

AN ACCOUNT OF
CERTAIN ORGANIC CELLS PECULIAR TO THE
EVACUATIONS OF CHOLERA.

By J. G. SWAYNE, M.D. Lond.

LECTURER ON MIDWIFERY AT THE BRISTOL MEDICAL SCHOOL.

[The engraver was unable to complete, for THE LANCET of last week, the following engravings of the microscopic appearances which should have accompanied the paper of Dr. Swayne. They are now subjoined, together with the passages referring to them in the paper of Dr. Swayne in the last LANCET.—Ed. L.]

Large and beautiful crystals of triple phosphate (fig. 1, *a*) may be constantly seen in choleraic evacuations, and are often in considerable abundance. These are present also in healthy fæcal matter, but are seldom or never plentiful. This, however, is not the case with urate of ammonia, which is occasionally present in very great abundance in choleraic evacuations. It may be either in an amorphous form, or in dark-yellow, semi-opaque globules, the smaller ones often cohering together in pairs. Sometimes it is present in such quantity as to tinge the evacuation of reddish colour. (Fig. 1, *d*.)

Lithic acid is occasionally, but more rarely present, and is never in any quantity. (Fig. 1, *c*.) Sometimes lithic acid is combined with lithate of ammonia, in the mode represented by Dr. Golding Bird in his book on urinary deposits. (Fig. 1, *e*.)

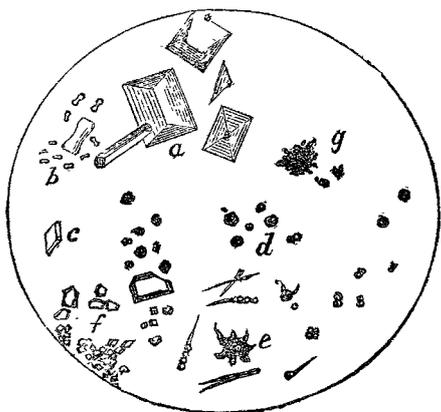
Oxalate of lime in its dumb-bell form is not uncommon, and is sometimes very plentiful. (Fig. 1, *b*.)

Although chloride of sodium is so constant in healthy evacuations, yet it is nearly always absent in those of cholera. In one case, however, (No. 11, First Series,) I met with it in large quantities. (Fig. 1, *f*.)

Cholera evacuations often contain large quantities of black amorphous matter, which I believe to be calomel, as it is always most plentiful in those who have been treated with large doses of that medicine, and is rendered darker by lime-water. (Fig. 1, *g*.)

I now come to the last and most important peculiarity—viz., the presence of those peculiar cells which we have so constantly found in the evacuations of cholera. I have found them absent entirely in only four out of thirty-four cases; and the proportion in which Mr. Brittan has failed to detect them is still smaller. Three of the cases in which I failed to see them were unusually severe, and rapidly fatal; but I do not think that this invalidates our conclusion, as I was only able to obtain one specimen of fluid from each of these, the evacuations mostly running from them through the bedding. Both Mr. Brittan and myself have occasionally failed in obtaining them in one motion, (usually the first,) but on examining others from the same patient, have succeeded in finding large quantities of them. It seems sometimes, especially in the worst cases, as if there were not sufficient power in the system to expel these bodies from the intestines. The evacuations in such cases are very thin, clear, and transparent, or semi-gelatinous, but without any well-marked flocculent deposit. In the majority of rice-water evacuations, this flocculent deposit is very marked, and the flocculi contain a good deal of yellowish-white semi-opaque matter. This is the peculiar appearance which these bodies present to the eye when clustered together in large numbers. In one case, from a convalescent patient, (No. 4, First Series,) a tolerably thick bilious evacuation was studded upon its surface with yellowish-white bran-like scales. On examining these under the microscope, I found them to consist almost entirely of these bodies, many of which were of very large dimensions, so as to occupy nearly half the field when viewed under an eighth-of-an-inch magnifier. The flocculent deposit sometimes almost entirely consists of myriads of these bodies of all sizes.

FIG. 1.



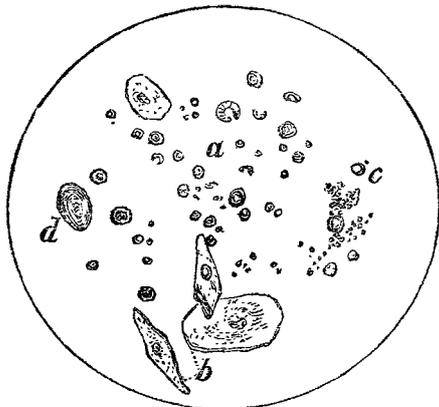
Crystalline Matters contained in Choleraic Evacuations.—*a*, Crystals of triple phosphate; *b*, Dumb-bell crystals of oxalate of lime; *c*, Lithic acid; *d*, Nodules of lithate of ammonia; *e*, Lithate of ammonia and lithic acid; *f*, Chloride of sodium; *g*, Amorphous matter—calomel? Magnified 420 diameters.

FIG. 3.



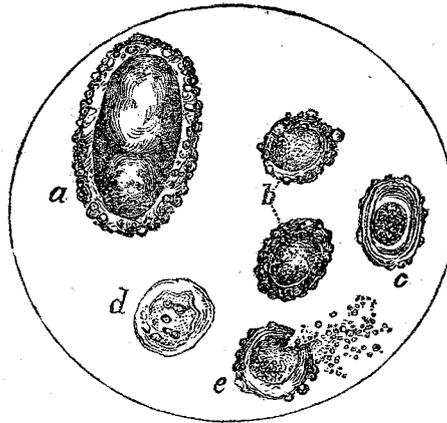
Choleraic Evacuation from Case 29 *a*.—*a*, Large cholera cell, somewhat broken; *b*, Medium ditto; *c*, Small ditto; *d*, Large cell, ruptured by pressure, so as to show its component parts; *e*, Mucous globules, with hyaline basis. Magnified 420 diameters.

FIG. 2.



Cholera Cells in Vomited Matter, from Case 5, (First Series).—*a*, Cholera cells; *b*, Squamous and columnar epithelium; *c*, Round, clear, oily globules; *d*, Starch grain. Magnified 420 diameters.

FIG. 4.



Large, well-developed Cholera Cells, from Cases 9 (First Series) and 34.—*a*, Large cell from Case 9; *b*, Large cells from Case 34, well developed; *c*, Ditto, not fully developed; *d*, Large cell, a little out of focus, so as to show the cells on its surface; *e*, Cell, ruptured by pressure, so as to give exit to its contents. Magnified 420 diameters.

The following additional remarks on the same interesting subject have been forwarded to us, by Dr. Swayne, for publication this week.

In my paper which appeared in the last number of *THE LANCET*, I alluded to some very perfect specimens of the cholera cells (from Case 336) which I had recently obtained. Since writing the above, I have examined minutely a considerable number of the same cells, and have been able to make out their structure more distinctly than I had hitherto done. The cells are mostly round, (some, however, are ovoid,) and covered, externally, with protuberances. In this respect their surface somewhat resembles that of a mulberry, except that the protuberances are not so thickly set. Each cell has an internal cavity, in which is contained a round mass of granular matter, which seems to be surrounded by a thin membrane of its own. In some cells—especially those that are ovoid and not fully developed—the granular matter only partially fills the cavity of the cell, the remaining space appearing to be occupied by a transparent fluid. When a cell is ruptured by pressure, the granular matter escapes, and then appears to contain very minute, rounded cells. In fully-developed cells the cell-wall is very thick, and is thrown into a number of lines or folds, passing between the external protuberances. Each of these protuberances appears to be a cell or bud, growing from the outer surface of the parent cell. They are very distinct in fully-developed cells, and appear to be covered by a fine membrane, which they protrude before them. Some of these cells or buds are more detached from the parent cell than others, so as occasionally to be connected to it only by a slight pedicle. I have seen one completely detached, as if just separated; so that there seems reason to believe that these cells may propagate by germination, as well as by shedding their granular contents.

To the Editor of *THE LANCET*.

SIR,—At page 9 of a pamphlet which I have recently published (entitled, "Malignant Cholera: its mode of Propagation, and its Prevention") there is a passage in which, I find, on re-perusal, I do not explain myself fully enough to make my meaning clear. After remarking on the great fertility of the "cholera fungus" within the human intestine, I go on to say, "that it is difficult to conceive that so vast a multitude of living organisms can be reared there, except at the expense of the fluids of the body at large."

Now this passage, without further explanation, might give rise to a very serious misconception of my views. It is clear, in fact, that, as far as mere "raw material" goes, the digested food generally to be found in the human intestine would supply ample nutriment for all the "fungi" which breed there. But there are many other considerations which render it exceedingly improbable that these "fungi" can subsist on such food. In the first place, if the digested products of the food of man and a given temperature (that of the living body, namely) were all the conditions needed for their development, it is difficult to understand why these "fungi" should not breed equally well in the intestine of the dog. The dog generally feeds from the same table as ourselves, and the temperature of his body is very nearly identical with that of our own.

In the next place, it is a well-known law that parasites, in general, do not live on the *food* of the creatures on which they fasten, however much this may have undergone previous elaboration, but on the perfected juices of the creatures themselves. And this law especially holds for all those parasites which are—as I believe this one to be—peculiar to a single species. This is, in fact, the only ground on which we can explain what, under any other view, must seem so singular an election. For, while the food of a great number of different species is, as far as proximate elements go, absolutely identical, there is something in the proper juices of every single species which distinguishes these juices from the juices of every other.

Of the limitation of particular parasites to one species, a hundred instances will at once occur to the mind of all who are familiar with the natural history of this numerous tribe. Almost as much as this is, indeed, tacitly implied in the very name they bear.

These (among others, which it would take too much time to detail) are some of the reasons which have led me to believe that the "cholera fungus" does not feed on the matters which it finds in the human intestine, but on the constituents of the perfect blood. Assuming this to be true, it follows as a matter of course, that the immense multitude of fungi

which are sometimes developed in the human intestine in a single case, cannot have been reared there, "except at the expense of the fluids of the body at large."

A considerable portion of the water which passes out of the blood into the intestine, in cases of cholera, would, under this view, represent the albumen and other blood-constituents appropriated by the newly developed "fungi."

The presence of that portion of water which is in excess of this, is probably to be accounted for on the well-known principle, that all serous fluxes (unless when the result of acute inflammation) are, by virtue of physical conditions, much more watery, in their first outpouring, than the serum from which they come.

The great public interest which the subject has excited, and the possibility that I may have no other opportunity of offering this explanation, will, I trust, be a sufficient excuse for the liberty I have taken in correcting, through your pages, the effect of a passage, which would otherwise appear to scientific men as an example of very loose and inconsequent reasoning.

I am, Sir, your obedient servant,
Park-street, Bristol, Oct. 1849. WILLIAM BUDD.

ON THE TREATMENT OF MALIGNANT CHOLERA.

By W. M. FAIRBROTHER, M.D., Southwark.

It occurred to me lately, in conjunction with Mr. Sewell, of Lambeth, to examine the bodies of two persons who had died of cholera. I subjoin a sketch of the post-mortem appearances:—The cavity of the thorax was one half empty, the lungs so collapsed as to be not larger nor thicker than the open hand, and unconnected with the anterior wall of the thorax, except by adhesions of the pleura, which extended in some points fully two inches; the right and left cavities of the heart were full of dark, uncoagulated blood; the gall-bladder turgid, with olive-green bile; the stomach slightly injected externally and ecchymosed internally; the intestines presented a roseate appearance, both in their peritoneal investment and mucous lining. The characteristic evacuation was found on slitting the bowels open. The mesenteric veins were injected, and the bladder contracted to the size of a small apple: and these appearances were common to both.

Must it be confessed that we still have made no great advancement in the knowledge of the right treatment of this disease when collapse has set in? It is grievous to witness that some gentlemen affirm that such and such treatment has been pursued in twenty cases, or one hundred; as, for instance, Dr. Ayre's calomel plan, and that no fatality has occurred amongst these. What stayed the vomiting? How was the purging restrained? Did that remedy bring back life to the half-dead tissues? We are left to presume that these fortunate cases were of a mild character; and chalk mixture, with aromatics, acetate of lead and opium, Dover's powder, with rest, or anything except "sulphate of magnesia and tartarized antimony," would probably have cured them all. That state short of collapse is easily prescribed for; but we are called, unfortunately too often, to see the patient cold, almost pulseless, tossing about in bed in every position of restlessness, voiceless, almost hopeless. What can we do here?

Of 130 cases of developed cholera, from July 6 to Oct. 4, including in that number 70 cases of complete collapse, 50 died. Of those 20 who recovered from decided collapse, four were entirely pulseless for several hours. This was in Southwark.

In 180 cases of developed cholera, occurring from Aug. 21 to October 4, in Lambeth, there were 45 deaths.

From Sept. 4 to Sept. 12, out of 13 cases of developed cholera but three recovered. This was also in Southwark.

Thus in 310 cases of confirmed cholera there were 95 deaths and 215 recoveries.

My experience leads me to believe that the best treatment for those symptoms which would probably pass into confirmed cholera, is a moderate dose of calomel and opium, with chalk mixture, frequently repeated; rest in bed, and cool drinks. In a case of developed cholera, with vomiting, purging, and cramps, a larger dose of calomel, with one grain of opium, to be repeated if rejected, and a mixture, with sesquicarbonate of ammonia, or aromatic spirit, with two minims of laudanum in each dose, given frequently, as the case may be more or less urgent, with or without one minim of Scheele's hydrocyanic acid; and if collapse seemed setting in, a blanket wrung out of boiling salt and water, applied closely to the naked body, and the patient to be warmly covered up. Should perspira-