is now west and the same number of readings taken for this position. The needle is then taken out of the glass box and reversed end for end of its axis, so that it faces the other way. The six readings are again taken as before for both ends of the needle.

The needle is then taken out of the box, and its polarity reversed in the following manner: Put the needle on the reversing block, face up and secure by the brass centre piece which is intended to protect the axis. Place the reversing block so that the north end of the needle will be on the right hand and the south end on the left. Now take the bar magnets one in each hand, the north pole of the magnet in the right hand lowermost and south pole of the magnet in the left hand, and bring the opposite poles of the two magnets down on the needle, near its centre and one on each side of the brass centre piece. Draw them slowly and steadily outwards over the needle, carrying them over its ends and lifting them some inches above the level of the needle, bring them back to the middle position again and repeat. This should be done five times. Care should be taken to have the motion as nearly parallel to the axis of the needle as possible; the ledge on each side of the reversing block is intended to act as a guide for the magnets to ensure this. The needle is then put face down in the reversing block and the operation repeated in the same way. The polarity of the needle will then be completely reversed.

The observations taken before reversal are now repeated. The mean of the observed inclinations in the eight positions is the dip.

It will be noticed that the mean resulting dip will, by the reversal of the dip circle, be free from any small error in the verticality of vertical axis and also eliminate index error of vertical circle; that the reversal of the face of the needle on the agates will eliminate the error caused by any want of perpendicularity of the axis of the needle to the needle; that the reversal of the polarity will correct for any want of balance of the two ends of the needle.

Total Force.—The total intensity may be determined with a dip circle by Lloyd's method when suitable standardization observations have been made at a station where the dip and intensity are known. This method involves first the determination of the angle of dip with a loaded needle, and second, a determination of the angle through which another needle is deflected by the loaded needle when the latter is placed at right angles to it in the place provided between the reading microscopes and protected by the brass shield. As the determination of total intensity by this method is relative, it is necessary to guard, as far as possible, against any change in the magnetism of the two needles and to use the same weight in the field as during the standardization observations. Their polarities must never be reversed, therefore, and they must not be allowed in close proximity to the bar magnets when these are being used to reverse the polarity of the regular dip needles. The needle which is weighted with the small wire is the loaded needle and is called the statical needle; the other is called the dipping needle. Neither of these needles must ever be touched with the bar magnets. Turn the instrument into the magnetic meridian with its face to the east. Revolve the vertical verniers until the tangent screw points to the north. By means of the small brass clips, attach the statical needle to the vernier plate with its face to the east and its north end next to the tangent screw and put the brass protecting shield in position over it. Place the dipping needle in the usual way on the agate planes, now, moving the vernier arms, read the inclination of the swinging needle as before, both north and south ends, then reverse the vertical vernier plate so that the tangent screw is south of the centre and read the inclination again. It should be noted here that the vertical circle is graduated into quadrants, from 0 to 90 degrees, and that these inclinations should always be read from the north zero, so that if in the former part of the observation, the north end of the dipping needle should be deflected by the statical needle past the vertical line, the reading to be entered is 180 degrees less the actual vernier reading, and, if in the latter part of the observation, the north end of the dipping needle be deflected above the horizontal, the vernier must be entered with a minus sign. The algebraic difference of the two readings is twice the deflection.

Frequency and Time of Observations.—The observations should be taken at least twice at each station whenever possible. Should the two observations not agree within 5 or 6 minutes a third observation should be taken. The most desirable time of day to observe is about the time of eastern and western extremes of declination, say, at 8 a.m. and 1 p.m., and it is suggested that when convenient these times be adopted.

Suitable forms for the observations are provided. The constant "A" used in the form is a constant for the two total force needles. That and the index correction to the compass have to be determined at the magnetic observatory at Agincourt.

Coal is produced commercially in only three of the numerous coal fields of British Columbia—namely, on Vancouver Island, in Nicola, and in the neighboring Similkameen district, and in the Crow's Nest section of southeast Kootenay. Production was adversely affected in 1913 by a strike of miners and other employees in Vancouver Island coal mines, so that the output of those mines was less by 596,000 long tons than in 1912. However, there was an increase at the other fields, so that the net gross production of coal—that is, of the quantity including coal made into coke—was about 450,000 tons less than the total for the previous year, the respective totals having been, for 1913, 2,576,071 tons of 2,240 lbs., and for 1912, 3,025,709 tons. The quantity of coal made into coke was 440,091 tons in 1913, as compared with 396,905 in 1912. The net production of coal disposed of as such was, in 1913, 2,125,980 tons, and in 1912 2,628,804. A summary of the production of coal in the several districts follows:

	Tons of 2,240 lbs.
Vancouver Island mines	962,620
Nicola and Similkameen mines	202,768
Southeast Kootenay	1,350,683
Total production (gross)	2,576,671

According to Consul Felix S. S. Johnson, Kingston, Ont. (United States Consular Report), the success of experimental work conducted by the Canadian Government in the manufacture of peat, has resulted in the fact that there are now two private concerns producing peat, one at Alfred, Ontario, and the other at Farnham, Quebec. The product is said to be satisfactory for use in grates and for cooking purposes. In connection with the new industry the Canadian Government will experiment with the production of gas and electrical energy from peat. At the fuel testing plant in Toronto a 60 horsepower gas producer engine is operated on gas from peat. If these experiments are successful, sections of the central peat-producing districts of Canada where water power is not available will be able to obtain power from a series of these gas-producer engines.