Here, then, as it appears to us, in this scanty and slowly moving stream of blood, we have a sufficient explanation of the diminished absorption which accompanies the collapse stage of cholera. This phenomenon of lessened power of absorption is exactly coincident with the stage of collapse. It comes on with the other symptoms of collapse, and it passes off with them. It is one of the obvious and necessary results of that remarkable impediment to the pulmonary circulation, which I have shown, in a previous communication (British Medical Journal, Nov. 18th, 1865), to be the one great central fact in the pathology of choleraic collapse.

Knowing what we do of the process of absorption by the blood-vessels, and of the various circumstances which tend to quicken and to retard it, we might have predicted, as a necessary consequence of that peculiar state of the circulation which has been proved to exist during the stage of collapse, just such a diminution of the function of absorption as is known to occur. As Magendie ascertained by experiment that the function of absorption from the lower bowel is reduced to about one-fifth of its ordinary activity during the stage of collapse, so it is probable that the blood-stream is lessened in the same proportion. The one phenomenon will serve as an index and a measure of the other.

It is probable that, during any future epidemic of cholera, attempts will be made to treat the disease by the method of hypodermic injection. I see that some practitioners have publicly announced their intention to introduce morphia in this way. It makes one shudder to contemplate the consequences of this practice. An opiate introduced by the stomach has some chance of being rejected by vomiting or passed away by stool; but injected beneath the skin, it must enter the circulation and produce its deadly narcotising effects. Two results, therefore, must inevitably attend this method of treating cholera. 1. The death of the patient, whose nervous system will be overwhelmed by the drug; and 2. The discredit of the practitioner who, refusing both to learn and unlearn, persists in a method of treatment condemned equally by therapeutical experience and by pathological science.

Cataract Glasses. In the October number of the *Ophthalmic Review*, Dr. Mackenzie of Glasgow gives some very excellent "Hints on Cataract Glasses." He tells us how to adapt proper glasses in individual cases; and winds up with directions to be given to the patient. "Having seen our patient provided with proper glasses, he should be warned against scratching them, which, on account of the prominence of their surfaces, is very apt to happen. Dismissed from an hospital, cataract patients are supplied with two pairs of glasses of the usual foci; but the cases with which they are furnished for holding the spectacles are generally so coarse and rough inside that in a few months the centres of the spectacles are marked with scratches, and thus rendered of almost no further service. Rather than commit the spectacles to such usage, it were better to advise the patients to have a soft pouch of cloth (of velvet, if they can get it), made expressly for holding their spectacles, so as to avoid scratching them. Cases for cataract-glasses, furnished by the optician, should be constructed so as never to open at one end, but should have a lid extending the whole length of the case, and hinged like that of a snuff-box; so that the glasses are laid flat into the case, and not put in at one end and thrust along into their place—a plan which, unless the case is lined throughout with velvet, is sure to injure the glasses by rubbing against their surfaces."

Original Communications.

THE CATTLE-PLAGUE AN ERUPTIVE FEVER.

By Robert Ceely, Esq., Aylesbury.

[*Continued from p.* 18.]

Notwithstanding that there are found some modifications both of the external and internal pathology of the Cattle-Plague when it attacks the sheep, yet it still is seen to preserve its eruptive character.

So also in the goat. Professor Varnell very lately informed me that he had met with a fatal case of the disease in the goat, in which the cutaneous eruption was well developed.

I have been favoured with the following description of the order of development of the cutaneous eruptions, by a careful observer, who had excellent opportunities (T. W. Mayor, Esq., V.S.R.E.).

"The earliest symptoms of cattle-plague are indicated by an increase of the heart's action; the pulse varying from 86 to 120, and generally wiry. The respirations 30 and upwards. The countenance, when not excited, appears anxious; the ears are thrown back; alæ nasi swollen, so as, in some instances, almost to close the aperture; Schneiderian membrane inflamed; slight watery discharge from the nostrils; vagina inflamed in streaks.

"In the second stage, which commences about the fourth, fifth, or sixth day from the preceding, the swelling of the alæ nasi diminishes; the pulse varies from 80 to 90; the respirations from 24 to 30 and upwards, with crepitation on one or both lungs. There now appears, on the nose, along its margin, close to the hair and occasionally along the back, vulva, udder, etc., a papular or vesicular eruption of a dark copper or bronze colour. When that is peeled off, a red spot is visible, slightly depressed in its centre; but, on the nose, rapidly becoming dry and pitted.

"The 'cauliflower' eruptions or incrustation, I have seen only in the last stage of the disease, and they only appear pustular.

"In the only cases of recovery I have seen here (Norfolk), the vesicular eruption began about the fourth day, and commenced to disappear about the twelfth day."

The character and course of the eruption are best observed on the udder, particularly when devoid of hair. Here, both during life as well as after death, may be seen patches of roseola, minute papulæ, small flat vesicles, and circular dirty brown crusts. Mr. Lepper of Aylesbury, not long since furnished me with the skin of the udder of a milch cow which had recently died of a severe attack of the disease. And, still later, Professor Varnell forwarded to me for inspection a portion of the skin of the udder of a heifer similarly affected, which was seen also by Dr. Quain. In both these specimens, the above co-existent phenomena were remarkably well displayed.

Reverting to the writers before mentioned, who either recorded the popular belief in the resemblance of the cattle-plague to small-pox, or expressed their own impressions on the subject, one cannot help remarking that no records are to be found, as far as my information extends, of the communication to man of the malignant cattle-distemper of their times, either by casual or artificial inoculation.

In regard to the present disease, reports have reached me of its casual communication to persons occupied in attendance on diseased cattle or engaged in autopsies. Few of these can be relied upon, the

information not being sufficiently explicit to allow of a satisfactory deduction. Some of the results reported, doubtless, were induced by inoculation with the products of septic decomposition and not with the specific virus of the disease.

I have neither seen nor heard of any case parallel to the following; which came under my observation after it had been inspected by several. The particulars of the case I noted down at time of my visit, from the dictation of the patient and the corroborative testimony of Mr. Rayner, his surgeon.

On December 3rd last, while the patient, Mr. H. M. Hancock of Uxbridge, veterinary inspector, was superintending the autopsy of a bullock which had recently died of cattle-plague, which was being performed by his assistant. Mr. Hancock accidentally received on the back of his hand a puncture from the point of the knife, while the operator was occupied in removing the skin in the vicinity of the scrotum. The injury, being slight, was disregarded, but washed as soon as practicable, and thought of no more. On Dec. 8th, five days afterwards, a small, slightly elevated, hard pimple, was seen and felt on the site of the puncture. This gradually advanced till the ninth day from the puncture—the fourth day from papulation; when the enlarged papule became distinctly vesicular. There were but slight constitutional symptoms at that time. On the next day—the tenth from the receipt of the puncture, the fifth of papulation, and the second of vesiculation—he called upon his surgeon, Mr. Rayner of Uxbridge, who, upon seeing the hand, asked the patient "if he had not been handling the udder of a cow, for he could recognise a cowpock vesicle of the ninth day.

"The vesicle was then distended with lymph; its margin elevated and rather brown; centre depressed, and also rather brown; and it was surrounded with a large bright areola. There was considerable tumefaction extending from the knuckles above the wrist. The absorbent vessels were visibly inflamed and painful, and much uneasiness was felt in the axilla. The pulse, naturally slow, was accelerated. There was much fever, pain in the back and limbs, severe headache, anorexia, etc., which symptoms continued to increase to the end of the two following days, when the diffused areola had extended up to the elbow."

On December 18th—fifteen days after the puncture, and ten days after papulation—the patient was seen in London by Dr. Quain, Professors Spooner and Simonds of the Royal Veterinary College, and also by Dr. Murchison. "The local inflammation and the constitutional symptoms had then partially subsided; the vesicle contained a rather turbid, brownish fluid, and all the indications of a declining vaccine vesicle."

On December 20th, I visited Mr. Hancock at Uxbridge—the eighteenth day of puncturation, the thirteenth of papulation. There was then evident declining œdema of the integuments of the back of the hand, extending up to the elbow, with a slight blush of redness near it. The vesicle, which was still poulticed, was depressed in the centre, puckered at the margin, but still raised on a firm base. It certainly exhibited the appearances I have often observed, at a corresponding stage, on the back of the hand of milkers infected with casual cowpock. A similar vesicle I have depicted in Plate v, Fig. 2, of "Further Observations on the Variolæ Vaccinæ" (*Transactions of the Provincial Medical and Surgical Association*, vol. x, 1842).

The conclusion drawn from the appearance of the vesicle was corroborated by the history of its development. Its late appearance after the puncture; its tardy and *gradual* papulation and vesiculation; the period of the advent of the areola; its extent and period of decline—all corresponding to these phenomena when induced by the casual inoculation of the milker by the cow affected with vaccinia. Still it must be regretted that lymph was not abstracted at a time when it would have been available in settling all doubts as to its reality.

In the few cases in which I have attempted inoculation with the nasal discharge in cattle-plague, on subjects not having previously undergone variola or vaccine, the results have been negative—the production merely of evanescent papules.

ON THE NATURE, CAUSE, AND TREATMENT OF TUBERCULOSIS.

By Horace Dobell, M.D., Physician to the Royal Infirmary for Diseases of the Chest, etc.

The greater part of my leisure during the last sixteen years has been devoted to a study of the natural history of pulmonary consumption and other forms of tuberculosis, and to collecting, assorting, comparing, and testing the facts recorded by others, directly and indirectly connected with the subject.

The ideas which led to this plan of work were set forth in a paper which I read to the Abernethian Society of St. Bartholomew's Hospital in 1848, and afterwards published in the *London Medical Gazette* of 1851, "On the Class of Medical Literature most needed in the Present Day."* The object was to bring together in an epitome all the most reliable facts concerning tuberculosis, and, from a careful study of them as a whole, to frame hypotheses which seemed capable of co-ordinating and explaining large numbers of the principal facts; then to select the one which included the largest number, and to contrive some crucial experiments to test its correctness.

This plan of procedure was carried out with the effect of annihilating one hypothesis after another, each time suggesting some apparently better arrangement of the facts and some more appropriate ideas with relation to them, until, at length, one hypothesis, with certain possible variations, appeared to grow nearer and nearer to a complete theory.

I have again and again been on the point of publishing this view of the causes of tuberculosis; but have hesitated from a feeling that, before doing so, it ought to be brought up to the completeness of a theory; and my attempts to give it this completeness having always failed to satisfy me, I have been thus deterred from bringing it forward. I have, however, gradually become impressed with the belief that this incompleteness may have been due in some measure to my own want of a sufficiently profound knowledge of physiology and organic chemistry, and of the leisure necessary to acquire this knowledge and to carry out experiments in physiological chemistry. I have hoped to engage the assistance of those whose acquirements in this respect are better than my own, and who, being less occupied with the practice of medicine, have more time for the required class of work. In this hope I have been, at present, disappointed, both because the number of such men is limited, and because they have their heads and hands preoccupied with their own studies, and are naturally unwilling to leave these and apply themselves to such as may be suggested by other persons.

The reasons which have deterred me so long would deter me still from venturing to bring my hypothesis before the profession, were it not that having, during the last two years, published in the *Lancet* (Sept. 10,

* These papers, as corrected and reprinted in 1857, may be obtained from Messrs. Churchill.