

which books only are concerned, and that we do not teach either science or Latin, mathematics or modern languages primarily to produce the habit of command, but because the habit of command and the ability to act with decision have a tenfold value in the man who is many-sided in his knowledge and experience and who, in the language of the street, "knows where he is" in many departments of human activity.

The object of a training in experimental science is not to stuff the mind with knowledge, as so many still seem to think, but to open and prepare it to receive and rightly apply knowledge in the after working years of life. Those persons are indeed ignorant who suppose that in a modern course of work, let us say, in physics, a boy's mind is "stuffed with knowledge" or that a course of work in electricity gives less play to the imagination than getting up vocabularies or irregular verbs. But we must not follow a bad example; these things also make for goodness in their degree.

As we have said above, the report of the Committee has, as regards its main features, been received with a chorus of approval, and little remains to be said about it. We think the proposal of an expert educational committee with advisory powers excellent. We are glad that whilst science and Latin are alternative subjects in Class I., the subject not taken as a Class I. subject can be taken as a Class II. subject. At the same time, we regret that Sir Michael Foster did not succeed in prevailing on his colleagues to embody in their final recommendations the admirable opinion which we quote at the beginning of this article.

If we may judge from the tenor of the discussion at the Conference of Science Masters last Christmas, we think the proposed changes in regard to practical work in chemistry will be widely welcomed. But if this reform is to work well, no attempt must be made to *add* the new scheme of practical work to the old requirements in qualitative analysis. The time which did not suffice for the latter alone cannot be sufficient for both together. We believe, too, that many teachers both of chemistry and physics would be most willing to see the scope of the syllabus in their special subject reduced a little, in order to secure that all candidates taking science should include in their work the "pass part" portions of both the chemical and physical divisions of science.

A HOLIDAY CRUISE TO ALASKA.¹

THESE two handsome and magnificently illustrated volumes should be brought to the notice of every man of wealth as a lesson in the art of spending a holiday. He will learn therefrom how this may be done with permanent satisfaction to himself and permanent advantage to science.

In a pointedly brief and unassuming preface the patron of the expedition explains that, having planned a summer cruise through Alaskan waters for himself and his family, he found that the steamer which he had chartered would accommodate a larger party, and therefore resolved to seek "some guests who, while adding to the interest and pleasure of the expedition, would gather useful information and distribute it for the benefit of others."

By the advice of his physician he obtained the aid of Dr. C. Hart Merriam, chief of the Biological Survey of the U.S. Department of Agriculture, in carrying out this plan.

The outcome is succinctly stated in the introduction (pp. xxv-xxx) by Dr. Merriam, who has most capably

¹ "Alaska. Harriman Alaska Expedition, 1899." 2 vols. Royal 8vo. Pp. xxxvii + 383, with 39 coloured plates, 85 photogravure plates, 240 text figures and 5 maps. Vol. i. Narrative, Glaciers, Natives. Vol. ii. History, Geography, Resources. By many authors. (New York: Doubleday, Page and Co., 1901.)

fulfilled his duties as general editor to the records of the cruise:—

"In the early spring of 1899 Mr. Edward H. Harriman of New York, in cooperation with the Washington Academy of Sciences but entirely at his own expense, organised an expedition to Alaska. He invited as his guests three artists and twenty-five men of science, representing various branches of research and including well known professors in universities on both sides of the continent, and leaders in several branches of Government scientific work. . . . The expedition sailed from Seattle May 30 . . . and was gone just two months."

The ship threaded the "inside passages" from Puget Sound to Juneau, Skagway and Sitka; thence along the open coast to Cook Inlet and the Alaska Peninsula, and past the Aleutian Islands into Bering Sea, up to the entrance to Bering Strait, touching at Eskimo settlements on both the Asiatic and American coasts, and then turning homeward. The voyage was not in itself in any way remarkable; the interest centres in the personnel and methods of the expedition.

As for the personnel—the following list will show that the selected scientific party was qualified to take advantage of every opportunity. Botany was represented by F. V. Coville and T. H. Kearney, jun., of the U.S. Department of Agriculture, and by Prof. B. E. Fernow, of Cornell, Dr. A. Saunders and Dr. W. Trelease; zoology in its various branches by Dr. W. R. Coe, of Yale, D. G. Elliot, of the Field Columbian Museum, Dr. A. K. Fisher and Dr. C. H. Merriam, of the U.S. Department of Agriculture, R. Ridgway, of the Washington National Museum, C. A. Keeler, of the San Francisco Museum, Prof. W. E. Ritter, of the University of California, Prof. T. Kincaid, of the University of Washington State, and Dr. G. B. Grinnell; geology and geography by Dr. W. H. Dall, G. K. Gilbert and H. Gannett, of the U.S. Geological Survey, and Prof. B. K. Emerson, of Amherst; mineralogy by Dr. C. Palache, of Harvard, and W. B. Devereux; meteorology by Prof. W. H. Brewer, of Yale; and nature-lore in its literary aspect by John Burroughs and John Muir. Of the three artists on the ship Mr. L. A. Fuertes was a specialist in bird-portraiture—sixteen of the many beautiful coloured plates which adorn these volumes attesting his skill. We learn, moreover, that a fourth artist was sent to Alaska in the following year for the special purpose of securing drawings and paintings of Alaskan plants! The expedition also included two photographers, two taxidermists, two stenographers; with a chaplain, two physicians and a trained nurse. The Harriman family party numbered eleven.

As for the methods—these seem to have been in every way admirable. Under unskilful management the scheme would probably have come to nought through the stress of divergent interests. But the patron of the expedition met the occasion like a whole-hearted democrat. His procedure is thus described by Dr. Merriam:—

"The day after leaving New York Mr. Harriman called together the members of the Expedition and announced that it was not his desire to dictate the route to be followed, or to control the details of the work. In accordance with his wishes a business organization was effected, comprising an executive committee, a committee on route and plans, and special committees on the various scientific activities. These committees, throughout the voyage, held frequent meetings and determined from day to day the operations of the expedition. . . .

"Among the unusual features which contributed to the success of the Expedition, three are worthy of special mention:—

"(1) The ship had no business other than to convey the party whithersoever it desired to go. Her route was entrusted to a committee comprising the heads of the various departments of research; so that from day to day and hour to hour her movements were made to subserve the interests of the scientific work.

"(2) The scientific staff represented varied interests and was made up of men trained in special lines of research.

"(3) The equipment was comprehensive, including naphtha launches, small boats and canoes, camping outfits, stenographers, photographers, and extra men for oarsmen and helpers, thereby reducing to a minimum the time necessary to accomplish material results. . . ."

To indicate what *was* accomplished let us again quote Dr. Merriam :—

"During the two months' cruise a distance of nine thousand miles was traversed. Frequent landings were made, and, no matter how brief, were utilised by the artists, photographers, geologists, botanists, zoologists, and students of glaciers. From time to time longer stops were made and camping parties were put ashore that more thorough work might be done. Thus one or more camping parties operated at Glacier Bay, Yakutat Bay, Prince William Sound, Kadiak Island, the Alaska Peninsula and the Shumagin Islands. Large and important collections were made, including series of the small mammals and birds of the coast-region,"—

and here we may break off to note that Burroughs, in a later part of the volume (p. 62), mentions that one day the ship "made a voyage of sixty miles to enable our collectors to take up some traps, the total catch of which proved to be nine mice,"—

"enormous numbers of marine animals and seaweeds, and by far the largest collections of insects and land-plants ever brought from Alaska. There were also small collections of fossil shells and fossil plants. In working up this material the services of more than fifty specialists have been secured, and although the task is by no means finished, thirteen genera and nearly six hundred species new to science have already been discovered and described. The natural history specimens have not merely enriched our museums, they have increased many fold our knowledge of the fauna and flora of Alaska. . . ."

"A number of glaciers not previously known, as well as many others which had been vaguely or imperfectly known, were mapped, photographed and described, and much evidence was gathered of changes that have occurred in their length and size. . . . In Prince William Sound a new fiord fifteen miles in length and abounding in glaciers was discovered, photographed, and mapped. . . . The large number of photographs taken by the professional photographers on board was materially increased by cameras belonging to various members of the Expedition, and in all not less than five thousand photographs were secured. These cover many parts of the coast region from British Columbia to Bering Strait, and constitute incomparably the best series of pictures of the region thus far obtained."

The publication of the results has been undertaken in the same well-ordered and liberal spirit. The two volumes before us

"contain the narrative of the expedition and a few papers on subjects believed to be of general interest. The technical matter, in the fields of geology, palæontology, zoology and botany, will follow in a series of illustrated volumes. Twenty-two special papers, based on collections made by the Expedition, have been already published in the Proceedings of the Washington Academy of Sciences, and others will follow. All this material will be brought together in the volumes of the technical series."

Having dealt somewhat fully with the organisation and methods of this truly exemplary expedition, let us now glance briefly over the principal contents of the book, which constitute the best general description of Alaska hitherto published.

The narrative of the cruise by John Burroughs (pp. 1-118) is a piece of literary workmanship such as only an able and well-practised writer with a keen eye for nature and under the stimulus of scenes new to him could have penned. This part will appeal more strongly to the general reader than to the man of science, for to the latter the blending of emotional sentiment with technical description, however skilfully done, can rarely fail to give a sense of incompatibility and distortion. As literature, however, these word-pictures are excellent; we will quote, as an example, Mr. Burroughs' impression of a distant view of Mount St. Elias (p. 55) :—

"The base and lower ranges had been visible for some time, bathed in clear sunshine, but a heavy canopy of dun-

coloured clouds hung above us and stretched away toward the mountain, dropping down there in many curtain-like folds, hiding the peak. But the scene-shifters were at work; slowly the heavy mass of clouds that limited our view yielded and was spun off by the air-currents till at last the veil was completely rent, and there, in the depths of clear air and sunshine, the vast mass soared to heaven.

"There is sublimity in the sight of a summer thunder-head with its great white and dun convolutions rising up for miles against the sky, but there is more in the vision of a jagged mountain crest piercing the blue at even a lesser height. This is partly because it is a much rarer spectacle, but mainly because it is a display of power that takes greater hold of the imagination. That lift heavenward of the solid crust of the earth, that aspiration of the insensate rocks, that effort of the whole range, as it were, to carry one peak into heights where all may not go—every lower summit seeming to second it and shoulder it forward till it stands there in a kind of serene astronomic solitude and remoteness—is a vision that always shakes the heart of the beholder."

The general narrative is succeeded by a series of profusely illustrated articles on special subjects. First we have "Notes on the Pacific Coast Glaciers," by John Muir (pp. 119-135), who was one of the earliest explorers of the Alaskan ice-fields and is able to compare the present limits of some of the glaciers with their extent in 1879, when he first visited them. He states that in Glacier Bay,

"the Hugh Miller and Muir have receded about two miles in the last twenty years, the Grand Pacific about four, and the Geikie, Rendu and Carrol perhaps from seven to ten miles."

The remaining portion of the first volume (pp. 137-183) is occupied by a concise account of the Indians and Eskimo of the Alaska coast region, by Dr. G. B. Grinnell, closing with the usual lament over the destruction of the weaker race by the influx of the horde of gold-seeking white men, "uncontrolled and uncontrollable."

The second volume opens with a history of the discovery and exploration of Alaska by the veteran Dr. W. H. Dall, whose thirteen previous visits to the territory render him thoroughly qualified to deal with the subject. He treats fully of the early period up to the transference of the country by Russia to the United States in 1867, but sums up the subsequent events in a few sentences, remarking (p. 203) that

"a history of conditions in Alaska from 1867 to 1897 is yet to be written, and when written few Americans will be able to read it without indignation. A country of which it could be said with little exaggeration that

"Never a law of God or man
Runs north of fifty-five";

a country where no man could make a legal will, own a homestead or transfer it, or so much as cut wood for his fire without defying a Congressional prohibition: where polygamy and slavery and the lynching of witches prevailed, with no legal authority to stay or punish criminals; such in great part has Alaska been for thirty years."

He notes also :—

"To one conversant with the facts, one of the most amusing things in current literature is the placid innocence of many a casual traveler or gold hunter, who pours out his tale of experiences in the confident belief that nothing of the kind is on record. A bibliography, far from complete, yet with fully 4000 titles, does not cover the publications in books and serials upon the Territory and its adjacent regions."

The next article is on "Days among Alaska Birds," by Mr. Charles Keeler (pp. 205-234), richly illustrated with coloured plates. Many readers will be somewhat astonished to learn that one of the humming-birds is found abundantly as far north as Juneau and Sitka, and will feel with Mr. Keeler that the bird "seemed singularly out of place."

"Indeed, even after reading that the tiny rufous humming-bird journeyed so far into the northern wilds, it was with almost a shock of surprise that we saw the dainty creature, which we

instinctively associate with the tropics, contentedly buzzing about the salmon berries and appearing as unconcerned and happy as if his fine wings had not carried him some thousands of miles from his winter quarters in southern California or Mexico. I cannot imagine a more wonderful instance of bird migration than this—one of the smallest known birds, no larger than a fair-sized moth, yet with strength, endurance, and intelligence to travel up and down the greater part of the North American coast line, pressing close upon the train of early spring, awaiting only the blooming of the wild currant in California and the salmon berry farther north, to venture upon his perilous way!"

What erroneous deductions as to the climate of an "inter-glacial period" would probably be drawn if the remains of a humming-bird were found in a peat bed between deposits derived from glaciers!

The "Forests of Alaska" are described by Prof. B. E. Fernow (pp. 235-256), who points out that their economic value has been much over-estimated. He notes "the astonishing indifference to the influence of the near-by ice-masses" shown by the trees growing in close proximity to some of the great glaciers and even upon their surfaces where covered by moraine material. This article contains some interesting observations on the propagation and spread of forest growth.

The general geography and physiography of the territory are the subject of a lucid article by Mr. H. Gannett (pp. 257-277). In mentioning that the present glaciers are "only trifling fragments" of the great glaciers which occupied this region a short time ago, it is remarked that, nevertheless,

"all the glaciers of Switzerland together would form but a few rivulets of ice on the surface of the Muir Glacier, and the Muir is but one of many glaciers of equal magnitude."

All observers of the glacial phenomena of the region will probably agree with Mr. Gannett that the period since the retreat of the ice from the present water-channels of the coast cannot have been long. It is evident that in Alaska, as in several other glacier-fields of the globe, if the existing ice were entirely removed, few of the glaciers could ever regain their present dimensions under the climatal conditions which now prevail. And it seems probable that in some degree the present glaciers represent the lingering remnants of the great ice-fields of the Glacial period.

"The Alaska Atmosphere" is dealt with by Prof. W. H. Brewer (pp. 279-289), who lays especial stress upon the effects produced by the relatively dustless condition of the air.

An article on "Bogoslof, our Newest Volcano," by Dr. C. H. Merriam (pp. 291-336), copiously illustrated with views of the two new volcanic islands at various periods in their history, and provided with a bibliographical appendix, will appeal to every volcanist.

In describing "The Salmon Industry" (pp. 337-355), which has attained such gigantic proportions in Alaska, Dr. G. B. Grinnell once more calls attention to the wretchedly wasteful methods adopted by the salmon canners in defiance of Congressional laws which there is scarcely a pretence of enforcing, and to the consequent extraordinarily rapid depletion of supplies supposed at first to be inexhaustible. It is the common story of the white pioneer in every part of the globe:—

"All these people recognise very well that they are destroying the fishing; and that before very long a time must come when there will be no more salmon to be canned at a profit. But this very knowledge makes them more and more eager to capture the fish and to capture all the fish. This bitter competition sometimes leads to actual fighting—on the water as well as in the courts. A year or two since, one company which was trying to stop another from fishing on ground which it claimed as its own, sent out its boats with immense seines, and dropping them about the steam launches of its rival tried to haul them to the shore. . . . Thus the canners work in a most wasteful and thoughtlessly selfish way, grasping for everything that is within

their reach and thinking nothing of the future. Their motto seems to be, 'If I do not take all I can get somebody else will get something.'"

The final article of the book, however, reveals the pioneer in the unaccustomed rôle of conservator. It consists of a highly interesting account, by Mr. M. L. Washburn, of "Fox Farming in Alaska" (pp. 357-365), a new industry which in itself is a striking illustration of western resourcefulness and may lead to important future developments.

"Something like fifteen years ago a few men in western Alaska, realizing that fur-bearing animals were doomed, decided to try the experiment of propagating some of the more valuable kinds. Having resided on the Seal or Pribilof Islands and observed that the blue fox became somewhat tame, they resolved to try its domestication by placing a small number on protected islands and caring for them as the stockman cares for his herd of cattle or sheep. About twenty foxes were taken from St. Paul Island of the Pribilof group, and placed on North Semidi, one of the hundreds of unoccupied islands of Alaska, and thus the experiment began. . . . From North Semidi, the original 'fox-ranch,' if one may employ such a term, foxes were taken to other islands along the Alaska coast and the experiments continued. The results though sometimes discouraging and not always financially successful, have shown on the whole that the animal could be raised and its valuable pelt obtained with as much regularity as in the case of the humbler domestic animals. About thirty islands are now stocked with blue foxes—all the outgrowth of the small stock of twenty foxes taken from St. Paul Island fifteen years ago."

A description is given of one of these ranches where there are now 800 to 1000 foxes. The animals soon learn to recognise their keepers and come to know the feeding time, gathering round for their daily allowance, and afterwards scattering about the island until the time for the next day's dinner. In short, the blue fox has been added to the list of domesticated animals. The probable outcome is thus stated:—

"It is believed that the time is not far distant when hundreds of the now useless islands of Alaska will be utilised in the propagation of fur-bearing animals, and that many of the farmers of the Northern States [*let Canadians take note!*] will have wire-fenced enclosures of an acre or two devoted to this industry, from which they will reap a far greater return than from all the rest of their live stock."

For the excellency of the paper, printing, illustrations and binding, as well as for their contents, these volumes are indeed highly to be commended. As an instance of rare unobtrusiveness and good taste we may mention that in spite of its almost immoderate wealth of illustration not a single portrait of Mr. Harriman or of any member of his family party is to be found in the work.

That the literary and scientific members of this summer cruise should have occasionally burst into song causes us no surprise; and the sprinkling of verse in the volumes is distinctly pardonable in the circumstances.

G. W. L.

OBSERVATIONS OF VOLCANIC ACTIVITY IN THE WEST INDIES.

FURTHER details of the recent volcanic eruptions at Martinique and St. Vincent continue to reach us through West Indian and other papers. Though the great eruptions of Mont Pelée and the Soufrière occurred on May 7-8, the *Dominica Guardian* states that shocks of earthquake were felt so far back as February of last year. These disturbances were noticed several times during the year, and were regarded as serious in February of this year. From April 20 also until the eruption, rumbling sounds were frequently heard, especially at Fancy and at Frasers. Nineteen shocks were experienced within half an hour on May 3 at Wallibou,