RECORD EQUIPMENT OF THE JOHANNESBURG POWER STATION.

On December 14th, 1905, another addition to the steam plant at the above station was officially started up. On that day a large attendance of town councillors, electricians, and engineers assembled at the Johannesburg municipal power station for the purpose of witnessing the first run of the new 1,000-kw. Belliss Morcom engine, which had been erected by Messrs. Reunert and Lenz for the municipality. The new set was started up by Major L. F. Allan, the chairman of the Tramways Committee, assisted by the vice-chairman, Mr. L. V. Partridge. There were no speeches, but the toast of success to the new plant was duly honored.

The new engine is similar to the two other larger units in the power station, and is built by the well-known firm of reciprocating engine makers, Belliss & Morcom. The complete contract, all of which has been carried out by Messrs. Reunert and Lenz, includes an A. E. G. generator, with switchgear, connecting cables, etc., a 500-kw. Babcock & Wilcox boiler, a superheater and chain-grate mechanical stokers. All the steam-piping was supplied by Messrs. Stewarts & Lloyds. This latest engine and generator have taken nineteen weeks to erect, this being three days inside the contract period. The contractors, therefore, earn a three days' bonus, and maintain their reputation for rapid delivery and erection.

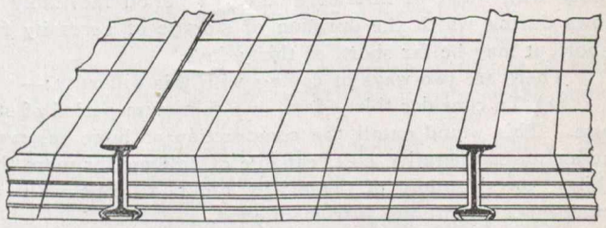
It is worth while reviewing the rapid way in which this steam station has been equipped since the failure of the gas station in the early part of 1907. This meant the stoppage of the tram service and a reduction in the lighting supply. When a steam plant had been decided on, the first order was placed with Messrs. Reunert and Lenz, the local agents of Messrs. Belliss and Morcom, for a complete installation, consisting of two 500-kw. generating sets, with the necessary boilers, steam and exhaust pipes and accessories, which they guaranteed to have completed and supplying power for the tram system within eight weeks under heavy penalties. One of the "Belliss" engines was already in the colony, the other had to be sent out from England. Cabled instructions were received by Messrs. Belliss on April 25, 1907, and the engine and dynamo were despatched on May 1st, leaving England by the mail steamer sailing from Southampton on the 4th. The steamer arrived at Cape Town on the 21st, and the engine and dynamo were promptly unloaded and sent on by special train to Johannesburg, 1,000 miles distant, arriving there on the 23rd. Meanwhile work had been actively proceeding on the site. Foundations had been excavated to a depth of ten feet for the two engines and completed in four days. The engine already on the Rand had been erected. The three Babcock boilers, chimney, and piping were dealt with with equal celerity, with the supply commenced on June 6th. The station was not, as is sometimes the case, merely formally started up and shut down to complete, but the plant was put to full and continuous work, the engines running for eighteen or more hours per day at loads considerably in excess of their rating, and this within six weeks of the placing of the order. When the quantity of the plant which had to be got together is considered, and the fact that a large proportion of it had to be transported upwards of 7,000 miles by sea and land, it will be agreed that the performance constitutes a record in power station equipment. Since then repeat orders have been frequently placed, until to-day there are six sets at work. To supply and erect three 1,000-kw. sets and three 500-kw. sets within twenty months forms another record that is not often touched, even within the United Kingdom.

All the six engines in the tramway and lighting station at Johannesburg are of Messrs. Belliss and Morcom's standard three-crank triple-expansion type, with high, intermediate, and low-pressure cylinders working cranks at equal angles. There are three 500-kw. sets and three 1,000-kw. sets. Two of the 500-kw. engines drive direct current generators by Messrs. Dick, Kerr & Co. and the Lancashire Dynamo and Motor Co., and the third engine drives a single-phase alternator by the Electric Construction Co. Each engine is capable of 720 b.h.p. and 25 per cent. overload, and runs at a speed of 300 r.p.m.

END CONSTRUCTION FLAT ARCH.

An interesting floor and roof construction, known as "End construction flat arch," has been employed in a building for the Royal College of Dental Surgeons, Toronto. This building, which is being erected by the National Fireproofing Company, Traders Bank Building, Toronto, is of pressed brick and terra cotta hollow tile construction. It is the first of this particular type to be erected in Toronto, and presents several unique features.

The building has a frontage on College Street of 102 ft. and 140 ft. on Huron Street, being L shaped, with a depth on the College Street wing of 54 ft. and on Huron Street of 42 ft., with a one-storey boiler house adjoining, extending east a further 42 ft. along the northerly boundary, which abuts on a lane. The main building is four stories in general height, with a Mezzanine on Huron Street extending into the southwest portion of the College Street front westerly, making the building practically five stories in height. It is faced with dark red brick, trimmed with a light stone.



End Construction Flat Arch.

In construction there are no interior bearing walls, each storey being one large flat, spanned by steel beams, supported on steel columns. By this means the various rooms may be changed without in any way affecting the structure, and each flat can be sub-divided without reference to the others, all partitions being supported upon the fireproof floors and girders.

The floors are of hollow tile, end construction, and all the beams, girders and columns are protected by the same material, with a minimum thickness of three inches on the columns and two inches on the beams. The partitions throughout are also of hollow tile, three to four inches thick, according to height of storey.

This type of end construction flat arch in comparison with the side construction flat arch design has been growing in favor. In comparison, it is claimed that if properly set it will develop fully 50 per cent. more strength for the same weight than side construction. A detail of the end construction flat arch is illustrated.

The architects are Messrs. Burke, Horwood & White, of Toronto.

An able American writer, reviewing the commercial and financial prospect in the United States, thus mentions the favorable features: The wisdom and forbearance both capital and labor are showing in the gradual and satisfactory adjustment of the wage problem; the signs of increasing consumption as the result of low prices for commodities; the revival in building operations; the improvement in railroad earnings; the decrease in mercantile failures, and the increase in volume of the Exchanges. But he notes with regret, amid these favorable items, that Wall Street speculators have set too rapid a pace, basing it upon presumed rapid and enormous recovery in business and transportation. "The immediate future has been more than discounted . . . that speculative fervor has got the better of sound judgment, and that serious reaction there is inevitable."

VANCOUVER.—About May 15th a party of seventeen, in charge of Mr. Frederick Lambart, will leave here for Skagway. They will devote all summer to locating a portion of the 141st meridian.