

A Sewage Farm.

While the problem of how best to dispose of the sewage of great cities is still unsolved, smaller communities have had more than one successful illustration of a speedy and on the whole economical distribution of the main fertilizers of the soil. Of these one of the best known is that of the Beddington Sewage Farm belonging to the Croydon Local Board of Health. Croydon, as many of our readers are aware, is a considerable township lying some ten miles south of London and draining into the streams which have their effluence in the Thames. Some fifteen years ago, when the rage for suburban residences began to seize the dwellers in the great metropolis, Croydon assumed proportions that made a new drainage system absolutely imperative. The owners of land on the banks of the Wandle, a famous trout stream, obtained an injunction against its pollution, and there was no choice between incurring heavy Chancery penalties and adopting some means of utilizing or, at all events, rendering innocuous the output of the sewers. This has been no uncommon case with towns having no direct connection with a tidal river, but Croydon has taken a rather uncommon part in forwarding an enlightened view of the best possible remedy. The district is fortunate in having among its residents Dr. Alfred Carpenter, one of the leading apostles of the irrigation theory, who has been most indefatigable in carrying that theory into actual and, so far as Croydon is concerned, into most successful practice. We need not take space to describe the gradual progress of the Sewage Farm under Dr. Carpenter's management, but some facts relative to its present condition are not unlikely to interest many of our readers.

The Beddington Farm consists of some 500 acres of table land, originally not very fertile, but well adapted, from the porous character of the soil, to the purposes of sewage irrigation. It is divided into some half-dozen or more fields, nearly all of which can be irrigated without the necessity for pumping, and with comparatively little manual labor on the part of the farm-servants. The district draining into this area may be estimated as containing a population of 60,000 souls. All the sewers connect with a main drain leading to a filter-house some distance away from the town, and where Latham's strainers are in use. The strainer may be roughly stated as a kind of mill wheel, turned by the sewage itself, and the revolutions of which serve to remove all hard extraneous matter and to set free the valuable portions of the sewage in the form of a thick liquid. The solid matter is collected at the works, and, mixed with ashes, is sold to farmers and market gardeners at 2s. 6d. per yard. The liquid sewage when it leaves the strainer passes rapidly along an open sewer to the farm, where the stream is so diverted as to enclose each of the larger fields. The sewer is not exactly on a level with the fields, for that would lead to involuntary overflows, particularly when there is much storm water; but sluices are fixed at points not far separate, and by their action the work of irrigation is carried on. There are sub-canals, about a foot in breadth, and about a dozen or fifteen yards apart, stretching from the main sewer across the fields, and these again are fitted with sluices, so that, on being filled, the sewage can be spread over the whole of the soil. The operation is very simple, and can be performed by a few out-door laborers without any assistance from steam or horses. The overflow is permitted to continue for about twelve hours, and then by lowering the height of the main sewer on one side of the field it naturally passes off so much of it as has not become amalgamated with the soil into the lowered sewer. It is far from being purified yet, however, and is not only too valuable to be lost, but too dirty to be thrown into the river. Accordingly, it is passed over other fields less needful of strong chemical treatment; and after three or four processes of this kind, it finally emerges in a crystalline stream, whose purity will bear very favorable comparison with a considerable portion of the water supply of London. All this has been accomplished in a few hours and in a run, zig-zag ways, of some three or four miles.

But it is now time to say some-

thing as to the products of the irrigation. The Beddington Farm has a little of all sorts of agricultural produce within its bounds, but the principal crop is Italian rye-grass, of which so many as seven or eight crops can be grown in a single year. It will be apparent that this possesses a double advantage, since it not only secures a considerable revenue, but preserves a constant receptacle for the sewage. When the sewers are swollen by storm water they can be let loose on meadows which do not require strong treatment, or on market garden land, which might be injured by the more powerful sewage. One of these rye-grass fields was laid down last autumn, and was cut for the first time on the 14th of last month, the sum received being £7 per acre. The second crop is now growing, and will very likely realize £12 an acre. There is an abundant demand, the surrounding farmers being very glad to carry away the grass in their own carts, and as a rule the most of it is sold and consumed in its fresh state. A field of wheat last year produced six quarters six bushels to the acre, and with the straw gave a return of £22 3s 9d per acre; a plot of potatoes fetched £19 per acre; and a plot of rhubarb, £26 10s 8d per acre. These are suggestive figures enough, and it might be supposed that the Croydon Local Board was carrying on farming operations on a very remunerative scale. But there is this drawback to the profit account, that the land is rented at the exorbitant figure of from £10 to £12 an acre. Sewage farms being yet in their infancy, there is a not unnatural hostility to them in the minds of many people, and Dr. Carpenter and his colleagues have had to encounter this hostility by paying prohibitive prices for the necessary soil to conduct their irrigation operations. Moreover, local boards are not as a rule ambitious to become high farmers, and that of Croydon cares more to dispose of its sewage without an actual loss than to demonstrate the full benefits of the system. Farming is with them merely a means to an end. Therefore, it is not surprising that the pecuniary side of the question is not so bright as the scientific side. But, after all, there may be said to be a clear gain; for any other method of purifying the sewage would be more costly in its outlay and much less productive in its income. Here, however (and it is only fair to state the fact), the cost is greatly reduced by the level character of the country, and it must be recognized that if there is a margin of loss—that is, loss on the farming account—where no pumping is necessary, a town which had to go to the expense of elaborate machinery would be in a very much less encouraging condition.

We have omitted a most important point in Dr. Carpenter's excellent scheme. The opponents of irrigation declare that it poisons the air of a district. Well, there is some evidence to the contrary at Croydon. Even in summer there is no offensive effluvia from the sewers or the land. Indeed, the sewage has no time to putrify and become deleterious to health, for it is constantly on the move, or being absorbed in Nature's great laboratory; and the luxuriance of the vegetation, nettles especially, on the banks of the stream act as a perfect deodoriser of the unhealthy gases. The process has been long enough in operation to show its effects, and it is noticeable that an orphan school on the very border of the farm is one of the very healthiest institutions of the kind in Surrey. As for the town of Croydon itself the rapid increase of its population testifies to the absence of any general fear. The birth-rate of Beddington in 1872 was 38.65, and the death-rate 13.4.

These foregoing observations have been occasioned by a visit paid to the farm on Saturday last by about fifty gentlemen interested in a question which is rapidly taking first place among the vital questions of the day. Among the visitors were Earl Fortescue, a sanitary reformer of a quarter of a century's standing; Mr. Henry Lee, the well known naturalist, who, as the first of living authorities on pisciculture, has a keen interest in all that concerns the purity of our streams; and Mr. McLagan, the member for Linlithgowshire, who is so well entitled to represent the agriculturist's side of the subject. Dr. Carpenter courteously instructed the party in every detail of the process, and subsequently entertained them at a luncheon where everything but the champagne was

the direct product of sewage irrigation. The bread was from sewage wheat, the butcher meat had been fed on sewage meadows, the vegetables, the cream, even the strawberries, were from sewage plots; and to crown all, there were some excellent trout taken from the Wandle at the point where the effluent water of the farm mixes with that beautiful stream. The guests, whose appetites had been whetted by the fresh breezes of the Surrey meadows, seemed to have no compunction as to the source of the edibles, and the writer of this, as one who enjoyed the feast, can testify that after two days he exhibits no symptom of poisoning or indigestion as the results of it.—*Glasgow Herald*, June 19.

The Black Hills.

[Extract from the Report of W. P. Jenney, Geologist of the Black Hills Expedition, June 22.]

West of the 104th meridian and south of the 44th parallel of latitude the oldest rock exposed is the great carboniferous limestone, almost horizontal in its bedding, succeeded by sandstones and shales of triassic and jurassic age, which, containing no valuable minerals, completely seals forever the older strata from view. East of the 10th meridian, in Dakota, is a great development of metamorphic slate, quartzite and granite, containing numerous veins and masses of quartz, and it is here that the mineral wealth of the Hills is to be sought for and found, if it exists. This park country is characterized by ridges of granite, gneiss and quartzite, traversing it from north to south, and alternating with beds of softer slates, which have been removed by denudation and produced broad, level swales of grass land between the pine covered hills and ridges of the harder rocks. Numerous veins and segregated masses of white translucent quartz appear traversing the strata in the direction of the "strike;" often the quartz is of a beautiful rose-color, and almost invariably shows traces of mineral matter. In the talcose slate, veins of limonite iron ore, more or less intermixed with slate and quartz, are occasionally found; but if they contain gold I have been unable, up to the present time, to detect it with the means at my disposal. About fifteen miners have located claims on the creek here, built dams and small sluices, but they have no gold to show as the result of their labors, and the reports they give of the richness of the gravel "bars" are greatly exaggerated. They report from five to 27 cents to the pan; but I selected one of their best prospecting shafts and washed out nine buckets of the average gravel (equal to eighteen pans) with a rocker, and obtained 22 cents worth of gold, or about six grains Troy. This would be at the rate of 1 1/2 cents to the pan, or about \$1.70 per cubic yard, but the average of the whole flat will be much less than this, although in some places a few pans of earth can be scraped off the bed rock that will yield higher results. The gold is in small flattened grains, with very little fine dust accompanying it, and shows by its appearance that it has been carried far by the action of water, but has most probably been derived from quartz veins in the slates about the head-waters of the stream. And my prospecting seems to show a general diffusion of small quantities of gold over a large area, while the action of the streams has locally concentrated it in limited channels and "bars."

There is no coal of carboniferous age, but I saw along the Cheyenne beds of cretaceous lignites, which, on further examination, may prove valuable. There are also beds of clay-iron ore of good quality in the jurassic slates along the western base of the hills. Prof. Hayden has estimated that nearly one-third the whole area is covered with a heavy growth of pine timber, and I should judge his estimate to have been carefully made. It is the *pinus ponderosa*, known generally as Norway pine and yellow pine. The trees are straight, free from limbs for one-half their height, and will furnish logs averaging from twelve to twenty inches in diameter, and fifty or more feet in length. I have seen some trees along the creek bottoms that were 100 feet in height, and two or three feet through at the ground. The wood is soft, straight, but rather coarse-grained; easily split, but has not so great a transverse strength as

our Eastern pine. There is a little elm and oak along the banks of the eastern streams, and in the elevated northern portions the pine is partly replaced by a tall, slender black spruce, used by the Indians for lodge poles. The flora of the hills is intermediate in its character between that of the Mississippi Valley and the Rocky Mountains, and plants peculiar to each region are here to be found growing side by side. The soil is rich and deep, and in the bottoms along the small streams is black and peaty, often several feet in depth, producing a heavy growth of bottom grass, suitable for hay. Along the hillsides, through the forests, and even on the mountain tops, where the rocks are covered by soil, a good growth of excellent grass is everywhere to be found, and the shelter afforded by the woods and deep valleys makes this country admirably adapted for stock-raising purposes. Water of excellent quality is abundant; fine springs are to be found all through the hills and since I have been in this region we have experienced frequent showers of rain.

THE TWENTY-FOURTH IN THE COUNTRY.

Pleasant Grove.

July 25th, 1875.

Editor Deseret News:

The 24th was celebrated here after the usual manner. The star-spangled banner was flung to the breeze at sunrise amid strains of martial music, such as Capt. Jos. Eaton's band of this place only can make.

The usual exercises commenced at nine a. m. Hon. George Halliday, the first speaker, on "Utah as it was," was happy in his remarks. Elder John S. Gleason, one of the pioneers, was replete with pleasant incidents of the trip across the Plains.

Bishop John Brown and Elder H. Walker, in short speeches, were interesting and instructive.

Music, both vocal and instrumental, under the able and efficient control of Wm. M. Frampton, added charm and pleasantness to the exercises that would have been appreciated by older cities than ours. Bro. F. merits the praise of all lovers of music, and it could be said, with truth, that Pleasant Grove owes its vitality in this respect to him.

The exercises were renewed at 3 p. m., when all, young and old, enjoyed the merry dance under the capacious bowery that had been erected for the purpose and decorated with such home productions as were pleasing to the sight and affording evidence of our progress. Dancing was continued until we were admonished that the Sabbath was drawing near, and when brought to a close all felt that the 28th anniversary of our arrival had been fully commemorated by the citizens of Pleasant Grove.

Marshal, A. Bullock.

Chaplain, F. Richards.

Committee of Arrangements, H. Walker, Sen., Lewis Harvey, R. Peterson, Wm. M. Frampton, A. Bullock.

BEN. W. DRIGGS,

Reporter.

Croydon.

July 24th, 1875.

Editor Deseret News:

The inhabitants of Croydon, Morgan County, feel delighted with their present position and prospects. The children say they wish the 4th and 24th would come oftener. Pies, cakes, and candies are passing around freely, and there is a good and peaceable feeling among us. As a people we try to appreciate our position as a part of the body politic, and as a church and people we rejoice, and envy none who differ from us in opinion, asking nothing but our constitutional rights, that we may still live and be happy. Some of us can look back and see what it has cost to establish ourselves so far. Nearly thirty years of toil and labor, but O! what a contrast to-day. We feel to thank God and take courage and continue on our way rejoicing.

But I am forgetting my subject, viz., our Sunday and day school are having a fine holiday, singing by the choir, prayer by the chaplain, orations by the brethren, recitations by the children, dancing and songs, with a variety of other amusements common to holidays. We have good prospects for an

abundant harvest. Our little valley seems like a paradise, Jack Frost and the beautiful snow having retired a long while back. But while they lasted, I need not tell—our memories are refreshed daily by the bleaching cattle bones around us.

I close with respects to all hands, not forgetting some of our very old acquaintances.

JOHN TOONE,

Clerk of the Day.

Logan.

July 26th, 1875.

The citizens of Logan observed the celebration of the 24th day of July, 1847, by the hoisting of flags at sunrise, and at 10 a. m. the people assembled under the spacious bowery, where a procession was formed under the direction of Alvin Crockett, marshal of the day, in the following order—

1. Logan brass band.
2. Sunday School children, under F. W. Hurst.
3. Twenty-four aged fathers in Israel, led by Father Earl.
4. Twenty-four aged mothers, led by Sister Maughan.
5. The Relief Society, led by Mrs. E. G. Benson.
6. Logan choir, led by Prof. Alexander Lewis.
7. Twenty-four Young Ladies, led by Miss Sarah Holden.
8. Twenty-four Young Gentlemen, led by Mr. Orson Smith.
9. Citizens.

The procession, thus formed, marched a short distance through the principal streets, the brass band discoursing music in the meantime. The several mottoes heading each of the divisions were very noticeable for beauty and design, especially the Young Ladies', bearing the inscription, "Beauty Soon Fades, but Virtue Lives Forever," with an artistically executed virgin in the centre, the work of Bro. F. W. Hurst, which speaks well for his taste and skill.

Arriving at the City Hall the committee of arrangements, James H. Martineau, Edwin Curtis, and George F. Gibbs, the orator of the day, Charles Nibley, Esq., and other leading citizens were received and escorted to the bowery. The congregation being called to order by the marshal after music by the band and singing by the choir, prayer was offered by the chaplain, Bro. Sutton Isaacke, when, after singing by the choir, the orator entertained the audience with a laconic narration of the circumstances which led to the exodus of the Saints from Nauvoo, and the subsequent travels of the Pioneers in search of a home and a resting-place for the exiled Saints, who had been mobbed and robbed of their all in a land of liberty and boasted civilization, and concluded by admonishing the congregation to continued devotion and fidelity to the principles of truth, which alone could save us.

Bishop Wm. B. Preston followed in an address, which was replete with interest and instruction, setting forth in his usual clear and forcible manner the advantages to be obtained by keeping the commandments of God.

Bro. Moses Thatcher followed in a short discourse, and touched upon many salient points respecting the history of the Latter-day Saints and their enemies since the settlement of the former in these valleys.

After singing by the choir the Temple song, the congregation joining in the chorus, the chaplain dismissed the meeting.

At 2 o'clock the people again assembled in the bowery and were entertained with songs and comicallies, while others indulged in foot-racing and other amusements common on such occasions.

JAMES A. LEISHMAN.

A Paris correspondent states that a French woman considers it a privilege, a bit of good fortune, to get a husband, even when he amounts to very little. She is almost willing beforehand to support him wholly or in part for the sake of being "madame."

A Detroit wife refused to speak to her husband for several weeks because he went away to his business one morning without kissing her good-bye. The joke of the matter was that the poor man didn't know in all that time how he had offended her.