assert that it is utterly impossible. There are, however, several undoubted cases on record; Mr. Lawrence has published a case that ought to convince the most sceptical. Sir Charles Bell has also published a case of complete dislocation of the last dorsal from the first lumbar vertebra, with entire division of the spinal chord. Professor Rust has also recorded a case of dislocation in the cervical region, which was replaced by himself. The injury occurred in consequence of a severe fall on the head.

Ehrlich has recorded a most remarkable case of dislocation of the atlas. A young man, 16 years of age, fell in carrying a sack of flour upstairs, and his head was forcibly bent forwards by the burthen. He was found senseless, with livid countenance, prominent eyes, tongue hanging out of the mouth, with slow and interrupted respiration, and pulse scarcely perceptible. The limbs were motionless, and apparently paralysed; urine and fæces passing involuntarily; the head was inclined to the right side, and had lost its firmness, so that it fell by its own weight from side to side, when unsupported. The articular process of the second vertebra projected on the left side. Ehrlich considered it a dislocation with pressure on the spinal chord, and caused extension of the head to be made, while he endeavoured to force back the atlas, and bring the second vertebra forwards.

After some effort the replacement was effected with a snap; the head now became steady, and the arms moved; but the patient remained insensible, with dilated pupils; the respiration and pulse were improved; and, on the next day, consciousness returned. A good deal of swelling of the neck and ecchymosis came on, but soon subsided, and after ten or twelve days he quite recovered.

In all the accounts, however, which the author has read he notices, that the direction of the displacement, when resulting from accident, has been forwards and upwards, and not, as in this case, *backwards and downwards*.

With regard to the anchylosis in this instance, there are a number of cases on record very similar, though not to so great an extent. Wynperse and Boyer have both met with cases of dislocation of the occiput upon the atlas, and of the latter upon the second vertebra, with anchylosis. Daubenton mentions a very remarkable case of this kind, where the second vertebra of the neck was pushed so far back as to leave only an interval of three lines between the odontoid process and the posterior arch of the atlas; the second vertebra, at the same time, inclining towards the right.

In this case, related by Daubenton, the distance between the odontoid process and the posterior arch of the atlas is one line less than in the case related above. Pro-

fessor Sandifort, of Leyden, has described a case where there was displacement of the atlas and axis, with anchylosis of these two bones to each other, and to the occiput; he describes also several others, chiefly of anchylosis, between the occiput and atlas.

There is one remarkable case recorded by him where the occiput, all the cervical, and the two superior dorsal vertebræ were anchylosed; but the articulating processes and laminæ only were implicated, the bodies of the vertebra being still connected by their fibro-cartilage.

It would appear, therefore, that a more extensive case of complete anchylosis than the one now under consideration, has not yet been authenticated and published. There can be no doubt that the primary disease was ulceration of the cartilages, spontaneous dislocation of the first and second cervical vertebræ following.

ABSTRACT OF A REPORT

ON THE

SMALL-POX HOSPITAL.

By GEORGE GREGORY, M.D.

SEVEN hundred and twelve patients were received into the Small-Pox Hospital in 1838, of whom 416 were males and 296 females. Eighteen were labouring under diseases not variolous, 694 had small-pox in some of its various forms or modifications, many very mildly, but the greater number in a high degree of intensity, rendering the seclusion of an hospital as necessary for the comfort of the individual as for the security of the community. The number of small-pox cases admitted in 1838, exceed the largest number ever received since the foundation of the hospital in 1746; besides which more than 100 persons with small-pox were refused admission for want of accommodation. In 1781, a year of very extensive and fatal small-pox, 646 patients were treated in the building in Cold-bath-fields, and of them 257 died, being at the rate of 40 out of every 100. In 1838, out of 694 cases, the deaths were 188, being at the rate of only 27 in the 100. This saving of 13 lives out of every 100, or 90 in the whole, may be attributed, in part, to the improved accommodations in the present building, imperfect as it is, partly to improved modes of practice, but chiefly to the influence of vaccination, which, where it fails to prevent small-pox, so modifies and alters the human constitution, as to permit the small-pox to run its course with a mildness and safety unknown in 1781.

The number of persons who last year in the hospital passed through small-pox at variable periods, after reputed vaccination, was 298, more than two-fifths of the total

admissions. Of them 114 took the disease in that mild and safe form called, from its close resemblance to the chicken-pox, the varicelloid; 66 had the disease severe at first, but shortened and modified in its subsequent stages, while 118 (or 40 per cent.) underwent the disease in a regular, normal, or unmitigated form; and in them the rate of mortality was nearly the same as in those who had never been subjected to vaccination. The deaths in this class amounted to 31, but from them some deductions must in fairness be made, for in the spring of the year, from the crowded state of the

wards, fever of a very malignant character pervaded the hospital, affecting indiscriminately those who had, and those who had not, been vaccinated. To that cause, and to superadded erysipelas, the deaths of 8 or 10 among the vaccinated may be attributed, leaving the total mortality by small-pox after vaccination 21 out of 298, or 7 per cent.

The following table, showing the ages of the patients admitted during the last year, and distinguishing the vaccinated from the unvaccinated, affords some interesting results:—

Ages.	Unvaccinated.		Vaccinated.	
	Admitted.	Died.	Admitted.	Died.
Under 5 years of age.....	42	20	0	0
From 5 to 9 inclusive.	37	19	5	0
— 10 to 14.....	30	8	25	0
— 15 to 19.....	104	32	90	6
— 20 to 24.....	115	50	106	16
— 25 to 30.....	45	23	55	8
— 31 to 35.....	12	7	13	1
Above 35 years of age	11	6	4	0
TOTAL.....	396	157	298	31*

* Of these 6 died of typhus, 3 of superadded erysipelas, 1 of chronic diarrhoea—Total 10*

From this table it appears that in the early periods of life the preventive powers of vaccination are almost complete; five vaccinated children only, under the age of 10, having been received, while of the unvaccinated, within the same ages, the number admitted was 79, of whom 31 died. At 10 years of age the receptivity of the small-pox in the vaccinated may be said to commence, but the disorder then shows itself only in its mildest form. From 15 to 25 years of age the disposition of the body to receive small-pox after vaccination increases, and the severity of the disease augments in a like ratio. The table indicates a decline in the number attacked by small-pox after the age of 25, but the diminution is equally great among the unprotected as among the vaccinated, and may, therefore, be owing to causes independent of vaccine agency.

A variety of tables, illustrating the same facts, have recently been published on the Continent,† and they all concur in showing that the security which vaccination offers, perfect as it is in the early periods of life, undergoes a material diminution from the period of puberty to that of confirmed manhood.

This important principle, now clearly established, could not possibly have been known to Jenner, and the early supporters of vaccination. Though it detracts in a certain degree from the high pretensions with which vaccination was introduced into public notice, it yet offers no reason whatever for neglecting vaccination, nor derogates from the merits of Jenner. Vaccination, shorn though it be of some of its attributes, and incapable as it is now proved to be of banishing small-pox from the earth, yet remains the greatest boon which medical science ever gave to mankind.

Two important questions arise out of the statements now made: first, how far the deterioration of vaccine security is owing to defective virus, imperfect modes of vaccination, or other causes under our control; and, secondly, how far such deterioration, whether arising from imperfection in the agent itself, or in the mode of its application, admits of remedy by the process of revaccination.

With respect to the first of these questions, it seems probable that the diminution of vaccine energy, commencing as it does at a particular period of life, and gradually augmenting for a certain number of years, cannot really be owing to defective modes of operation, at least to the extent supposed by many; that it has its origin in certain

† Also in THE LANCET. (See Nos. 15, 16, 17, and 19, Vol. I., 1838-9.)

progressive changes taking place in the human frame, and, consequently, that there is no rational ground for believing that recurrence to the cow for fresh matter, a greater number of incisions, vaccinating at a later period of life than has hitherto been usual, or any other alteration in the present mode of conducting the process, will materially lessen the number of cases in which small-pox succeeds to vaccination. The defect, whatever be its amount, is in the agent itself, and not in the mode of its employment.

With reference to the second question, involving the propriety of revaccination, it may be observed, that this practice is comparatively of recent date, and that the means of judging whether it really possesses the power of renewing the security deteriorated by time are still very scanty. We need not wonder, therefore, at great differences of opinion existing on this subject. In Germany, the practice of revaccination is considered to be of unquestionable value. In France, on the other hand, it is viewed as a measure of trivial importance. Without prematurely venturing any decided opinion on the question, the author of the Report is disposed, until further experience has been acquired, to recommend revaccination as a precautionary measure; and thinks that the earliest age at which it can be practised with any prospect of real advantage is ten years, and that the period of life best adapted for it is from 15 to 20.

If the experience acquired at the hospital can thus be rendered useful to the public generally, it must still more strongly serve to direct the attention of the Governors to the state of the building. Whoever reflects that forty years after the discovery of vaccination, in a country where every encouragement is held out, both by the Government and the medical profession universally, to the practice of vaccination—in a town where the opportunities of efficient vaccination are immense, and small-pox inoculation unknown, the calls upon this hospital should have been greater than in any year since 1781, will at once acknowledge, that this institution is entitled to recover that share of public patronage which it once enjoyed, and that its accommodations should be adapted to the increased size of the metropolis, and the altered circumstances of the times. The necessity of withdrawing the mild and varicelloid cases from all contamination with the aggravated forms of the disease, has long been felt, but was never so strikingly displayed as during the past year. This measure of great and indispensable necessity, cannot be effected without devoting the whole of the present building to the reception of small-pox cases. This involves the necessity of a separate building for the purposes of vaccination, a plan which has often been recommended on other grounds, and which, we trust, the liberality of the

public will enable the Governors to carry into effect, without any serious drain upon the permanent resources of the charity.

The vaccination department of the institution has been in full activity during the past year: 4830 persons have been vaccinated at the hospital; 1558 medical gentlemen have been provided with abundant supplies of vaccine lymph. The applications from the country have increased very considerably, and but for the heavy expense of postage would have been still more numerous.

There have been received from Bristol, Aylesbury, and the north of Scotland, supplies of matter recently taken from the cow, with which experiments have been made, but as none of them appear to exceed, or even to equal in intensity the lymph now in use, it has not been thought advisable to make any alteration. Recurrence to the cow for fresh lymph is not a measure lightly to be had recourse to, nor should it be advised until the old and tried stock has obviously degenerated.

February 1st, 1839.

THE
CAUSES AND MORTALITY
OF

FEVER AND SMALL-POX AT GLASGOW.

(From Dr. COWAN'S "Vital Statistics of Glasgow.")

CAUSES peculiar to Glasgow, giving rise to fever, and favourable to its propagation, must exist, and it is the duty of the civic authorities to investigate these causes.

Manchester, with a population at the last census of 227,808, and which, in its constitution and density, must nearly resemble that of Glasgow, has been for years, and is now comparatively free from fever. The average annual number treated in the Manchester Fever Hospital for seven years, ending in 1836, was..... 497

The annual average in Glasgow during the same period..... 1842

The number treated in Manchester Hospital in 1836..... 780

The.....Glasgow..... 3125

Fever is now diminishing in Manchester, while it is increasing in Glasgow.

The prevalence of fever in Glasgow, when compared with Manchester, is still more strikingly contrasted by the great change which has taken place in this respect. From 1797 to 1806, both inclusive, the number of the fever patients treated in the Glasgow Infirmary was only 883, while those treated in the Manchester Fever Hospital amounted to 4618.

In Leeds, too, another manufacturing city, with a population at the last census of 123,393, the number of patients affected with fever and treated in hospital, amounts