they have worn in the rock; but above the cascades, one sees the wooded valleys of the streams as mountain hollows enclosed by gradual slopes that lead up to the heights north of Mt. Webster. These features seem to correspond to the hanging valleys of the Alps, although their dimensions are comparatively insignificant. East of Mt. Washington, the point of the spur between Tuckerman's and Huntington's ravines has the appearance of having been sheared off; and over the verge of the steep slope thus formed swings the white thread of Raymond's cataract, recalling the gauzy veils of the Yosemite cliffs.

Another characteristic of the glaciated and over-deepened Alpine valleys with their cliff walls is repeated in the rock falls from the sides of the White mountain valleys. The floor of Carter notch is heaped with rough rock fragments, forming two little ponds. The avalanche that killed the dwellers in the old Willey house is famous; the sides of the upper Saco trough towards Crawford notch are scarred with the paths of many other slides; and the Saco flows beneath heaped granite blocks that have fallen from the enclosing cliffs. Long talus slopes descend from the foot of the shear cliffs of the Franconia notch. These phenomena are not normally characteristic of mountains so old as those of New Hampshire, although they seem appropriate enough to ice-cut notches in old mountains.

The notch streams are not large enough to have produced prominent waste fans; yet north of the gate of Crawford notch—evidently the old divide—the streams which come down from the east and west, in Gibb's falls and Beecher's cascades respectively, have built a double fan where the Crawford house now stands, thus forming a new divide, on which one stream turns south to form the Saco. Probably the waste here was largely accumulated as a delta when the district to the north was a glacial lake that had its outlet southward over the old divide into the notch. The attitude of the headwaters of the north-flowing Peabody river would indicate that they had been diverted similarly from a southern course into the south-flowing Glen Ellis river by a waste filling on the floor of Pinkham notch near the old divide.

The general form and the recent changes in the White mountain notches thus indicate that they are the result of strong glacial erosion along the course of north and south valleys.

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FLOATING SAND AND STONES.

Perusal of Dr. Erland Nordenskiold's description (*Nature*, vol. 61, p. 278, January 18, 1900) of the floating stones which he observed during his journey along the southwestern coast of Patagonia and of Professor Simonds's discussion of the topic in Science (Vol. XI, N. S., pp. 510–512, March 30, 1900), prompts me to add a locality to those already mentioned at which sand and stones have been observed floating on water. While camping on the 'Thumb,' or West Arm, of Yellowstone Lake, Wyoming, in July, 1899, the writer and other members of the party, among whom were several geologists, saw dark patches from two to six inches in diameter on the surface of the lake. These patches were numerous near the shore, and occasional ones were noted as far out as we could see. Examination showed that they were composed of the coarse black and red obsidian sand which forms much of the lake shore. The sand consisted for the most part of subangular particles 2 or 3 mm. in diameter, but pebbles 5 or 6 mm. across were frequently seen, and at least one fully 10 mm. long and rudely ellipsoidal in shape was observed by the writer among these floating aggregations. The material was solid glass, not cellular, and probably had a specific gravity of 2.345 (see J. P. Iddings, in 7th Ann. Rep. U. S. G. S., p. 291). The sand was not very dry, on the other hand, it seemed to be rather damp, when it was picked up from the shore by the gentle ripples and carried out by the moderate current produced at this locality by the inflow from an adjacent hot spring area. Ripples which did not break the surface of the water did not destroy the patches of floating sand, but crested wavelets precipitated the particles at once and stopped the formation of other patches along the shore line. The conditions therefore at this locality are a sand composed of material somewhat repellent to water and motion of the

water strong enough to lift the particles of rock without agitating them enough to overcome the surface tension of the water. Here, again, as has been noted by other observers, the fine particles appear to gather about the larger ones and help to support them.

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DIURNAL RANGE OF TEMPERATURES.

TO THE EDITOR OF SCIENCE: In the last issue of SCIENCE, page 872, attention is called by Professor R. DeC. Ward to a remarkable diurnal range of temperature. Nothing is said about the elevation or other conditions of the point of observation, but the article calls to mind my own experiences near the summit of Mauna Kea, on the Island of Hawaii. We were in camp on the shore of Lake Waiau nearly a week in July, 1892. The elevation was slightly over 13,000 feet—2000 feet above the last limit of vegetation, and about 1000 feet below the summit. The thermometer, always occupying the same position, read 13° F. at night and 108° in the daytime.

E. D. PRESTON.

EOGÆA AND ANTARCTICA.

TO THE EDITOR OF SCIENCE: At last I send an abstract of my remarks 'On the zoo-geographical relations of Africa,' given at the last session of the National Academy of Sciences. I have been obliged to omit some points for want of time. As I find that some of my views long ago promulgated have been overlooked, or are being taken up now as new and attributed to others, I take this opportunity to refer to several articles, including especially such as have been published in SCIENCE:

1. 'On the Geographical Distribution of Fishes.' (*Ann. Mag. Nat. Hist.* (4), XV., 251–255, April, 1875.)

2. 'Fish.' (Johnson's New Univ. Cyclopædia, II., 116–119, 1876.)

3. Wallace's 'Geographical Distribution of Animals.' [A Review.] (*The Nation*, XXIV., 27, 28; 42, 43, July 12 and 19, 1877; reprinted (*Field and Forest*, III.), 69–74: 78–80; 98–101, 1877.)

4. 'Zoological Geography.' (Johnson's New Univ. Cyclopædia, IV., 1754–1760, 1878.)

5. 'The Principles of Zoogeography.' A presidential address, etc. (*Proc. Bio. Soc. Wash.*, II., 1–39, 1883.)

6. 'A Comparison of Antipodal Faunas.' (*Nat. Acad. Sc. Memoirs*, VI., 89–124, 1894.)

7. 'A Text-book of Zoo-geography.' By Frank E. Beddard. [A Review.] (SCIENCE, N. S., II., 272–274, August 30, 1895; Corrections, 342, Sept. 13, 1895.)

8. 'The Early Segregation of Fresh-Water Types.' (SCIENCE, N. S., II., 678, 679, Nov. 22, 1895.)

9. 'The Origin and Relations of the Floras and Faunas of the Antarctic and Adjacent Regions.' (SCIENCE, N. S., III., 305–320, February 28, 1896.)—'Vertebrata of the Land: Fishes, Batrachia and Reptiles.' (*Op. cit.*, 314–317.) 'Vertebrata of the Sea.' (*Op. cit.*, 319–320).

10. 'Principles of Marine Zoo-geography.' (SCIENCE, N. S., III., 514–516, April 3, 1396.)

11. 'The Distribution of Marine Mammals.' (SCIENCE, N. S., V., 955, 956, June 18, 1897.)

THEO. GILL.

WASHINGTON, May 28, 1900.

NOTES ON PHYSICS.

THE ABSORPTION OF LIGHT IN A RAREFIED GAS AND THE SUN'S CORONA.

MATHIAS CANTOR in the *Annalen der Physik* for March, 1900, describes an experiment showing that a rarefied gas through which an electric discharge is passing has no perceptible absorption spectrum corresponding to its emission spectrum, and Professor G. F. Fitz Gerald in *Nature* May 3, 1900, remarks that this fact confirms the suggestion that the sun's corona is an aurora around the sun (an electrical discharge phenomenon) inasmuch as the bright spectrum line of the corona is not represented by a dark line in the solar spectrum.

The absence of an absorption spectrum corresponding to the emission spectrum of a rarefied gas through which an electric discharge is passing is very likely due to very great concentration of kinetic energy, among a few types of the molecular motion of the gas so that in regard to its emission the gas is potentially at an excessively high temperature.