

ICE AGE PROBABLY KNOWN IN FIRST GEOLOGICAL PERIOD

The earliest records of geology indicate a cold rather than a warm climate at the beginning of the world's known history and give no support to the theory that the world began as a molten ball and has been cooling ever since, said Dr. A. P. Coleman, of the University of Toronto, to the American Association for the Advancement of Science at Washington recently.

"The spacing of ice ages in the earlier geological times shows that they come closer together in the earlier subdivisions than in the later," Dr. Coleman continued. "This strongly supports the view that glaciation took place in the earliest known geological times."

Striated rocks in boulder clay are the best evidences of ice ages as they cannot be imitated by any other geological process. Such evidence, however, can not be found as these very ancient rocks have been greatly deformed and changed.

ANCIENT PLANT FOSSILS TELL OF OLD CLIMATES

What were the climates of geological periods millions of years ago? Can there be a science of "paleoclimatology"? It looks difficult, for clouds and sunshine and lightning flashes do not leave bones or shells behind them. But Dr. David White, chairman of the division of geology and geography of the National Research Council, has an answer. He studies the records of ancient climates as they left their mark on the plants of those remote periods, which did leave their fossils behind them.

In the most ancient of the rocks that yield any recognizable organic remains assigned by geologists to Cambrian, Ordovician and early Silurian periods, there were few or no land plants. Remains of primitive blue-green seaweeds, however, indicated an abundance of sunny weather over the warm, shallow seas. Later in the Silurian, types of amphibious plants evolved from the seaweeds; they required immersion part of the time, but were stiffened sufficiently to endure exposure to the world above the waters for considerable periods.

In the next period, the Devonian, the development of the land plants had proceeded to a point where they formed extensive swamps, as demonstrated by beds of peat; and huge seaweed-like things with trunks three feet in diameter stood up in the sun. The climate must have been rather even, for the plants did not develop annual rings as trees do now; and there was plenty of dry, sunny weather.

Then came the earlier coal age, the Mississippian. This was, for the most part, warm and rainy, apparently all over the earth, for fossils of subtropical plants are found in the Arctic. The coal age proper, or Pennsylvanian, followed; also with an equable, and apparently warm climate well distributed. The subtropical quality of the climate is indicated by the richness of the plant remains, the great thickness of the coal beds, and by the lace-like delicacy of the leaves of many of the plants. There were extensive swamps, for fossil tree stumps show thickened bases and "knees" such as are found in swamps today. There was considerable wind, for winged seeds were common. Again, in the latter part of this age, the fossils show that harder times had come, for the delicate-leaved plants disappeared, and tougher plants, inured to desert conditions, began to show up.

The early period of geology closed with the Permian, which ended with the