

western limit of the province of Santa Catherina, has been for some time in doubt. Efforts hitherto made to settle it have been fruitless; and the disputed area between the Uruguay and Iguassu Rivers, a strip some seventy-five miles wide, has been regarded as neutral ground. In the little-known region known as the *Misiones*, formerly governed by the Jesuit missionaries, an old treaty between Spain and Portugal fixed upon two rivers, the Peperi and San Antonio, flowing respectively north to the Iguassu, and south into the Uruguay, as the boundary in question. The determination in modern times of the particular rivers, out of many existing, which were entitled to bear the above names, has been fraught with difficulty. The two governments have now agreed to a joint exploration of the neutral ground, in order that the matter may be permanently settled.

In the report of Governor Swineford of Alaska, recently made public, an interesting *résumé* of affairs in the territory is presented. Educational matters have made some progress, though a want of tact on the part of the agent of the bureau of education, notwithstanding his energy and ability, has aggravated difficulties which, in the nature of things, were serious enough already. The value of the south-eastern part of the territory is warmly maintained by the governor, who upholds essentially views expressed by many travellers, which it has been the fashion, on the part of ignorant or interested persons, to deride as 'rose-colored.' The success of mining and fishing enterprises, and the practicability of auxiliary agriculture, are insisted upon. Hardy vegetables do well, and cattle are sleek and in the best condition. The white population of this part of the territory amounts to 1,900, and that of the partly civilized natives to 7,000 more.

In this connection the *New York Times* very reasonably points out the usefulness of exploration in Alaska, as compared with arctic expeditions. The prospect of a survey of the very dubiously defined boundary will probably before long require systematic and extensive work in this direction. The indirect results of such investigation can hardly fail to be important.

#### ASTRONOMICAL NOTES.

**Standards of stellar magnitudes.**—The third report of the American committee on standards of stellar magnitudes states that the zones following the twenty-four selected equatorial stars have received a second careful revision with the Princeton 23-inch, which should make them include all stars down to about 16.0 mag., and that a revision

will probably be made with the Washington 26-inch. Four of the charts have been distributed to all observatories having large telescopes, with requests for all visible additions which will furnish comparisons of the penetrating power of different kinds of telescopes. Certain selected standards in each zone, about 0.5 mag. apart, have been measured at the Harvard college observatory with photometer I, and the two brightest, if not too faint, with the meridian-photometer. A catalogue of these selected standards in the twenty-four zones, giving the positions and provisional magnitudes, is published, and also a table of twenty-one close circumpolars ranging in magnitude from 2.2 to 15.7.

**Observing comparison stars.**—Dr. Gill expresses the hope (*Astr. nachr.*, 2,688) that some of the numerous well-equipped European or American observatories will take up the systematic observation of stars that have been used in comet comparisons, faint stars whose occultations have been observed, zones of stars employed for scale or screw values, or stars that have been used for geodetic purposes. The editor, Dr. Krueger, heartily seconds the proposal, and announces that Dr. Hirsch, director of the Neuchâtel observatory, stands ready to determine the places of such stars at the request of computers of orbits. He hopes to announce later that other observatories have promised co-operation.

**The new observatory of Bordeaux.**—This observatory, founded in 1871, has just now (*Comptes rendus*, ci. 690) published its first volume of *Annales*, containing a minute description of the instruments (a meridian-circle of 0.19 m. aperture, two equatorials of 0.22 and 0.39 m., and three clocks), and also a determination of the longitude of the observatory. An important piece of work has been undertaken by the director, M. Rayet, in the re-observation of the 23,000 stars in Argeland's southern zones between  $-15^{\circ}$  and  $-31^{\circ}$  of declination.

**Longitude of the Cordoba observatory.**—In the *Astromische nachrichten*, 2,683, Dr. Gould publishes the finally adopted value of the longitude of the Cordoba meridian-circle, depending upon exchanges of longitude signals with Buenos Aires on the east, and Valparaíso on the west. Buenos Aires was determined by Capt. Green, U.S.N., via Lisbon and Rio de Janeiro, and Valparaíso by Commander Davis, U.S.N., via Washington and Panama, and the two results agree within 0".05, a very satisfactory accordance. Dr. Gould adopts as the final definitive position of the Cordoba meridian-circle:—

$$\begin{aligned}\phi &= -31^{\circ} 25' 15''.46 \\ \lambda &= 4^{\text{h}} 16^{\text{m}} 48.2, \text{ W.}\end{aligned}$$

**The November meteors.**—The regular November meteors or Leonids, moving in the orbit of Temple's comet (1866 I), are due between the 12th and 15th of the month, probably reaching a maximum display on the night of the 13th. The investigations of Prof. Kirkwood seem to indicate the existence of three separate clusters moving in this orbit, and there is a possibility of the earth intersecting a portion of one of the clusters the present year. Mr. Denning has pointed out that toward the end of the month circumstances appear to be extremely favorable for a recurrence of the Andromeda meteors (see *Science*, vi. 279).

**Lick observatory.**—In a letter to the *Sidereal messenger*, dated Oct. 20, Professor Holden expresses his thanks to the many astronomers and societies that have generously contributed to the library of the Washburn observatory, and he bespeaks a similar generosity for the Lick observatory, of which he is about to take charge. He requests that parcels intended for the observatory be addressed to the Library of the Lick observatory, San José, Santa Clara county, California, while such as are intended for himself personally be directed to Berkeley, California. Professor Holden says, "Real astronomical work at the Lick observatory will begin as soon as possible. Under the provisions of the trust, no salaries can be paid to observers until after the completion of the observatory; and this date depends upon the time at which the large telescope is finished by the firm of A. Clark & Sons. Every thing else is practically complete. I have hopes that some arrangement may be made by which the meridian circle and the 12-inch Clark refractor may soon be put to use." If the immediate inauguration of systematic observations at this observatory is contingent merely upon obtaining a fund sufficient to employ assistants during the two years, more or less, which must elapse before the permanent funds are available, we sincerely hope that the well-known liberality of California will come to Professor Holden's aid in advancing the interests of her magnificent gift to science.

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#### NOTES AND NEWS.

THE *Scientific American* of October 31 contains an article by John C. Goodridge, jun., entitled 'Can the temperature of the Atlantic states be changed?' It is neatly illustrated by two charts, and presents a dangerously entertaining, one-sided statement that will doubtless be pleasant reading to the uninformed. The error that vitiates the whole argument is the implication that the low mean temperature of our Atlantic states depends on their being next to the Labrador current that

brings cold water down the coast, and shoves the Gulf stream out to sea. To remedy this defect, it is proposed to dam up the Straits of Belle Isle, as if all the cold water came through that narrow passage, and none reached us from the east coast of Newfoundland! But even if we grant this, and build the dam, our winters would still be cold, for their low temperature depends on the winds from the great north-western interior, and not on the chill of the Atlantic waters.

—A circular has lately been issued by the University of Michigan, descriptive of a scheme of undergraduate geological study, leading to the degree of bachelor of science after four years' work. The subjects belonging strictly to geology are taught by Professors Winchell, Pettee, and Cheever, and embrace general geology and paleontology, mineralogy and lithology, economic geology and metallurgy. Besides these, the curriculum includes a certain amount of mathematics, chemistry, physics, French, German, and drawing, and allows moderate excursions among elective studies. Field-work has no special time allotted in the course, although it is noted that students 'will incidentally acquire skill' in it. This, and the omission of surveying as a required study, seem to us as defects in the plan; the amount of French and German also seems to fall short of that needed to give an effective use of these essential languages; but, as a whole, the course must give a good knowledge of theoretical and practical geology to the inquiring student.

—The Appalachian mountain club announces that a room of moderate size, suitable to the purposes of the club, has been rented in the Ticknor mansion, on Park Street, Boston, possession to be given about November 15. The club is not yet in condition to employ a paid librarian or attendant, but it is expected that by unpaid attendance the room can be open to all club members, without charge, during the afternoon hours of several days in the week, and perhaps, if a sufficient volunteer force can be organized, every afternoon. It is confidently believed that when the books, maps, and photographs of the club are brought together, and made for the first time accessible, the room will prove a very attractive resort to members, and that the plan may be even so successful as to warrant, within a few years, a removal to larger quarters in the same attractive building.

—A meeting of the local committee to arrange for the coming session in Washington, of the American public health association, was held Nov. 3. The committee on transportation reported that a uniform reduction of rates had been secured for members on the railroads all over the country.