of the community.

(b) *Revaccination.*—The importance of revaccination has never been popularly recognised in this country, so that with the exception of the local results which follow the occurrence of an outbreak of small-pox the operation among the general population is unusual. It has never held any legal position. The belief that vaccination in infancy will protect from small-pox for the rest of life is still common among the people. As a result revaccination during the inter-epidemic period is practically non-existent, and even with the inclusion of the residuum of those who were revaccinated during the epidemic period of 1901-02 it is unlikely that the number of completely protected individuals forms more than a trifling minority of the London population. One is, therefore, probably justified in assuming that in respect of vaccination the population is not in a better position, but is less well

prepared to meet an outbreak of small-pox than it was in 1901.

Another essential factor which holds a position of high importance in the successful sowing of epidemic small-pox in a community is freedom of communication. How does present-day London compare with the London of 1901-02 in this respect? In 1901 the electric tramway service was not begun. Now it is within easy reach of almost every district. In 1901 a motor omnibus was a rarity, and the underground railway system was insufficient and comparatively little used. The remarkable development in travel facilities which has been in progress since 1901 is affecting, not only the metropolitan area itself, but also the populous extra-metropolitan districts, by bringing the latter into closer communication with the parent community, as well as with each other. So great a change must have a considerable effect in promoting a small-pox invasion, and will almost certainly place a heavier handicap on those whose duty it is to cope with the disease than they have had to carry in the past.

That small-pox in London may or may not become epidemic during this year or during next year is not the important feature of the situation to-day. The points to be emphasised are (1) that experience indicates that the disease will almost certainly in the near future assert its increasing power and (2) that a comparison of present with former conditions makes it reasonable to suspect that the control of small-pox in London will present in the time to come a more difficult problem than it has presented in the past.

THE THERAPEUTIC APPLICATION OF RADIUM TO CANCEROUS AND OTHER TUMOURS.

DR. LOUIS WICKHAM'S ADDRESS BEFORE THE DERMATOLOGICAL SECTION OF THE ROYAL SOCIETY OF MEDICINE.

ON the afternoon of May 20th the hall of the Royal Society of Medicine, at 20, Hanover-square, was filled to its limits with a representative gathering of members of the Dermatological Section and Fellows of the Society assembled to listen to an address of exceptional interest from Dr. Louis Wickham, director of the Radium Institute of Paris, who had journeyed to London to communicate in person to British medical men some of the remarkable and encouraging results which have been obtained under his care by the therapeutic use of radium. It was to be expected that the city in which M. and Madame Curie made their profound discovery would have a long start of foreign centres in developing the applications of the newest element, but the excellence of the results which Dr. Wickham has already obtained with the radium, to the value of some 200,000 francs, with which the French Government is said to have stocked his institute, must have surprised a great number of his audience. Radium therapeutics may be said to be emerging from the experimental stage, and if their progress is to advance further in their recent ratio we must acknowledge that medicine has added a very considerable weapon to her armament against disease. The importance of Dr. Wickham's message lay in his carefully guarded but none the less confident announcement that in radium we have an effective and selective remedial agent for various forms of cancer. The public importance of this statement was doubtless the factor that led the council of the Dermatological Section to invite the Lord Mayor and Lady Mayoress of London to be present at its first authoritative utterance in this country, and though we are bound to plead for the utmost caution in applying too widely the lessons of a limited series of cases none of which have been under observation for many years, the more especially as Dr. Wickham gave no statistics of his successes and failures, we are constrained to think that the Chief Magistrate was shown good reason to carry away from the Royal Society of Medicine a message of hope to some at least of his suffering citizens. Dr. Wickham's statement of his case has certainly increased our eagerness to see the British Institute of Radium an accomplished fact.

Dr. H. RADCLIFFE CROCKER, President of the Dermatological Section, in opening the meeting, called upon the members of the section to honour the memory of the late