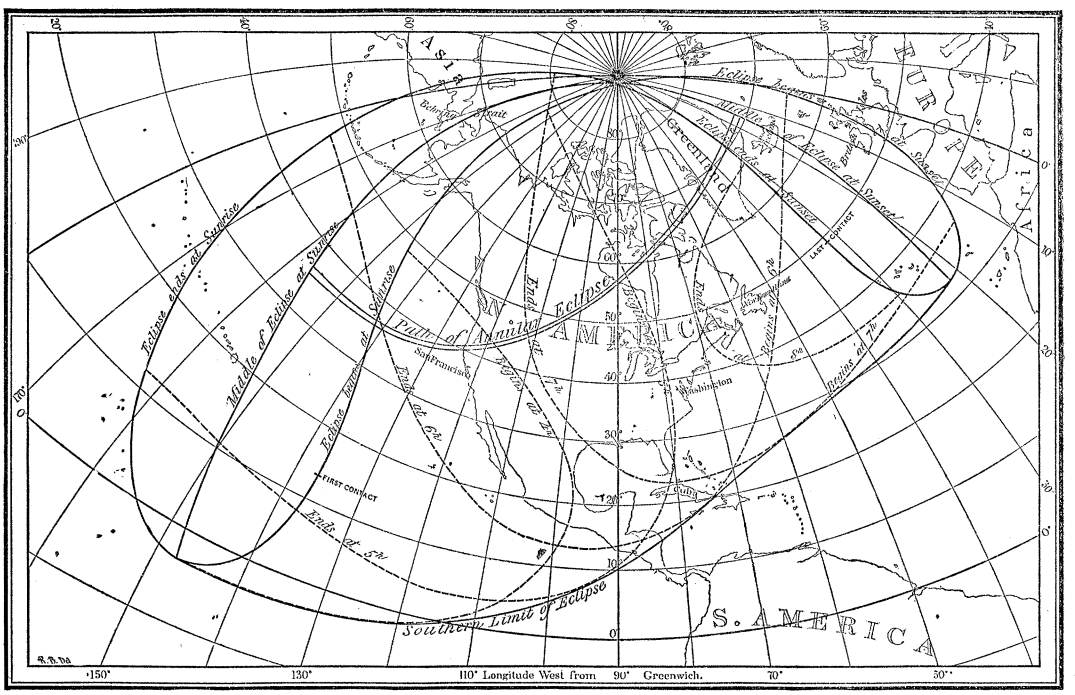
eclipse is doubtless entitled to interest the average observer but little; however, it is quite possible that the rapid development of the means of eclipse research may in time lead to the utilization of annular eclipses with quite the same regularity that total eclipses are at the present day observed. In so far as we have learned, astronomers have made no preparations for observing this eclipse within the belt where the annular phase is visible.

The notion that an annular eclipse is an indifferent species of occurrence has certainly been helped along by the deceptive way in which these eclipses are almost always represented in astronomical treatises, where the ratio of the semi-diameters of the sun and the moon are unnecessarily out of proportion; and frequently that of the moon is drawn only three-quarters that of the sun, thus giving the impression that a very large proportion of the total light of the sun is unextinguished at the time and place of central eclipse. In point of fact, the greatest breadth the annulus can have, under the most favorable circumstances, is only about a minute and a half of arc, or less than one-tenth the semi-diameter of the sun at the time; while not infrequently — as is the case with the annular eclipse which occurs on Monday next, when the moon's semi-diameter is only one-thirtieth part less than the sun's — the eclipse which is put down in the almanacs as annular, only barely escapes being total. It seems very possible that a strongly developed corona might be observed on such occasions: indeed, the experience of many observers who have followed the corona after the total phase, makes it quite probable. To be sure, the duration of the annulus at such times is very short; but, if the corona could be observed on these occasions, we should be able to halve the intervals of an observation as conducted by the present methods at the times of total eclipses only.



ANNULAR SOLAR ECLIPSE OF MARCH 16, 1885.

THE ANNISQUAM SEASIDE LABORATORY.

WE have in America two classes of summer schools of natural history, — one in which only original investigators are allowed to study (Professor Agassiz's laboratory at Newport, the Fish-commission laboratory at Wood's Holl, and the Johns Hopkins laboratory at Beaufort, being examples); the other where students of

all grades, both beginners and specialists, are admitted. The Massachusetts laboratories at Salem, Cottage City, and Annisquam, are examples of this class; and these differ among themselves. Those at Salem and Cottage City have been conducted on the plan of giving lectures, and supplementing them with laboratory work. They have had little success; and, in fact, that at Salem has been closed for two years, because of small attendance, and lack of funds, for it can readily be seen that the lecture system is an expensive one. The laboratory at Annisquam has a distinct policy, due to Professor Hyatt's and Mr. Van Vleck's experience, much simpler and less expensive. No lectures are given, and no classes formed. The fundamental consideration in each case is the individual wants of the pupil. The student is set at work upon some special animal or in some line which he wishes to follow, and made to study and see for himself, frequently without the aid of text-books, which are seldom used except as means of confirming what has already been seen without their aid. Students not infrequently come from schools and colleges where the old method of teaching from books is still in vogue; and though imbued with the idea that this is the proper way of teaching, and at first opposed to the new method, they eventually go away with their notions concerning teaching always much modified, and sometimes completely revolutionized. That this is the proper method of teaching biology, there can be no doubt; and the amount of knowledge possessed by the students at the end of the season's work is remarkable indeed. Advanced students are allowed to choose their specialty, and study what they please; though they, too, are advised to study after this method.

The Annisquam school is the outgrowth of a small private laboratory which Professor Hyatt had in his own house at Annisquam. The number of applicants increased to such an extent, that the limited accommodations at Professor Hyatt's disposal would by no means satisfy the demands. Some of the members of the Woman's educational association of Boston who were interested in this branch of education, and knew these facts, took the matter in hand, and, though uninfluenced by any direct solicitation from Professor Hyatt or others, offered to found a laboratory for the use of both sexes, provided its departments of instruction could be carried on by the officers of the Boston society of natural history, of which Professor Hyatt is curator.

Annisquam, the place chosen, is an extremely pretty and quiet village on the north side of Cape Ann, a few miles from Gloucester, and two hours' ride from Boston by stage and rail. The granite, surf-beaten shores and the bowlder-covered granite hilltops are found on all sides. All conditions necessary to the existence of a variety of marine forms are present on these shores. There are tide-pools, rocks, mud, sand, eel-grass, and marshes, all alternately covered with water, and exposed to the collector, by the strong tides which rise and fall from nine to eleven feet twice each day. All kinds of shore and surface forms are found in an abundance equalled by no place south of Eastport. Embryos and adults of common and curious forms are constantly met with, thus furnishing material both for general work and original investigation. For collecting-purposes, the laboratory owns two row-boats, in which the students can visit any of the collecting-grounds in the vicinity. It has also been the privilege of the students, for the past four years, to make occasional dredging-trips in Professor Hyatt's schooner-yacht, though this does not belong to the laboratory. These excursions are not promised as an inducement to draw students; but it has been Professor Hyatt's custom to take the students out as frequently as they desire to go, and give them opportunities for dredging in proportion to their interest in this kind of work, whenever the Arethusa is at Annisquam. Dredgings are then made in from fifteen to fifty fathoms, and many interesting animals are added to the students' collections, besides the new forms which are thus furnished them for study.

Like most laboratories, this one is far from prepossessing, either from an external or internal point of view. The foundations are of solid granite. Most of the tables are fastened directly to the wall to allow microscopic work to proceed with little jarring. Each table is furnished with a small glass aquarium fed with salt water flowing from a tank which is filled by a windmill. The pipes from this are all wooden, so that there is no trouble with iron-rust. In the centre of the room are larger aquaria. There is also a photographic room, an attic, and a basement for storage. There is a good collection of chemicals, even those for fine microscopic work being well represented.

The school is open to all who intend to make use of the knowledge they obtain in teaching or in original investigation. The charges being merely nominal, those of limited means are not excluded by exorbitant fees; and the only obstacle of a pecuniary nature is the necessarily high board at seashore places. A few investigators have already made use of the

laboratory; and the best tables and facilities are reserved for any of this class who may select Annisquam in order to pursue their work in any special department, whether botanical or zoölogical. For the four years the average attendance has been sixteen. Last year there were, in all, fifteen, but at no one time more than twelve. There are comfortable accommodations for about eighteen persons when all the seats are filled, and this is considered the extreme limit in numbers at any one time.

The students come from all parts of the country east of the Rocky Mountains. Professor Hyatt is the director, and has one assistant; and neither receives any remuneration for his special services. A building specially constructed for a laboratory is much needed, as well as a steam-launch in which to make surface-towings, — a class of work little carried on in our waters, but the value of which should not be underrated. For the successful maintenance of this laboratory, it should possess a regular fund; for some fear exists that the Woman's association may at an early date withdraw its support. This would be sincerely regretted; for the Annisquam laboratory has marked out for itself a course, which, with proper support, will result in great advantage to American science. As it is, the ladies of the Boston association may well be proud of their beginning, and they may be sure that they receive the thanks of a large class of students who have profited by their venture.

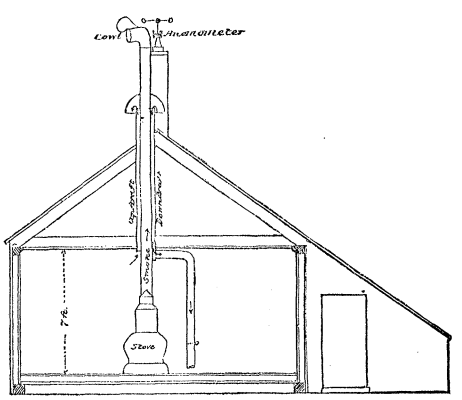
THE HUDSON-BAY EXPEDITION OF 1884.

WITH Manitoba, and the Canadian North-west beyond it, promising to become a vast wheat-producing country, a convenient outlet for surplus grain is most important. Taking Winnipeg as the converging point of all grain to be shipped, we find that the distance to Montreal by the shortest road, the soon-to-be-opened Canadian Pacific railway, will be fourteen hundred and thirty miles, and thence by water to Liverpool, *via* Cape Race, twenty-nine hundred and ninety miles; while if that large inland sea, Hudson Bay, could be utilized as part of a continuous water route to Europe, it would involve only seven hundred miles of rail transport to York Factory, and twenty-nine hundred and forty-one miles of water to Liverpool.

That the bay and strait are navigable to a limited extent is proved not only by the voyage of the intrepid navigator who bequeathed his name to them and left his body on their shores, but by the fact that the Hudson-Bay company has had ships sailing from England to York Factory annually for a great number of years, to take in all the supplies required in its western trade. But the voyages of these vessels, entering the bay only once a year, at the most favorable season, could throw little light upon the extreme duration of navigation; nor could American whalers entering the bay add much to our information, as they winter and pursue their avocation usually altogether too far to the northward.

The desire for further information on this important subject culminated in the appointment of a committee of investigation by the Canadian house of commons during its last session, and the appointment of an expedition under the command of Lieut. A. R. Gordon, a retired naval officer, and assistant director of the Dominion meteorological service. The plan adopted was to establish on the shores of the strait six observing-stations, — one on each side of the outer entrance, two similarly situated at the inner entrance, and the third pair dividing the distance between these, as stated briefly in No. 78 of *Science*.

A Newfoundland sealing-steamer, the Neptune, was chartered to convey the expedition; and, on the outward voyage, four stations were located: viz., at Port Burwell, on the north-western shore of Cape Chudleigh, at the entrance to Ungava Bay; at Ashe



SECTION OF OBSERVERS' HUT.

Inlet, near North Bluff, on the island called by Lieut. Schwatka Turenne Island; at Stupart's Bay, about three miles away from the strait, along the north-west coast of Prince of Wales Sound; and at Port DeBoucherville, on Nottingham Island, near its most southerly point. Each of the stations was named after the observer stationed there. The steamer then ran across Hudson Bay to its north-west angle, and visited the whalers' harbor on Marble Island, where a letter was found from Capt. Fisher, of the whaling-bark George and Mary, dated the 7th of August, stating that they had experienced a very cold winter and spring, with the thermometer four degrees below zero on the 23d of May; that the ship had got out of her winter quarters on the 7th of June, but had been unable to get up the Welcome or to the east shore in consequence of ice.

Continuing her voyage, the Neptune visited Fort