it is well outlined, as no one exploration could encompass the whole of it. One bay alone has some six or seven glaciers coming down from the southern spurs of these Alaskan Alps just off the summits of Mounts Fairweather and Crillon, which, dipping into the sea, snap off into icebergs that float away nearly as high as the masts of the excursion steamers that visit this bay — called Glacier Bay — monthly during the spring and summer. From Glacier Bay northward to beyond Icy Bay (just seaward from Mount St. Elias) there can be seen these huge rivers of solid ice coming down to the sea; one, Le Grand Plateau, so named by La Perouse, its discoverer, being probably the largest one of the immense group covering so wide a territory. It is quite evident, if the expedition accomplishes any thing, that no small share of it will be in this particular field of research.

"Between the St. Elias Alps and the sea — the Pacific Ocean — is a narrow strip of flat lands where the Indians live, and which, from the ocean, seems to be heavily wooded. It is proposed to find out the status of this timber and that on the foothills of the Alps, as far as it is possible without spending too much time upon it. If fine forests of merchantable timber are found, which is not at all unlikely, it is known that there are good harbors here which will make it quite accessible, and give value to the discovery. If any thing near as valuable as the present yellow cedar forests of the shores of the inland passage of Alaska can be found, the expedition will be a double success from this very fact.

"In the way of precious minerals there is the usual prospect of seeing them; and while the search for them is probably the last on the list of undertakings, if at all, the party will not go by any mountains of gold or silver without at least taking a photograph of them.

"It is hardly to be hoped that the country is much richer in furs than the general average of the Alaska mainland; but, should it fortunately prove otherwise, the public shall know of it in due time.

"Agriculturally there is little to be expected in such a rough Alpine country; but if the low flats known to exist along the coast are not too marshy, and have fertile soil, there is nothing to prevent their being cultivated to the fullest extent, in which case it would be doubly valuable by there being no other agricultural lands near by.

"Of the Indians living here, but very little is known; and this very fact is somewhat in favor of the expedition, as among these little known savages there is every reason to suppose that a rich ethnological collection can be made, which will not only shed some light on the people themselves, but on adjoining tribes that are somewhat spoiled for ethnological purposes by long contact with white men and civilization."

The exploring party is well supplied with arms and ammunition, as well as with food; and the precise course to be pursued by them is left largely to the discretion of the commander. When the expedition will return depends largely on its success; for Lieutenant Schwatka is determined not to return until he has accomplished something worthy of the expenditure of time and money. He hopes, however, to be back to the Alaskan coast by September of the present year.

ASTRONOMICAL NOTES.

The large dome for the Lick observatory. — At the meeting of the Royal astronomical society on May 14, Mr. Grubb, the well-known Dublin instrument-maker, presented a model of an equatorial mounting and dome which he had designed, at the request of the Lick trustees, for their 36-inch objective. The main idea throughout was to bring under the direct control of the observer all the required motions of the instrument and of the dome, so as to give him as little physical exertion as possible. To effect this the motive power was to be a number of small water-engines, controlled by an electrical apparatus which the observer could carry about with him. A tap on one key will turn the dome in one direction; another will reverse the dome; a third key will control the telescope in right ascension, and another in declination; and so on; while there is one for lighting up the observatory; and lastly, in order that the observer shall have as little difficulty as possible in getting into a position to observe, instead of climbing into a chair which would perhaps require to be twenty-five feet high, a key is provided which will make the whole floor move up or down. During the discussion upon this ingenious device, Mr. Common quoted the following paragraph from Professor Holden in regard to the prospects of completing the observatory: "We hope during the early part of 1887 that we may see the objective, both photographically and visually, completely finished, and perhaps delivered in California. Our large dome will undoubtedly be finished during the current year; and we look forward to commencing serious work with the whole observatory during the year 1887, and possibly sooner." The contracts for the mounting and dome, if any have yet been made by the Lick trustees, are not yet public.

Change of latitude. — Miss Alice Lamb, assistant astronomer at the Washburn observatory, has, in the June number of the *Sidereal messenger*, given

the results of a critical examination of the latitude observations made by army engineer officers at Willets Point during the year 1885. These observations are of peculiar interest from their bearing upon the mooted question of the variability of terrestrial latitudes; but it appears that the sequence of the results from 1880 to 1884, which seemed to indicate a gradual decrease of latitude, is interrupted by the result for 1885, which is practically the same as that for 1881. The conclusion which Miss Lamb reached from a similar discussion of previous observations (*Science*, vi. p. 118) is now further confirmed. The evidence seems to be rather against a systematic change of latitude at Willets Point, though the results for future years will be awaited with interest.

Astronomical activity. — In looking over the reports of observatories for the year 1885, one cannot but be impressed with the increase of activity in all branches of observational astronomy. Greenwich has ordered a 28-inch refractor for spectroscopic work; Struve at Pulkowa, with the new 30-inch, can go deeper than ever into the star depths for faint 'doubles;' the Vienna 27-inch, in the hands of Dr. Vogel, has already done good work in astronomical physics; and Paris has taken the front rank in stellar photography. The interesting report of Admiral Moucher, the director of the Paris observatory, now before us, gives especial prominence to this comparatively new method of research. A reproduction of a photograph of the Pleiades, taken by the Henry Brothers with an exposure of one hour, has suggested a comparison with Wolf's well-known chart of that group, upon which he spent three years' labor, and the advantage of photography in certain directions is strongly brought out. Wolf's chart contains 671 stars, the limit being the 13th magnitude; while the photograph shows no less than 1,421, the faintest being of about the 16th magnitude. In the meridian service over sixteen thousand observations have been made by sixteen different observers; the instrument devised by M. Loewy, the *equatorial coudé*, has been brought into regular use for observations of comets and minor planets; and the time service, meteorological department, etc., are all in a most satisfactory condition. A department of the observatory which we should like to see imitated in this country is the 'Ecole d'astronomie,' in which courses of instruction are given by such members of the observatory staff as Loewy, Tisserand, Gaillot, and Perigaud. The students are given employment in the computing bureau, and, after sufficient instruction, they take part in the observations with the meridian instruments. The schools of astronomy in this country are not very thriving adjuncts of our colleges.

NOTES AND NEWS.

THE following appropriations are recommended by the committee on appropriations for the various scientific departments of the government for the fiscal year ending June 30, 1887: — coast survey, $407,246, being $146,250 less than was appropriated the past year; the number of field officers is reduced from 64 to 48; office force, from 103 to 91: geological survey, $467,700, the same amount as was appropriated last year: signal service, $799,493, being $64,587 less than was appropriated last year: national museum, $157,500, $19,000 more than was appropriated last year: Smithsonian institution — international exchange, $10,000; North American ethnology, $40,000; being the same amounts as were appropriated last year: fish commission, $220,040, being $40 more than was appropriated last year.

— The final excursion of the geological class of the Academy of natural sciences of Philadelphia, extending over a period of about ten days, and beginning with the first week in July, will be directed to Nantucket and Martha's Vineyard. It is proposed to investigate the physical (geological and paleontological) features of the islands, and the recent fauna of the coast. The total expense, including the academy admission-fee of seven dollars, will not exceed thirty-five dollars.

— About twenty-five thousand deaths from typhoid-fever occur in this country annually, says the *Medical record*, and this represents fully one hundred and fifty thousand cases of the disease. Statistics show that there is no disease so easily preventable as this; and it is safe to say that fully one-half of this mortality might be saved by greater cleanliness and more attention to sewage.

— A new monthly magazine devoted to the now popular art of photography has just appeared in England under the appropriate title of the *Camera*. Mr. R. A. Proctor supplies an interesting paper on photography and astronomy, with illustrations of some of the recent results of observations; Dr. Lindsay Johnson and Mr. T. C. Hepworth also contribute useful articles; and a descriptive account of the amateur photographic exhibition in Bond Street, with reproductions of some of the principal examples, is carefully written.

— Letters from Colonel Lockhart's mission, dated May 9, have reached India. The party were then near Gumbaz, on the northern slopes of the Hindoo-Koosh. They had gone northward from Gilghit, through Hunza, and would work along the Hindoo-Koosh, and enter Kafristan from the north.

— Dr. Julius Stöckhardt, the well-known agri-