Altogether, this systematic use of the balloon for the study of special meteorological conditions must be regarded as a new departure; and the signal-service is to be congratulated on its successful initiation.

THE KOWAK RIVER.

THE map opposite shows the explorations made by the U. S. revenue marine on the Kowak or Kūak River during the season of 1884. The asterisk indicates the farthest explored point on the river. The native settlements are shown by small black triangles. The course of the lower part of the Selawik River and part of the Kowak delta, indicated in dotted lines, have not been explored. It will be observed that the new explorations almost exactly join the course of the river as laid down on the coast-survey map of 1884 by Dall, from Woolfe and Jacobsen's sketch-map. The spelling of the names on the above map has not been modified to agree with the Innuit pronunciation as obtained by Lieut. Cantwell, since the different tribes of the region do not pronounce these names uniformly, and the names 'Kowak' and 'Selawik' have been adopted on all charts for many years. According to Lieut. Cantwell, the people of the river call it Kū-ak (or 'big river'). Other names are Shēlāwik (Selawik, or 'fish') lake and river, Imogarik'-choit (lake or 'little sea'). The stream connecting this with Selawik River is Ig'-yăk ('throat') River: that flowing to Selawik Lake is Ki-ăk'-tŭk ('fox') River. Others have been referred to in our report of this exploration. It is probable that the upper part of the Selawik, taken from the Western union explorations of 1866–67, is too far to the westward, and that the course of the river is less irregular than above indicated; but there are not sufficient data to make this certain, or to alter the chart at present.

A GLANCE AT THE HISTORY OF OUR KNOWLEDGE OF FOSSIL PLANTS.[1]

THE ancients, though acquainted with fossil shells and corals, were wholly ignorant of fossil plants; and the first mention of any vegetable substance in a state of petrifaction was made by Albertus Magnus about the middle of the thirteenth century. Agricola, Gesner, and others treated of petrified wood in the sixteenth century; and, during the seventeenth, Major in Germany, and notably Lhwyd in England, called attention to the existence of vegetable impressions in the rocks. By the beginning of the eighteenth century considerable collections of such material existed in the European museums, and this had become the subject of animated discussion. Dendrite had long been known, and was then generally supposed to represent vegetable matter; but in the year 1700 Scheuchzer overthrew that doctrine, and established its purely mineral character.

Prior to this date the prevailing notions of the times ascribed all fossils to some mysterious cause, and denied their reality as the remains of things that had once possessed life. As to their true nature, there was, however, no harmony of opinion. Some looked upon them as divinely created archetypes of living things, others as divine enigmas placed before man to test his faith, others still as merely the varied forms of the subterranean world corresponding to those of the earth's surface, while many regarded such objects as purely accidental, or as mere freaks of nature.

Against these predominant mystic views there had, however, long existed the theory that these forms, so strikingly similar to real things, might be the petrified remains of the life that perished by the Noachian deluge, and which had been stranded on the mountains and highlands of Europe and Asia. This view was countenanced by Martin Luther, and strongly defended by Alexander ab Alexandro in the sixteenth century; while towards the close of the seventeenth it secured many earnest advocates, including Woodward of England, and Scheuchzer of Switzerland. The latter undertook to defend his theory from the evidence furnished by plant-remains; and from this zeal resulted his greatest work, one of the most remarkable of the time, — his 'Herbarium diluvianum.' This appeared in 1709, and in it are enumerated and figured many fossil plants. These impressions were declared to be those of existing and often familiar species; and we find among them the myrrh of Scripture, Galium, Hippuris, and other well-known forms. So confident was Scheuchzer that these were living plants, that in 1718 he ventured to classify all known impressions according to Tournefort's system, as drawn up in his 'Elémens de botanique' in 1694. The new edition of the 'Herbarium diluvianum,' which appeared in 1723, contained this systematic table, in which four hundred and forty-five species are enumerated.

This bold stroke aroused an intense interest in the subject, and immediately led to a closer comparison of the fossil with the living flora. In this work, Leibnitz in 1706, and Antoine de Jussieu in 1718, had already led the way by examining certain well-defined impressions, and expressing strong doubts of their identity with any European species. Further investigations were made; and these disagreements soon gave rise to the belief that they were tropical forms which by some convulsion or vicissitude had been brought to Europe, and buried under its soil. This view prevailed until the close of the eighteenth century.

Thus far the idea of ancient or extinct life had

[1] Read before the American association for the advancement of science, Sept. 8, 1884, by LESTER F. WARD.