

UTILIZATION OF PEAT—II.

By Louis Simpson.

(Continued from March 15th issue.)

Capital Cost of Peat Manufacturing Plant; By-Product Recovery Plant; and Power Plant.

Peat, taken from a drained bog, contains approximately 85 per cent. moisture.

Peat, immediately before turning, contains approximately 65 per cent. moisture.

Peat, immediately before cubing, contains approximately 45 per cent. moisture.

Peat, 10 days after cubing, contains approximately 35 per cent. moisture.

Peat, 10 days after cubing, but harvested during hot weather, contains 25 per cent. moisture.

It seems preferable to designate these several grades of peat not by their moisture content—which, hitherto, has been the case—but by their dry fuel content:

Bog peat has approximately 15 per cent. dry fuel content.

Peat fuel, 10 days after cubing, has approximately 65 per cent. dry fuel content.

Operating Period.—In Denmark, the operations of peat harvesting, in favorable seasons, commence as early as the 6th of April. When peat is harvested for use in gas producers, excavating may be begun not only earlier, but may be continued later than when the peat harvested is intended for domestic consumption alone. When peat is to be used in by-product gas producers, the harvesting may be almost invariably commenced prior to the 10th of April, and may be continued until the end of September, or even until the end of October. Thus, 158 working days are easily available; but to be conservative, the operations of 150 days, only, are considered. Peat containing as much as 40 per cent. moisture can be used in gas producers; and since over 10 per cent. of the contained moisture may be driven out of the peat by the use of special devices, which are not costly, and which are used in connection with the bunkers which store the peat and which are located over the gas producers, it is probable that peat which, when placed in the bunkers, contains as much as 50 per cent. moisture may be used with safety.

Number of Excavators.—Two excavators, working two shifts of 10 hours each, should produce 1,160 short tons of 65 per cent. peat daily; providing they are operated as described in Part I. The production of each excavator should be, at least, 29 tons of 65 per cent. peat per hour, or 580 tons per day of two shifts of 10 hours. Working 150 days, one excavator should produce 87,000 tons. Two excavators should produce 174,000 tons of 65 per cent. peat, per season.

Labor.—The labor required per day to operate two excavator units, working double shift of 10 hours each, is as follows:

	Per day.
2 Excavators: 4 operators at \$3.00 per day.....	\$ 12
4 assistants at \$2.25 per day.....	9
4 laborers at \$2.00 per day.....	8
6 Spreaders: 12 operators at \$2.25 per day.....	27
12 assistants at \$2.00 per day.....	24
12 laborers at \$2.00 per day.....	24
2 Tracks: 8 laborers at \$2.00 per day.....	16

Total... 56 men costing \$120

Thus, 1,160 tons of 65 per cent. peat are excavated, per day, at a cost of 10.35 cents per ton.

Turning.—Boys should be employed for this work. They should be paid by piece work, at a rate per 1,000 bricks, that will yield them (when industriously

working), \$1 per day of 10 hours. One boy can turn 15,000 bricks of the standard size, viz., 8 in. x 4 in. x 4 in. As intimated in Part I, it is proposed to increase the size of the bricks, making them as large as the boys can turn, without reducing the quantity so turned. The present standard size was fixed to suit the requirements of domestic trade, and not to suit the economy of manufacture. Under the proposed alteration, it is estimated that employment would be given to 33 boys, at a cost of 2.83 cents per ton.

Cubing.—Boys and young men should be employed for this work. The wages paid are based on 8,000 bricks being cubed by each operative in one day. Fifty-two boys are employed at a cost of 5.35 cents per ton.

Loading.—If loading is done into trailers drawn by specially constructed electric or gasoline tractors—the trailers being worked by specially constructed transportable loading machines, there would be employed: 8 men and 32 boys, at a cost of 4.45 cents per ton.

Transportation to Gas Producers.—This is proposed to be done by a combination consisting of specially constructed tractors, as before mentioned, drawing self-dumping trailers to certain central fixed stations, located outside the bog, and working in connection with Ambursen aerial tramways. Extra trailers would be provided, so that while one loaded set is being hauled to the central station, the other set will, in its turn, be loaded. At the central station the trailer loads are quickly dumped. The peat is then taken hold of by a mechanical loader, by which means it is loaded on to the trays of the aerial tramway, which delivers the peat into the bunkers over the gas producer, or into the receiving hopper of a breaker, which, in its turn, delivers into the aforementioned bunkers. This proposed arrangement requires the attention of 12 men, entailing a cost of 2.5 cents per ton.

Annual Preparation of the Bog.—This preparatory work is required in order to facilitate the subsequent seasons' operations, and includes the cost of turning and relocating the excavators. It is done by certain of the regular staff, after the work of harvesting is completed. It will cost less than 0.50 cents per ton.

Summary of Wage Cost in Making and Delivering Peat Fuel.

	Men.	Boys.	Cost per ton.
Excavating and spreading..	56	0	10.35 cents.
Turning.	33		2.85 "
Cubing.	52		5.35 "
Loading: using loaders.....	8	32	4.45 "
Transportation.	12	0	2.50 "
Preparing bog.	..	..	0.50 "
Total.	76	117	26.00 cents.

Calculated upon an annual production of 174,000 short tons of 65 per cent. peat per year.

Cost of Plant.

Peat bog and lands, including drainage: 6,000 acres at \$7.50.....	\$ 45,000
Legal and other initial organizing expenses..	5,000
2 Improved excavators, with 3 pulpers, electric motor and track.....	30,000
6 Spreaders.	12,000
2 Tracks, each supplied with dump cars for 3 spreaders.	
2 Tracks for ends of bog, and 4 removable turntables.	
2 Motor tractors, with 16 trailers, and 4 transportable loaders.	
4 Central stations, equipped with mechanical loaders.	