

on the size of the purifiers, and the condition of the oxide. After the oxide has been used for some time, it loses its efficiency as an oxidizer and is revived by being removed and spread out in a thin layer on a flat surface and exposed to the air, being turned over repeatedly so as to expose every part of it. When thoroughly revived it is ready for use again. A large concrete slab is usually provided for treating the oxide. A small shed is also provided for an oxide storage.

From the purifiers the gas passes into the storage holders, which in this case are two in number, the old holder of 43,000 cu. ft. and one new one of 150,000 cu. ft. capacity, having a total weight of 305,166 pounds. The small holder is a single lift type with a steel containing tank, while the new holder is of the double lift type. Each holder is supplied with drip pots to collect tar and gas liquor, the C.I. mains being laid so as to drain towards the holders. All gas house piping is of cast iron, mostly bell and spigot leaded. All fittings are standard gas fittings, reducers being eccentric and all mains being laid so as to convey gas liquor and tar to some point where it can be readily removed to a drip pot or seal. All elbows are provided with hand holes in order that the pipes may be rodded in case they become clogged. Tees are used in the piping instead of ells for the same reason and the tar drains are made as straight and short as possible, allowing as much fall as convenient under the conditions. In passing from the holder on its way to the distributing system the gas is made to flow through the station meter. This meter is of the wet type, 72" x 72", and is supplied with a Hinnman drum. The capacity of the meter is 500,000 cu. ft. per day with a loss of 1" pressure. The inlet and outlet pipes are 10" and the meter is furnished with a by-pass in order that it may be taken out of commission without seriously interfering with the delivery of gas.

The system of distribution used in North Yakima is known as the high pressure system. The gas is drawn from the holders through the station meter and compressed into two compression tanks 8' 2" x 10' to 40 lbs. pressure by means of an Ingersoll Rand 9" x 11" steam-driven compressor running at 160 r.p.m. A 2" high-pressure main conveys the gas to the centres of distribution in the city where district regulators reduce it to the standard 3" pressure for commercial use.

A 75-h.p. boiler supplies this compressor as well as the gas exhauster with steam. The boiler also supplies hot water to the holder cup in winter, so as to prevent freezing, and is also used to heat the building during the cold weather and supply hot water to the men's wash-room.

A table showing the cost of the above plant is shown on the previous page.

It is announced from Zanzibar, East Africa, that the building of the railway through German East Africa is going ahead successfully, and if the hopes of the promoters are realized, will be opened for public traffic early in 1914. The line has been completed to within 210 miles west of Tabota, whilst the earthworks has been carried to within 30 miles of Ujiji. No native is allowed to leave the Belgian Congo or German East Africa without special permission, and the regulations which govern them are strictly enforced. Even the Governor is not allowed to grant this permission without a contract from the recruiters of native labor that the men shall be returned to their own country at the expiration of the contract.

SOME TESTS OF CAKED CEMENT.

The following tests of eight samples of caked cement were made at the Kansas City Testing Laboratory, Kansas City, Mo. The object of the tests was to determine the effect of caking on the tensile strength of cement. The tests were made on neat cement and on 1:3 briquettes. The results of the tests are given in Table I.

Table I.—Results of Tests of Briquettes Made From Caked Cement.

Ref No.	Neat cement			1 cem. :	3 sand.
	24 hrs.	7 days.	28 days.	7 days.	28 days.
1	259	691	811	250	317
2	304	778	861	242	391
3	215	646	807	318	404
4	185	545	708	165	265
5	203	510	703	255	325
6	135	643	865	335	443
7	115	505	698	190	304
8	190	650	822	230	390

The breaking strengths in pounds per square inch at various ages are given in the table. Some of the cement used was badly caked. This is especially true of specimen No. 4, as this cement had been stored in an old basement against a porous sandstone wall.

Although these tests show a wide variation, most of them developed sufficient strength to pass standard specifications. They do not show as definite an increase of strength as should be given by fresh cement, but this may in part be due to the lumps not being uniformly pulverized. In reporting these tests it was stated that "while it is safe to use caked cement, it must be observed that unless the cement is again perfectly powdered, any remaining lumps of cement will not have any bonding effect, and more cement in sufficient quantities must be used to compensate for any undisintegrated lumps that may remain."

When practically all of the cement was imported from Europe, it was not uncommon to find that the cement in some of the barrels was sufficiently hardened to remain in position after the staves were knocked off. In such cases the cement was not rejected, but was powdered and used with satisfactory results. It is known by testers of cement that Portland cement which has caked and has then been powdered and used does not set so rapidly nor does it acquire its maximum strength so quickly as does cement which has never caked; yet testers have found that the strength of such material is practically unimpaired and that it will pass the requirements of specifications. Of course, the safe thing to do is to use only fresh cement, but to reject all cement which contains lumps may result in a very considerable loss. If cement which contains some lumps is used, care should be taken to thoroughly pulverize the lumps before using it.

Mr. H. C. Cooke, of the Geological Survey of Canada, has completed researches on Vancouver Island, and asserts that as a result of his investigations, which have been carried on since May of this year, he is able to state authoritatively that there are great prospects of copper development in certain sections, notably in the vicinity of Sooke and also of Ladysmith. It is anticipated that his report, while pregnant with valuable geological data, will attach particular significance to the copper-bearing regions of the Island he has come in contact with.