

out the sources of impurity, and shewing the importance of watchful attention, especially with regard to the filtration of water, and the prevention of stagnant accumulations on the surface.—Of the papers on minute and delicate chemical processes, it is unnecessary to give abstracts, as none but the initiated would understand them.

Geology and Physical Geography.—President, Sir H. T. De la Beche. Many communications on the geology of Wales were read, among which was one of great length and value, by the President of the Section, tracing the formation of the several strata in that country. We give a short extract:—"With respect to the origin of the coal in this district, there is evidence that it originated in accumulations of vegetable matter which grew on the spot. The conditions under which the beds of coal occur have been described minutely by Mr. Logan; under each coal seam is a bed of sandy clay, full of the fossil plants known as *Stigmaria*, and which Mr. Binney has shown to be the roots of another plant, the *Sigillaria*, equally abundant in the coal, which must have grown in swamps near the sea. After each great accumulation of vegetable matter, the land seems to have subsided, and the sea flowed in, bringing sand and mud and marine shells; again marshes were formed and fresh accumulation of peat and plants, to be in turn covered by silt from the sea. Evidence of the local origin of the coal is also afforded by the frequent occurrence of fossil trees with their trunks erect and their roots spreading out in the clay below; several of these trees, each 14 or 15 feet high, were discovered at the head of the Tow Valley; the outside of their trunks appears to have been originally hard, and to have resisted the action of the water for some time, but their interior was soft and soon became hollow and filled with mud, which is regularly stratified; the sandstone on the outside of the trees also bears traces of the rippling of the water around them."—Mr. Booker, being called on by the President for some statistical information, stated that there were 159 blast furnaces in the district employed in smelting iron, and that 550,000 tons of iron were annually manufactured. The coal raised in the district was employed as follows—

1,500,000	tons annually in the manufacture of iron.
200,000	" " " " " copper.
150,000	" " " " " tin.
750,000	" employed in domestic purposes and in agriculture.
1,750,000	" exported.
4,350,000	tons per annum.

At this rate, and supposing the coal to exist only over 100 square miles, there was sufficient for 1400 years to come. The value of the exports from the district, consisting of

iron, &c., in a state of rough manufacture, amounted to £4,000,000 a-year."—A paper by Professor Rogers, of the United States, "On the Geology of Pennsylvania," contained the following statements respecting the coal districts of America:—"The three great coal-fields of America are—the Ohio, 740 miles long and 180 wide, covering an area of 60,000 square miles, a surface greater than that of England and Wales; the Illinois coal-field, covering 50,000 square miles; and the Michigan, occupying 15,000 square miles. Besides these, there are numerous anthracitic basins in Pennsylvania and Virginia; the farthest being 100 miles S.E. of the margin of the Ohio coal-field. In passing across these coal-fields there is a gradual diminution in the quantity of bituminous matter from W. to E. In the Illinois it amounts to 40 or 45 per cent.; in Western Ohio, from 35 to 40; in Eastern Ohio, 25 to 30; in the table-land of the Alleghanies it is reduced to 18 or 20 per cent.; in a little coal-field 20 miles E. of the great field it is only 14 or 15 per cent.; in the western edge of the anthracite field 10 or 12 per cent.; and in the great body of the anthracite only 1 or 2 per cent. of gaseous matter exist, and this not in the form of bitumen. Farther south, in Kentucky and Tennessee, the same change takes place, and the associated rocks become metamorphic eastwards. All the coal, of every kind, rests on the same basis of rock, with the same fossils distributed through it, and the particular coal-beds can be identified even when separated by an interval of 50 miles. The anthracite field is 5000 feet deep, and contains 50 seams of coal; the bituminous coal-field of Ohio is 2800 feet deep. The working of these coal-fields is increasing rapidly; 3,000,000 tons of anthracite and 1,000,000 tons of bituminous coal are annually raised; and 700,000 tons of iron manufactured."—Mr. A. Petermann exhibited a new Hydrographic Map of the British Isles, on which about 1550 rivers are distinguished by names, 480 lakes and ponds, and 40 waterfalls; the canals with their altitude, as well as that of the rivers and lakes, and the great drains in the fen districts. It was stated that there were 20 rivers in England, 10 in Scotland, and in 10 Ireland, each draining 500 square miles and upwards.

Ethnology.—Professor Elton, of the United States, read a paper "On the Ante-Columbian Discovery of America." He said that memorials of the past, and especially such as related to the discovery of a great continent, had excited peculiar interest in the human mind in all ages and among all nations. He would state a few facts exhibiting evidence that America was known to Europeans as early as the tenth century. An Icelandic