The total number of persons employed during the year, of all classes, was 125,229, to whom were paid in wages, $39,152,124. The number of regular establishments or breakers equipped for the preparation and shipment of coal was 342. 19 of which were idle during the year. Besides these there were 49 small diggings and washeries, supplying local trade, and there were also 18 new establishments in course of construction. The following items from the tenth census, of the production, etc., in the fiscal year 1879-80, show the progress that has since been made. The gross production, exclusive of culm, was 25,575,875 long tons, valued at $42,172,942; average price of all grades at mines, $1.68. The total shipments were 24,566,822; the number of collieries, 273; number of employés 70,669; and amount of wages paid $22,664,055.

The largest actual shipment during any year in the history of the trade was made in 1888, being 38,145,178 long tons; and the largest during any one month was 4,187,527 tons in December, 1888. Taking the largest monthly shipments ever made up to December, 1889, it is found that a maximum annual shipment of 39,611,813 tons is practicable, and that of 1889, was therefore, 90 per cent. of this. The average monthly tonnage, based upon the foregoing, is 3,300,984 tons; the average annual shipment during ten years ending 1889 was 31,551,301 tons, and during the five years ending at that date, 34,390,868 tons.

The following was the distribution of coal for 1889: Pennsylvania, New York and New Jersey, 22,314,351 long tons or 63.02 per cent.; New England States, 5,407,357 tons, or 15.27 per cent.; Western States, 4,922,076 tons, or 13.90 per cent.; Southern States, 1,613,120 tons, or 4.56 per cent.; Pacific Coast, 20,900 tons, or 0.06 per cent.; Canada, 1,094,736 tons, or 3.09 per cent.; Foreign, 35,190 tons or 0.10 per cent.

The shipments of anthracite coal from the three districts from 1820 to December 1889 were: Schuylkill region, 253,484,053 long tons, or 36.10 per cent.; Lehigh, 128,490,084 tons, or 18.30 per cent.; Wyoming, 320,192,011, or 45.60 per cent.; total since 1820, 702,166,148 long tons.

A directory of the anthracite collieries of Pennsylvania, with the names of operators and the locations, accompanies the bulletin, the whole being a valuable forerunner of the complete census returns.

Principal Mackay has given notice that at the next meeting of the Nova Scotia Institute of Science, in March, he will move the following resolution:—Resolved—That this Institute presses upon the Dominion Government the desirability, from a scientific as well as industrial point of view, of publishing as soon as possible on the scale of one mile to the inch, the long-delayed maps made by the Geological Survey, of the counties of Antigonish and Pictou.

The treatment of magnetic iron ores containing phosphorus, sulphur or titanium, by a magnetic process is, in its practical development, of comparatively recent date, but already numerous improvements on the original form have been suggested, and the machine has attained a high state of efficiency. The application of this principle was, we believe, referred to as long ago as 1869 by Dr. Sterry Hunt, then connected with the Geological Survey of Canada, who remarked that by means of a hand magnet the magnetic oxide of iron was readily separated from titanic in an ore taken from St. Francois on the Chaudière River, Quebec. No use appears to have been made of this discovery—if discovery it may be called—for a number of years, and it was not until about 1880 that a machine was devised to utilize the magnetic properties of these ores. From that time until the present, however, the idea has been kept steadily in view by inventors, and additions have been made and faults remedied until the present separators were evolved. In its earliest form the machine consisted of two cylinders magnetised by induction so as to form positive and negative poles, forming a magnetic field between them, while non-magnetic on the opposite sides. The ore was fed through this field from above, and the cylinders, rotating towards each other at the rate of from 60 to 75 revolutions per minute, attracted all that was magnetic, which adhered to them and was carried around to the point where attraction ceased, when it dropped into chutes, the other components of the ore falling undisturbed below. In most of the later forms of machine a belt has been used, the principle being similar save that the ore being fed on the belts, the magnetic particles are attracted thereto and carried along until beyond the influence of the current, the remainder falling off in another chute. The essential difference in these is the placing of the magnets. One exception must be noted to this rule, however, in the case of the separator invented by Mr. Thomas A. Edison. In this, after the usual preparatory breaking and pulverizing common to all forms, the ore descends from a hopper above the magnet, and falling in a stream in front of it, the magnetic particles are deflected from their course and drop into a separate partition.

A better idea can be gained of the working of concentrators by studying the cut and accompanying description of the Rotary Magnetic Separator published in the columns of our Machinery Department. This is the latest and, we believe, most perfect machine that has yet been produced. It is, as will be observed, a combination of the cylinder and belt types, and unites the best characteristics of each, while in its construction the importance of simplicity has been carefully kept in view. The necessary opposite poles have been attained by an ingenious device, on the one cylinder, the ends being insulated, while the current is diffused over the surface by metal bars running alternately from either side, and insulated a short distance from the opposing pole. The turning of the charged portion of the belt against the current ensures greater purity in the concentrate, and, judging from the appended analyses, this separator has attained results unsurpassed, if not superior to any yet constructed.

An objection has been raised to ores treated in this manner, that the fine pulverization necessary to magnetic separation will interfere with smelting, but experience has shown this to be groundless, pulverized ore having been successfully smelted in Sweden, and, intermixed with large ore, in the United States. The importance of such a method of concentrating to Canadian iron interests is great as by its means enormous areas, hitherto of little commercial value, can be worked. The beds of magnetic sand about the Lower St. Lawrence, for instance, could be successfully treated and rendered available for smelting, while ores of a higher grade could be concentrated to a degree allowing of their profitable smelting in this country or even in the United States, when the situation of the deposit precludes their remunerative treatment on this side, owing to the cost of fuel. Besides, a saving can be effected in lean and clean ores, usually thrown on the waste heap, but which, concentrated, will form an important factor in the economical working of a mine. On these various counts the utilization of the magnetic process seems destined to work a great change in the prospects of iron mining in this country, and its value can hardly yet be appreciated.

It is a very jaundiced eye, indeed, that Mr. J. Lainson Wills casts upon the General Mining Association of the Province of Quebec, which, to judge from his recent letter to the press, is doomed to a speedy dissolution. He is afraid that when the Mining Law issue is set at rest, there will be no longer any common interest to bind the "heterogeneous" components of the Association together, and that they will fall apart. This does not seem very probable to ordinary eyes, and the chances are that Mr. Wills may wait awhile before his fears are fulfilled. But this cause of alarm sinks into common-place as compared with the next doleful foreboding of this second Jeremiah! The Association, he thinks, is confined to too narrow limits by political considerations, while at the same time they are endeavoring to cover too much ground, the interests combined being too many and diverse for its safety and continuance. Whether the association be too narrow or too broad it is equally bound to come to the ground, according to this logic, but to deduce this result on *both* grounds is rather beyond the ordinary intelligence—none but a Wills or a Mickey Free could comprehend it. Still further, the Association cannot "in fairness expect to attach to its roll of honorary members the names of scientists," because a deputation has interviewed Mr. Mercier. Is this wit, or is it an echo from previously unfathomed depths in the great Wills' philosophical intellect? The former we presume—at least "thousands will *laugh* more than did weep at it," to paraphrase the immortal William. On all these counts, this unfortunate body seems