of typhoid fever, which occurred among them. It became clear that some more radical remedy for the evil would have to be adopted, and it was finally decided to adopt that method of sewage disposal which goes by the name of Intermittent Downward Filtration.

A piece of sandy land, four acres in extent, was selected for the purpose. This, in the first place, was graded perfectly flat, and was then laid out in alternate beds and trenches, the beds being ten feet and the trenches eight feet wide. The difference in level between the surface of the beds and the bottom of the trenches is twenty inches. The length of the beds and trenches is 220 yards. The number of the trenches is eighteen. The whole plot was provided with an elaborate system of tile drainage, many thousand feet of two inch tile being used. These were supposed to carry the purified water of the sewage to a well situated at the southwest corner of the field, which well was expected to overflow into a surface drain, and its water to run to the head of an adjacent small creek. Experience showed, however, that this tile drainage was almost or quite unnecessary and useless Of late years the tiles have been dug up here and there for the purpose of examination, and it has been found that no water ever passed into them—they were in precisely the same state as when they were put down -that is, they were apparently quite new and unused In one part of the field, however, in which the soil is not so sandy, some water does pass into the tile in wet seasons. On the whole, however, water seldom runs into the well, and I have no doubt the field would do its work as well without the tile as with it.

The sewage field is on a slightly higher level than that on which the asylum itself stands; it is therefore necessary to use a pump. The sewage from all parts of the institution (including of course all laundry and other impure water), is run into an underground tank 80 feet long, 40 feet wide and 15 feet deep. From this tank it is thrown once a day by a centrifugal pump through a six inch iron duct into a small well at the northeast angle of the sewage field. This well, after being filled, overflows into a long trough made of three two inch planks spiked together. Opposite each trench there is a short spout made with similar two inch plankings. Each spout is fitted with a sliding gate and just beyond each spout the trough is fitted with a similar gate. By means of these gates the sewage is turned into any trench desired. The whole arrangement is exceedingly simple, cheap and efficient. The centrifugal steam pump churns up the sewage so that when it comes to the field it resembles dishwater in appearance and is so dilute that it has very little odor.

The population of London asylum is in round numbers 1,000 patients and 200 sane people. The quantity of sewage made in a day averages about 75,000 gallons. It requires two and a half hours each day to throw this on to the field, and within from half an hour to six hours (according to the season of the year and the moisture or dryness of the earth), after it is thrown into the trenches, it has been absorbed by the soil. It is never seen again by us, doubtless it reappears at the surface somewhere as pure spring water. Only two to four trenches are used each day, so that the soil as used is always ready to absorb the sewage. There is no pollution of the soil; it is as sweet to-day as before it was used at all for the purpose in question. The disposal of the sewage then is absolute, as complete, indeed, as if it had passed out of existence. But it will be asked, how is it when the ground is soaked with long continued rain, or when it is frozen hard in very cold weather? Neither of these conditions trouble us. The sewage always disappears in the soil, the process only somewhat checked by previous soaking, and only slightly checked by frost; for the sewage, even in winter is always many degrees above the freezing point, and it thaws the soil sufficiently to make way for itself. Granted then a sufficiently porous soil, which can be found within moderate distance anywhere, this mode of sewage disposal is simple, certain and cheap. No expensive plant is needed, and there are no chemicals or other supplies to purchase to carry it out.

But this is not all, these are not its only recommendations. For the first few years, after adopting this method at London asylum we used the field for sewage disposal only: we simply kept it clean of weeds and grass, and maintained the level and form of the trenches. But seven or eight years ago the temptation to experiment with the field as a garden took possession of us. All that we did in this direction prospered. We watered the plants grown on the field with the sewage, being careful not to use it at such times as it could taint such a crop as (for instance) strawberries. We found from the first that in the beds between the trenches (although the soil in them was poor), we could grow by aid of the sewage immense crops. For six years now we have cultivated this field to its full capacity with the result that we grow upon it year by year crops of fruit and vegetables to the value of over $200 per acre. So that over and above the disposal of our sewage in a cheap and cleanly manner the sewage itself is so used as to bring us in several hundred dollars a year more than the field in its original condition could possibly (without the sewage), be made to produce. The crops we have grown upon the sewage field in the last six years have been as follows: Water and musk melons, squash, pumpkins, celery, peppers, cucumbers, tomatoes, peas, radishes, chilies, lettuce, beans, cabbage, beets, carrots, corn, onions, turnips, salsify, sea-kale, asparagus, parsnips, strawberries. Every one of the crops grown on the sewage field has done well. One of our most successful crops is melons, both musk and water, which we grow there every year. The yield is immense and we have grown better melons on this field than I have ever eaten grown elsewhere. We have had immense crops also of cabbage and celery, and the quality of the crops has been much above the average. I need hardly say that the fruits and vegetables grown on the field are as wholesome as those grown elsewhere. Neither is the health of those who work upon the field in the least affected, there are no healthier people about the institution than they. Why not? The field is simply a beautiful garden which is kept well manured and irrigated.

To sum up. The advantages of this mode of sewage disposal are many and great. It is cheap, simple, cleanly, not liable to get out of order, wholesome It would seem to be nature's own plan of refuse riddance. It seems clear that solid excrement, including dead bodies, should be returned to the earth whose chemistry is competent to deal with it and utilize it without itself receiving taint or injury, and not to the waters which have no use for it, and which are tainted and grievously injured by it.

THE SURVEYING EQUIPMENT OF McGILL COLLEGE.

In consequence of the rapid growth of the Mining Department of McGill College consequent upon the completion of the McDonald mining laboratories, it became necessary to largely increase the equipment of the Surveying Department. This was made possible by the generosity of the same benefactor, W. C. McDonald, of Montreal. The accompanying engraving shows a number of the instruments added under this donation. It was made from a photograph taken in the east room of the Architectural Department.

The full list of instruments purchased is as follows: From Troughton & Simms, London, Eng., 14-inch Charlton Model, Dumpy Level; from L. Casella, London, Eng., 3-in. Transit Theodolite, Brydges-Lee, Photo Theodolite, Box Sextant with Supplementary Arc; from W. F. Stanley, London Eng., Box Sextant, Box of Drawing Instruments; from L. Lesdorpf, Stuttgart, Germany, Wagner Pocket Level, Precision Level, 4-in. Transit Theodolite, Goldschmid Aneroid Barometer, Prismatic Reflecting Circle, two sets Beam Compasses; from Martin Veig, Christiania, Norway, Wrede Pocket Level; from Chesterman & Co., Sheffield, 30-in. Straight Edge, 3 100-ft. and 1 66-ft. steel bands, half dozen linen tapes; from G. Cooper, London, Eng., Sidereal Watch; from Young & Sons, Philadelphia, U.S.A., 6¼-inch Railroad Transit, 6¼-in. Mining Transit with three tripods and interchangeable lamp targets; from Buff & Berger, Boston, U.S.A., 14-in. Dumpy Level; from Keieffel & Esser, New York, U.S.A., combined Architect's Level and Transit, 100 ft. steel band, 300-ft steel band for mining work, slide rules, scales, plum bobs and other minor equipment; from Lufkin Rule Co., Saginaw, U.S.A., 2 Steel Bands, ½ dozen Linen Tapes; from W. & L. E. Gurley, Troy, U.S.A., 4 Plane Tables, 2 Surveyor's Compasses, Solar Compass, Pantograph, Price Current Meter; from Hearn & Harrison, Montreal, Rochon Micrometer, 2 Aneroid Barometers, 3 Hand Levels, 2 Lemaire Field Glasses, Box Sextant, Parallel Ruler, Scales and minor drawing implements.

The effect of this donation has been to increase the number of instruments available for field work by fifty per cent. and to place ample opportunities for practical work at the disposal of