

ELECTRICALLY OPERATED CONDENSER.

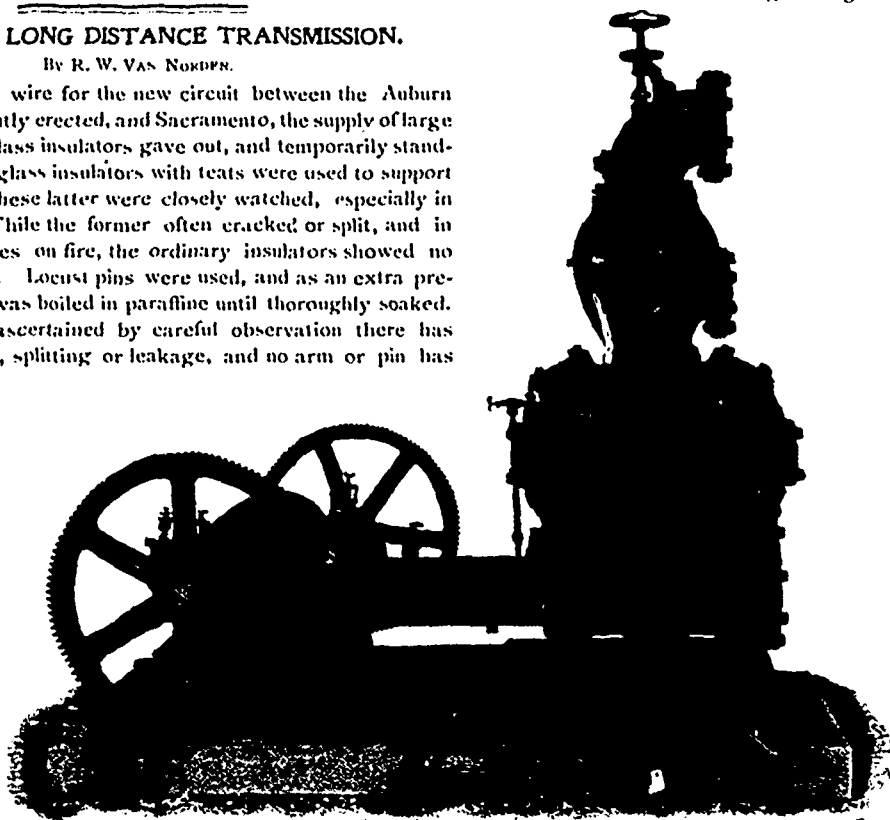
There was lately installed at the United States Government yard, Bremerton, Washington, an electric plant, one of the units of the plant being a special Smith-Vaile direct connected electrically operated jet condenser, as illustrated by half-tone engraving herewith. A sub-base is provided extending under the air cylinder, as well as condensing chamber, and also extended to receive a G. E. motor. The power end is provided with double reduction of gears; the motor is provided with raw-hide pinion, and there is also a raw-hide pinion on pinion shaft of condenser. The gears are machine cut; air cylinders removable and brass lined; air piston is of bronze, fibrous packed and provided with expansion ring; special priming valve is also furnished; and the condensing chamber is provided with special distributing valve.

The condenser was manufactured and installed by the Stillwell-Bierce & Smith-Vaile Co., of Dayton, Ohio.

HINTS ON LONG DISTANCE TRANSMISSION.

By R. W. VAN NORDEN.

In stringing the wire for the new circuit between the Auburn power house, recently erected, and Sacramento, the supply of large tripple-petticoat glass insulators gave out, and temporarily standard two-petticoat glass insulators with teats were used to support a mile of wire. These latter were closely watched, especially in wind and rain. While the former often cracked or split, and in some cases set poles on fire, the ordinary insulators showed no signs of weakness. Locust pins were used, and as an extra precaution every pin was boiled in paraffine until thoroughly soaked. So far as can be ascertained by careful observation there has been no cracking, splitting or leakage, and no arm or pin has



SMITH-VAILE DIRECT CONNECTED JET CONDENSER.

been burned or charred. The line has been cut out and thrown in suddenly every day for nine months; but while the water in a storm hangs from the teats and drips near the wire or upon the arms, no results detrimental to the proper working of the line have been observed. Several large glass insulators have passed through severe storms without accident, though badly cracked. It is therefore a natural conclusion that boiling the pins in paraffine is of extreme importance.

The possibility of synchronizing the machine at Auburn with the Newcastle generators, the distance between the stations being some five and one-half miles, and the line of No. 4 copper wire, was seriously questioned by some authorities, who claimed that as the capacity of the line was small, the effect would be to cause a current lag or a change in the form of the electromotive force curve and make the machines pump or altogether fall out of synchronism. Not the slightest difficulty of this nature was experienced. In fact, when Station No. 2 comes in, the operator at Station No. 1 hardly knows the moment, there being only a slight movement of the ammeters.

At present all regulation (the system is hand regulated) is done at Station No. 1. Station No. 2 starts up with a specified load, and as the general load increases, at a telephone signal Station No. 2

*Paper read at the annual convention of the Pacific Coast Electric Transmission Association, San Francisco.

augments its own load 100 horse power at a time, every hour or half hour, until the maximum is reached. The operation is then reversed until Station No. 2 is cut out entirely.

By this method no water is wasted at Station No. 1, where it is valuable for irrigation, etc., while at Station No. 2 the water must flow constantly, this station being on the same canal but farther up the country.

If for any reason the generator in Station No. 2 be underexcited, the difficulty can be remedied by over-exciting the lower generators. This causes a slight flattening of the electromotive force curve, however, so that a wattless current flows between the stations, which tends to make the voltmeters fluctuate very slowly but regularly about one volt, and the ammeters become unsteady.

The distance seems to have a cushioning effect, and it is not by any means so necessary to have the generators so near in synchronism when thrown together as when side by side.

It is therefore evident that stations may be distributed over considerable distance and yet run as one, all aiding to swell the total of current to be delivered.

A COMPLIMENT TO CANADIAN ENGINEERING.

THE Municipal Technical School, Manchester, England, has ordered from the Robb Engineering Co., of Amherst, Nova

Scotia, a 150 h. p. tandem compound engine, to be directly coupled to dynamo from Dick, Kerr & Co., of London, for electric lighting. The order was given on the recommendation of Dr. J. T. Nicholson, Professor of Engineering, who was formerly at the Institute of Science, McGill University, and the purchasers state that this engine is to be placed with other engines of the leading British makers as an example of the best English and foreign practice in engineering.

The council of St. Mary's, Ont., have passed a by-law to provide \$15,000 for the purpose of acquiring the electric light plant now owned by Mr. Reesor. The ratepayers will vote on the question on July 21st.

Mr. W. T. Steward, electrical engineer, Toronto, has removed from Temple Building to Room 38, Yonge Street Arcade. Mr. Steward has just given a valuation of the electric light plant at Galt, Ont., for the corporation.

In the report in last issue of the annual banquet of Hamilton No. 2, Canadian Association Stationary Engineers, it was stated that the response to the toast of "Education" was made by Mr. Geddes, of the Scranton School of Correspondence. This was an error, as Mr. Geddes represents the American School of Correspondence, of Boston.