in the air were one of the main causes of phthisis—an anticipation of modern thought. He laid much stress upon diet in the treatment of disease, made a large use of diluents, recommended plenty of fluid in fevers, popularized the use of Peruvian bark in ague and iron in chlorosis, advised plenty of fresh air in sick-rooms, and thought horseback exercise valuable both in nervous affections and in phthisis. Like the Greek physicians, he urged the importance of studying the patient's constitution and avoiding routine treatment.

Sydenham's writings are full of pithy axioms and aphorisms—for example: "Experientia magistra doctorum"; "Qui mundificat bene, bene sanat"; "Lachrymae—certissima signa morbillorum." "Nevertheless, I have always thought it a greater happiness to discover a certain remedy for even the slightest disease than to accumulate the largest fortune, and whoever compasses the former I esteem not only happier but wiser and better too." Sydenham believed much in common sense. His favourite authors were Hippocrates, Cicero, Bacon, and Cervantes. Sir Richard Blackhouse, who had commenced the study of medicine, once asked Sydenham what book he would recommend. His reply was, "Read *Don Quixote*. It is a very good book. I read it still."

With Sydenham I may fairly conclude these burrowings in the medical lore of past ages. We began with Hippocrates; we conclude with his English successor. Between Hippocrates and Sydenham what a vast vista of human history—a period of just over two thousand years! During that long period the healing art has seen many vicissitudes—now advancing, conquering, again coming to a standstill, or undergoing grievous relapse. But it is significant for us that the English Hippocrates found it to his advantage to have at his elbow the works of his great forerunner. We might with profit follow his example. The past is not dead—it lives in us, in our lives, and in our work. We do not forget that in the three hundred years which separate us from the birth of Sydenham medicine has made a greater advance than in all the previous ages. But, as Rudyard Kipling says, "that is another story."

THE DIAGNOSIS OF SMALL-POX AND CHICKEN-POX: A CONTRAST.

BY

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(With Special Plate.)

THE photographs reproduced on the special plate by which this paper is illustrated exemplify the fallacy of placing much reliance upon the severity of the rash in making a differential diagnosis between chicken-pox and small-pox. Figs. 1, 2, 3, and 4 are from a case of chicken-pox; Figs. 5 and 6 from a case of mild discrete small-pox. The ratio of severity so far as the rash is concerned is the opposite to what is taught to students of medicine and is still assumed by many members of our profession—namely, that small-pox is characterized by a profuse rash, and that chicken-pox is perhaps the mildest and most negligible of all the exanthemata. Figs. 1, 2, 3, and 4 show the rash twenty-four hours old in girl aged 11; she had no prodromal symptoms; the type of rash was very superficial and the fluid in the vesicles was quite clear (glass-pox). The crenated edge of some of the vesicles can be seen in the back view. The distribution is centripetal. Figs. 3 and 4 (from the same case) show vesicles on the palms and soles, but still of the superficial type; such a condition is common in chicken-pox. Figs. 5 and 6 are of an unvaccinated boy aged 6, suffering from a mild form of discrete small-pox. The prodromal symptoms were headache, slight sickness, and pains in the limbs; the rash appeared on the fifth day. The rash, it will be noted, is centrifugal and deeper than in chicken-pox, and the pocks are circular with a central depression.

It should not be difficult to understand that doubt may exist in the mind of a medical officer when called on to make a diagnosis of small-pox in such a case as this, perhaps the first to occur in his experience, or even, with previous experi-

ence, the first case in a community hitherto free from this disease, and to report his finding to the health authority.

A correct diagnosis can and should be made, and in typical cases, even when very mild, it is simple enough. The sheet anchors of differential diagnosis are:

1. The distribution of the rash.
2. The prodromal history.
3. The characteristics of the rash.

I would like, however, to stress the possibility that these points are not always obvious and clear-cut.

Distribution.

Border-line cases occur sometimes, but fortunately rarely, and in these a count of lesions leads to no conclusion as to whether the rash is centrifugal or centripetal, and every mathematical maxim fails.

Prodromal Symptoms.

No one symptom is so consistently obvious as to constitute *per se* a specific point of diagnosis. The length of the prodromal period—that is, three to four days' illness in small-pox before the appearance of the rash—is of great importance, but very careful inquiry is often necessary, both as regards the prodromal beginnings and the first appearance of the rash, to elicit information substantiating this length of period.

The symptoms of themselves may vary in severity between one extreme and another in small-pox, and the eruption which follows does not appear to have any definite relation to the degree of their severity. Headache, a most constant feature in mild small-pox, may be described in every degree from "very severe" with delirium to a feeling of "giddiness" only. Pains in the back and limbs may vary from the excruciating type to a "feeling of tiredness" or "heaviness in the legs," enough to make the patient prefer to "lie up" rather than to "keep about." Vomiting may vary between persistent retching and "just wanting to be sick." The temperature may be high or normal. Prostration may be severe or absent.

Just before the appearance of the rash the prodromal symptoms of small-pox lessen to a very marked extent and the temperature when high may fall, so that the patient "feels better," and may return to work, or to school, as the case may be.

Chicken-pox sometimes, especially in older people, may be preceded by fairly severe symptoms of headache, etc., lasting for a few days. In chicken-pox, however, this prodromal stage is usually of shorter duration and the symptoms run on and overlap the eruption; the temperature is often highest on the second or third day of the rash.

Character of the Rash.

A typical chicken-pox rash and a typical small-pox rash are easily distinguished, but a chicken-pox rash may be severe and very pustular, and small-pox lesions may be of an abortive type; even when not abortive they may be more superficial and less markedly round than usual and may have the appearance of successive crops on successive days. The rash in chicken-pox is, however, more cuticular (glass-pox), matures more rapidly, has a more oval shape with a more crenated edge and with deeper areolae tending to run in the creases of the skin and producing an exaggeration of the ovoid appearance or giving a markedly stellate shape. On the other hand, small-pox lesions are deeper, less rapidly maturing, round, with a narrow round areola, and later on a circular central umbilication.

Confusion is sometimes caused by a resemblance of small-pox lesions to the polymorphism seen in chicken-pox, due to deeper lesions or those under denser tissue taking longer to mature, and to the fact that some small-pox lesions abort in an early stage. Then again, in chicken-pox spurious umbilication may occur, but the vesicle is more convincingly monolocular, small-pox vesicles being usually multilocular. Again, two or more small-pox lesions may run together and produce a crenated edge and an oval appearance. To complicate things a little more, post-vaccinal rashes occur more commonly than is supposed. Prodromal rashes, secondary rises of temperature, particular smells, predilection to come out more profusely at places of friction, are among other points to be considered but are inconstant.

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(The plates show the centripetal character of the rash in chicken-pox and its centrifugal character in small-pox.)

FIG. 1.

FIG. 3.

FIG. 4.

FIG. 2.

Figs. 1 to 4.—A case of chicken-pox. The superficiality of the lesions is well shown on the palm of the hand and sole of foot.

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FIG. 5.

FIG. 6.

FIGS. 5 AND 6.—A mild case (boy, aged 6) of small-pox with very slight rash.

FIG. 7.

FIG. 7.—Sister, aged 3 (unvaccinated), of patient shown in Figs. 5 and 6. More profuse rash.

It is the weighing up of all points that produces the convinced diagnosis, and it is this diagnosis in an early case of mild small-pox that is at the same time both essential and difficult. A missed case (for the doctor is not always sent for) or an error in diagnosis is the usual and regretted beginning of epidemics, mild or severe.

There is no dividing line to be plainly seen between small-pox *sine eruptione*; mild small-pox, with one, two, ten, twenty, or a hundred lesions; severe, discrete, confluent small-pox, and the haemorrhagic forms of this disease.

The conjecture that there is a separate and distinct disease—alastrim—must be rejected. Leake and Force of the United States Public Health Service made certain experiments on rats and monkeys with material from cases of so-called alastrim in the West Indies. They found¹ that in monkeys a vesico-papular eruption was produced by inoculation of crusts or the contents of vesicles from such patients and that the animals were protected against re-inoculation with the virus or with vaccinia. Rats inoculated with alastrim did not develop an eruption, but became almost completely immune to vaccine virus. When intracutaneous inoculation is made with small-pox crusts, alastrim material, and vaccine virus in rats in the manner used in the Schick test for diphtheria, a reaction occurs. Rats previously inoculated with vaccine virus gave an intracutaneous reaction to small-pox crusts, alastrim material, and vaccine virus, but remained negative to chicken-pox crusts. They conclude that definite immunity to vaccinia is produced by previous inoculation with alastrim and that this affords additional evidence of the essential identity of alastrim with small-pox.

Taking an average of small-pox fatality for 276 cities in the United States of America and Canada, the rate has increased from 0.6 per cent. in 1920 to 5 per cent. in 1922, and at the present moment it would be unwise to presume that the mild type of small-pox as seen in Gloucester and the North of England will not revert in the future to the more fatal form of the disease.

I have endeavoured in this short article to bring out the fact that a definite diagnosis between these two diseases is at times extremely difficult. In the recent Gloucester epidemic the two diseases existed side by side in the same family; in such an instance a case of chicken-pox was admitted to hospital as one of small-pox. The patient, on recovery, was discharged from hospital, and a few days later passed through a typical prodromal history and developed a typical and profuse small-pox rash! The converse has also happened, a small-pox patient on discharge from hospital developing a typical chicken-pox eruption within a month of discharge.

Administrative measures for dealing with an epidemic of mild small-pox must at present remain the same as if we were dealing with the virulent type of the disease. One matter of paramount importance which should never be omitted where small-pox threatens is the provision of an observation ward where cases of doubt can be isolated. As stated before, a correct diagnosis can and should be made, and the number of cases for observation should be small.

REFERENCE.

¹ Report of U.S. Public Health Service, vol. 36, No. 25, June 24th, 1921.

CLINICAL NOTES OF FIFTY CASES OF SMALL-POX (1923).

BY

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In the following notes of 50 consecutive cases occurring in West Gloucestershire, the main consideration has been to show on which of the classical diagnostic points reliance may be placed in the light of present experience, and especially to emphasize those points in which the current type of the disease differs from the classical. The cases are the first fifty admitted to the West Gloucestershire Small-pox Hospital during the present epidemic, and occurred

between May and October, 1923. The first and several subsequent cases were imported from Gloucester; the remainder were contacts of earlier cases.

Of the 50 cases, 27 were males, 23 females; the youngest was 2 years of age; 2 belonged to the age-group 2 to 5 years, 9 to the group 5 to 10 years, 13 to group 10 to 15, 9 to group 15 to 20, 9 to group 20 to 30, and 8 were from 47 to 55 years. Forty-two were unvaccinated; the remaining 8 had been vaccinated in infancy and never re-vaccinated; the youngest vaccinated case was 23, and the next youngest 47 years old, so that none of the patients had been vaccinated within twenty-three years and only one within forty-seven years.

In type the cases were fairly clearly divided into a mild type (36 cases) and a semiconfluent type (14 cases). The mild type had a less severe prodromal illness, fewer spots, and a quicker convalescence. Some of these were very mild indeed, the prodromal illness being negligible and the rash confined to a very few spots on the face, wrists, or ankles. There can be no doubt that several cases of this kind passed unrecognized, so keeping up the epidemic; it was established beyond doubt that the mildest cases could hand on the disease in semiconfluent form to contacts. Previous vaccination did not appear to affect the type—of the 8 vaccinated cases 6 being of the mild and 2 of the semiconfluent type.

The semiconfluent type of case had a more severe prodromal illness, being in every case confined to bed, a profuse rash consisting of many hundreds of spots so that the features in the worst cases were quite unrecognizable, and usually a longer convalescence. In none of these cases was the constitutional disturbance at all so severe as one would have expected from so many pustulating vesicles.

One of the patients had been successfully vaccinated in the incubation period, four good vesicles forming; his subsequent illness was in no way different from that of the other mild cases. The remaining 49 were vaccinated on admission to hospital to confirm the diagnosis; immunity to vaccinia was complete in every case.

Incubation Period.—As a student, the writer was once asked by his chief on what day of the week the rash of small-pox most often appeared; the correct answer was "Sunday"—that is, fifteen days from the most likely day of infection under prevailing social conditions. Although difficult to establish with accuracy, this appears to have been about the interval in these cases.

Prodromal Period.—The onset being in the great majority of cases quite definite, it has been possible to define the length of this period with more accuracy and the result has failed altogether to confirm the four days universally described in textbooks. In three cases it was impossible to determine accurately the commencement of the disease; of the remaining 47 cases the rash appeared once on the second day, three times on the third day, twelve times on the fourth day, fourteen times on the fifth day, twelve times on the sixth day, four times on the seventh day, and once on the eighth day; in a certain number of cases, however, medical advice was not sought until the rash was well out, and it is possible that the rash may occasionally have been present a day before it was recognized by the patient's friends.

In the great majority of cases the prodromal illness was first diagnosed as a "chill" or "influenza"; two patients who had had pneumonia before complained of "pain like pneumonia but a little lower down"; one case was diagnosed "lumbago." Only four times was lumbar pain at all prominent, headache being the pain usually complained of. Initial vomiting occurred in 3 cases; there was no case of convulsions and no prodromal rash. Those cases which were under observation during this period had usually a temperature of from 100° to 103° F., which fell to normal when the rash appeared, and in quite a number of instances on the day previous to the rash. It was impossible to establish any relationship between the duration of this period and the severity of the subsequent disease.

The nature and distribution of the rash was very consistent in all cases, differing only in quantity. Appearing