fore larger quantities of manure consumed, than by ordinary cultivation. Still it appears exceedingly doubtful whether—having regard also to the commercial side of the question—it will ever be practicable to utilise the sewage of more than twenty to thirty persons per acre over a term of years.

It is evident that the reduction from 100 or 150 to 20 or 30 persons per acre, by increasing the total area to which the sewage is applied, would at once relieve Dr. Letheby's "pestilential swamp" of much of its bad character; and if the land, when so relieved, be treated according to the teachings of science, and also, I may add, of practical agriculture, I confidently maintain that the swampy and objectionable character vanishes at once.

Again, nothing could be more completely unscientific than what is known as the "catchwater" system of irrigation. Not to weary you with engineering details, I may briefly describe it as a system which necessitates a saturated condition of both soil and subsoil to admit of the sewage being passed *over* the surface of successive areas of land, overflowing at the lower edge of each into a "catchwater" ditch which conveys it to the next area, the effluent water eventually overflowing, in its turn, the edge of the last area, and running off the surface into the ditch which conveys it to the river, the first area receiving too much sewage, and the last too little. On this system there is simply no guarantee at all that the effluent water has been exposed to any purifying process. It is generally clarified and sometimes purified, but the whole thing is a happy-go-lucky affair from first to last. Accordingly we have found, in the case of four distinct farms laid out on this principle, that what had been predicted on theoretical grounds, was actually taking place in practice, and that something like a third of the organic matter in solution was escaping in an unoxidised form; and, what was even more satisfactory to me, we found barely a trace of organic matter in an oxidised form.

This danger, however, at once disappears on a farm laid out as is my Romford farm, where the sewage cannot escape without passing through five or six feet of constantly re-aerated soil, in its intermittent passage through which the organic matter is minutely, almost infinitely, subdivided by the grains of earth, and washed in the air contained in the interstices, which it displaces and forces to bubble up to the surface. Moreover, when a farm is properly laid out and properly managed, instead of the sewage being allowed to flow for many hours consecutively over the same individual square yards of land, in quantities far in excess of the wants of the plants, a few square yards only are treated at one time; and when these are moistened the sewage is passed on to a fresh area. Thus the sewage is economised, and the land begins to be re-aerated as soon as the sewage begins to move downwards to the under drains.

Frankland's "intermittent downward filtration" is, therefore, the same as scientific irrigation, *minus* the assistance of vegetation.

Two dangers will, however, occur to the medical mind as attendant on all sewage irrigation, namely, malaria and well-pollution. Malaria is supposed indeed to be an almost necessary attendant upon all irrigation, and so I believe it is in most cases, simply because irrigation coupled with artificial drainage has been hitherto unknown. Low lands have generally been chosen for irrigation from motives of economy; they are not drained; in most cases their subsoils are naturally saturated, and vast quantities of water are superadded. The soil is generally rich and built up of the decomposing vegetation of centuries, while the grass growing on it (not to take the case of rice-fields, which are artificial swamps) is rank. The long roots of this rank herbage push down into the unoxidised organic matter, and make little capillary tubes in the soil through which a saturated solution of organic matter is evaporated into the atmosphere. But this dangerous condition of things at once ceases, the moment under-drainage of the subsoil is made to supplement irrigation of the surface, whether the liquid employed be plain water or sewage. The danger of well-pollution also disappears when under-drainage is introduced coupled with intermittent irrigation, aëration, and moderate doses.

The sewage question is therefore solved, and the dangers arising from sewage removed by its direct application to land.

But the benefit derived from this system is not merely negative—it is also positive. Sewage-irrigation enormously increases the productive power of the land—provides, in fact, a new source of food for the people, and by making bread, meat, vegetables, milk, butter, and cheese probably cheaper, but at all events more plentiful, will feed the masses better, and enable them better to resist disease. The sewage of the urban population of Great Britain alone, expressed in wheat, represents a minimum of 675 millions of quartern loaves of bread, but it is specially adapted for the production of milk. Now it is notorious that the milk-supply of our large towns, even when "stretched" to the utmost by the aid of the water-companies, is ludicrously small, and I believe that the

stunted and weak frames of our town populations are due to the absence of milk from their diet as children, even more than to bad air. Milk is the great source of soluble phosphate, out of which children manufacture the bones of strong men. To tell the children of England to make these bones without milk, is like the order given to the children of Israel to make bricks without straw. Let medical men insist on sewage being applied to land, and they will remove one principal source of disease, while by the same stroke strengthening their patients to resist diseases arising from other sources. They will, in short, substitute Food for Fever.

THE ANATOMICAL RELATIONS OF HYPERTROPHY OF THE CERVIX UTERI.*

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A RARE opportunity presented by the care of Mr. Stewart, Curator of St. Thomas's Museum, enables me to offer an accurate description of the anatomical conditions connected with hypertrophic elongation of the cervix uteri. Nothing is known of the history of the woman who furnished the specimen, except that she was advanced in years. The whole pelvis and its contents were removed without disturbing their relations. A careful vertical section was made in the median line, thus giving two preparations, and exhibiting a typical illustration of this affection, the accuracy of which cannot be impeached. The specimens are so bulky that they could not travel without risk. I have, however, got our Librarian, Mr. Denison, to make an enlarged drawing of the one which shows the parts best. The drawing is very exact. [It was exhibited.]

The entire length of the uterus is about seven inches. The fundus and body are somewhat lower in the pelvis than natural; the body has undergone apparently very little elongation, the chief excess of longitudinal growth being spent upon the cervix. The two lips of the os uteri are much hypertrophied and somewhat everted. They form a mass covered by the everted vagina outside the vulva. That this is the result of downward growth, not of simple prolapsus or stretching, is seen in the condition of the bladder and of the ante-uterine and retro-uterine peritoneal pouches. The base of the bladder is carried down along with the down-growing interior wall of the cervix uteri, forming a sacculated pouch below the level of the urethra, and therefore below the symphysis pubis. The urethra is also distorted into a curve, of which the convexity looks upwards, the bladder-end of it being carried downwards along with the base, so that a catheter to pass would have to be directed first, a little upwards, then backwards and downwards. The body of the bladder is enormously enlarged; that is, its capacity is greatly increased, but its walls are not materially thickened. The change seems to be simply distension, probably the consequence, not of actual obstruction to the passage of urine, but to a habit of long voluntary retention acquired through the desire to avoid the irritation caused by the dribbling of urine over the protruded mucous membrane of the everted vagina. The fundus rose as high as the umbilicus, and considerably higher than the fundus of the uterus. The peritoneum, descending behind the abdominal wall, is reflected upwards over the bladder at a point about two inches above the symphysis pubis. It descends behind the bladder quite down to a point on a level with the sacculated pouch of the bladder; that is, below the level of the lower margin of the symphysis pubis. Rising over the fundus uteri, the membrane descends behind, forming a Douglas's pouch quite below the vulva. The only part not much disturbed is the rectum. Of course there is no apparent vagina, since the down-growing os and cervix uteri have carried the vagina before them, completely everting it and turning it into an investment of the protruded parts.

The specimens and the drawing exhibit very clearly the danger of amputating the hypertrophied cervix. It would not be possible to remove more than a portion of the os without opening the retro-uterine peritoneal pouch. It also explains the difficulty commonly encountered in keeping the protruded parts inside the pelvis by pessaries. The drawing exhibits the relations of the bladder, uterus, and rectum, exactly as they were found; that is, in apposition with each other. There were no folds of intestine descending between them in the anterior or posterior peritoneal pouches.

* Read in the Midwifery Section at the Annual Meeting of the British Medical Association in Plymouth, August 1871.