The mines of Aspen were mainly discovered and opened by men whose most recent mining experience had been at Leadville, where the silver-ores were found principally at or near the contact of limestone, with overlying sheets of porphyry. The ores consist chiefly of lead and zinc sulphides, carrying silver, with a gangue of barytes, quartz and dolomite. Rich shoots of ore occur chiefly at the intersection of two or more faults, and the theory is advanced that while the minerals were deposited by hot waters, the solutions ascending along one of these channels were precipitated by solutions which circulated along the other.

The fundamental rock in the district is a granite, and this is overlaid by Cambrian, Silurian, Devonian, Carboniferous, Juratrias and Cretaceous. The Cambrian and Silurian formations are comparatively thin, and they consist largely of dolomitic sandstones and shales. The Devonian beds, which are very variable in character, comprise limestones and calciferous sandstones of no great thickness, and they are characterised by the presence of fishes of Devonian type. The Carboniferous and also the Secondary formations attain a great thickness. Into these strata, probably in Cretaceous times, there were intruded dykes of quartz-porphyry and diorite-porphyry. Great physical disturbances took place, accompanied by distinct systems of faults, some developed before, others after the deposition of the ores. In the author's opinion some faults have developed almost entirely in Post-Glacial times, the evidence resting partly on the preservation of scarps with slickensided fault-surfaces. He believes also that in many cases the fault-movement is going on at the present day. Since the beginning of the great disturbances, about 15,000 feet of sedimentary rocks have been removed by denudation; in later times by glacial action. A general ice-sheet at one time covered the whole of the Aspen district, leaving evidence of its presence in the rounded and fluted forms into which the hill-tops are carved, and in deposits of morainic material. When the ice-sheet shrank to smaller dimensions, there resulted local glaciers which followed the course of pre-existing valleys, and carved them into their present forms. At this period temporary lakes were formed by the damming up of glacial waters.

The author has given considerable attention to the subject of dolomitisation. He remarks that along the channels afforded by faults, hot spring-waters containing carbonate of magnesia rose and produced the dolomitisation of the limestone. Zones in the limestone following watercourses which are parallel to the bedding, or which cut across it, are locally altered to dolomite. There is evidence also of an earlier period of such chemical interchange, some of the Silurian and Carboniferous sediments having been early converted into dolomite by the action of magnesium salts contained in the waters of a great lake or inland sea, and in which they were concentrated by evaporation. These earlier dolomites are continuous over wide areas, with an almost uniform chemical composition.

Maryland Geological Survey.

Under the vigorous direction of the State Geologist, Prof. W. Bullock Clark, the Maryland Geological Survey has just issued its third volume; one of a series which in type and illustration is one of the most excellent of all the geological reports published in the United States. The present volume deals wholly with questions of economic geology treated from a scientific as well as a practical point of view. It is, in fact, a manual on road-materials and road-construction. The dependence of the highways upon the surface configuration of the land, and the bearing of the distribution of temperature and rainfall are pointed out. Attention is rightly paid to the relationship between the stony structure of the ground and the roads. The questions of construction and repair, and the qualities of road-metals are dealt with in detail, and the construction of sample roads is described. Various administrative matters are also dealt with. Illustrations are given of the method of road-making since early times; there are numerous photographic illustrations of types of roads formed of different materials, including types of bad roads in Maryland; and there are photo-micrographs of rock-sections of road-material.

Geology of Indiana.

A bulky volume of 1741 octavo pages forms the "Twenty-third Annual Report of the Department of Geology and Natural Resources for the State of Indiana," under the direction of Mr. W. S. Blatchley, State Geologist. It comprises the result of a careful survey of the coal area of Indiana, giving full details of the physical features and stratigraphy, of the mines and method of mining, with analyses of the coal. The work is profusely illustrated with maps and sections, and not the least interesting are the sections of faults and disturbances and evidences of irregularities in the coal-seams due to local thickening by disturbance, or to original deposition, or to erosion in Carboniferous or later periods. A report is made on the natural gas which occurs in the Trenton limestone, and is sealed up beneath the Utica shale. The first boring was made in 1884, and the gas was tapped at a depth of about 1100 feet. The Trenton limestone was proved to be both the source and the reservoir of the gas.

Geological Survey of Canada.

The "Annual Report of the Geological Survey of Canada for the year 1897 (1899)" has just reached us. It is a composite volume, containing six individual reports separately paged, but all indexed together with special references to each. As the progress of the survey has been noticed already in NATURE, when dealing with the Annual Summary Reports of the director, Dr. G. M. Dawson, it will suffice to call attention to this important volume which contains detailed accounts of Archæan, Palæozoic and Pleistocene deposits, with full descriptions of the economic products. There is a special report on the mineral resources of New Brunswick, by Mr. L. W. Bailey, and another on mineral statistics and mines, by Mr. E. D. Ingall. The volume is illustrated by a number of maps and plates. One of the most effective views is that of the Devil's Rapids on Chandière river, Quebec. It illustrates a report on the surface geology and auriferous deposits of South-eastern Quebec, by Mr. R. Chalmers.

ELECTRO-CULTURE.

THE results obtained by culture under the influence of electric light are fairly well known, and the growing of lettuce for salads, in spacious greenhouses with the aid of electric light, is already a profitable industrial pursuit in the United States (near Chicago and elsewhere). However, the use of electric currents for stimulating vegetation, although it was studied more than fifty years ago (by Ross, in 1844–46; continued by Forster, Sheppard, Fichtner, &c.), still remains unsettled. A communication upon this subject, made by a Russian engineer, V. A. Tyurin, before the St. Petersburg Electro-Technical Society, contains some welcome information upon the work done in this direction in Russia by M. Spyeshneff and M. Kravkoff. The former experimented a few years ago on three different lines. Repeating well-known experiments on electrified seeds, he ascertained once more that such seeds germinated more rapidly, a nd gave better fruit and better crops (from two and a half to six times higher), than seeds that had not been submitted to preliminary electrification. Repeating next the experiments of Ross—that is, burying in the soil one copper and one zinc plate, placed vertically and connected by a wire, he found that potatoes and roots grown in the electrified space gave crops three times heavier than those which were grown close by on a test plot; the carrots attained a quite unusual size, of from ten to twelve inches in diameter. Spyeshneff's third series of experiments was more original. He planted on his experimental plot, about ten yards apart, wooden posts provided at their tops with metallic aigrettes connected together by wires, so as to cultivate his plants under a sort of network of wires. He obtained some striking results, one of which was that the growth and the ripening of barley were accelerated by twelve days. Quite recently M. Kravkoff undertook a series of laboratory experiments upon boxes of soil submitted to electric currents. The temperature of the soil was raised by these currents; its moisture decreased first, but began to increase after a course of three weeks (the same increase of moisture was also noticed by Fichtner); and finally, the amount of vegetable matter in the soil was increased by the electric currents. With what is now known upon the influence of micro-organisms upon vegetation, further research on similar lines is most desirable and very promising.

SCIENTIFIC SERIALS.

THE *Journal of the Royal Microscopical Society* for April contains the President's Annual Address, the last instalment of his valuable series of addresses on the mathematics of the construction of microscopic lenses. In this address, Mr. E. M. Nelson devotes himself to the aplanatic immersion front and the Huyghenian eye-piece, and deals with the errors of this lens, viz. chromatism, curvature of image, distortion, and astigmatism.