carbon transmitters and commutation as an occupation, but that it also is a way of thinking, and as such is not an occupation, but the latest and most highly developed scientific method of solving all kinds of practical problems of matter and force, for the benefit of the human race.

LARGE ROLLING LIFT BRIDGE.

One of the principal bridge building contracts of the year has just been placed by the Great Central Railway Company of England with Sir William Arrol and Company, Limited, of Glasgow, Scotland, for the construction of a large new railway and highway Scherzer Rolling Lift Bridge and approaches across the River Trent at Keadby, in Lincoln, England. The requirements of navigation at this point on the River Trent, just above where it enters into the River Humber, are quite severe and necessitated the most careful consideration in selection of the type of draw span, and the engineers of the railway company visited all of the important modern movable bridges in Great Britain and America before deciding upon the Scherzer type as best fulfilling the requirements of navigation and the very heavy traffic over the bridge.

The structure will be composed of two fixed approach spans in addition to the bascule span and the track girder span upon which the moving leaf rolls in its operation, on the well known simple Scherzer principle. The total length of steel work will be nearly 500 feet. Each span will have three trusses, the centre truss dividing the railway and roadway portions of the bridge deck. The railway section will have a width of 29 feet and the roadway 24 feet centre to centre of trusses.

The movable span of this bridge is of the Scherzer single leaf through type and as it will have a movable length of 160 feet and an extreme width of nearly 60 feet it will be one of the largest bascule bridges in the world. The machinery and power equipment designed for opening and closing the bridge in one minute is very simple and effective for so large and heavy a structure. The power will be electrically generated in a machinery house alongside the bridge and this current will actuate the motors which are placed on the rear end of the movable leaf. These motors are geared to the main operating shafts which drive pinions engaging with racks on independent fixed supports outside of the plane of the movable bridge trusses. This method of operation is one of the special features of the latest designs of Scherzer Rolling Lift Bridges, and reduces the machinery and power required to a minimum even in the largest and heaviest structures.

The substructure will consist of steel caissons carried to about 50 feet below the low water of ordinary spring tides and the masonry piers carrying the superstructure will be founded upon these caissons.

The entire bridge is designed in accordance with the latest practice in both foundations and steel structures to carry the heaviest main line traffic of the Great Central Railway between Doncaster, Grimsby and the large modern Immingham Docks on the Humber River.

Sir William Arrol and Company, Limited, will execute the work under the supervision of Mr. J. B. Ball, engineer-in-chief of the Great Central Railway Company, by whom the foundations and approach spans were designed. The Scherzer Rolling Lift Bridge Company, Chicago, Mr. Albert H. Scherzer, president and chief engineer, designed the superstructure, operating machinery and power equipment of the bascule span, and will maintain a general consulting engineering supervision over the manufacture and erection of that portion of the work in co-operation with Mr. Ball's staff.

LARGEST CLOCK IN CANADA.

The clock that claims the above title has recently been installed in the tower of the Vancouver Block on Granville Street, Vancouver, B.C. The four faces of this clock are each twenty-two feet in diameter. The glass contained in the dial weighs four tons, and is seven-eighths of an inch in thickness. The minute hands are eleven feet long and the hour hands about eight feet.

The clock is controlled by a master clock, which is situated on the ninth story of the building. This master clock is a 60-beat instrument, and transmits its time to the large clock in the tower. It is fitted with a pilot dial, which shows at all times the exact position of the hands in the tower piece. The master clock in turn receives its time through a synchronizing attachment, which delivers McGill observatory time once every minute, thereby assuring accuracy.

Machinery for operating this huge timepiece is all set in the clock tower. It consists in the main of a motor, which propels the hands. This motor is controlled by a magnet attachment, which only permits it to run for a period of fifteen seconds, this being the time required for the large hand to travel one-sixtieth part of the circumference of the dial. Thus the hands are still for forty-five out of every sixty seconds.

The current for running the clock is generated by a small dynamo, which is driven from the electric light mains. The energy from the dynamo is stored in accumulators.

These batteries are of sufficient capacity to run the clock for one week if the ordinary sources of current derived from the lighting mains were to fail. In case the storage batteries were to be put out of commission the generator would drive the clock direct.

Every point of friction in the clock—from the motor to the crown gear and hands—is fitted with ball bearings. The clock can be set either from the office of the superintendent or in the tower.

The hour marks are a single bar ten inches wide and about four feet long. They will be left blank, no numerals being painted on them. The dial is constructed of structural steel, and not, as in most of the older clocks of the country, of cast-iron. The minute divisions of the clock are five and one-half inches wide and about one foot long. The hands are made of aluminum.

The clock was erected by the Standard Electric Time Company, of San Francisco, at a cost of more than $10,000.

TRACK SINKAGE NEAR VANCOUVER, B.C.

The tracks of the Great Northern Railway a few miles south of Vancouver have been the cause of considerable trouble to the trainmen for several days. We recently announced the fact that these tracks were sinking in a bog-hole. Since then we have obtained additional information.

Ardley Station, the scene of the trouble, lies right in the heart of the Still Creek district. Still Creek is really a flat sump for the drainage of the district lying between Hastings Townsite and Burnaby Lake. The land it drains has very little fall, and the creek spreads out into wide areas of muskeg. At Ardley both the Great Northern and the British Columbia Electric Railway Burnaby line tracks run close together.

Every day for two weeks trainloads of dirt, brush and rocks have been piled into the hole in the hope that bottom and a firm foundation would finally be reached. Fifty cars of material per day have been put into the sink without any apparent beneficial effect.