ruggedness of the limestone belt in which the cave lies, are entirely out of harmony with the existence of mastodons, elephants and tapirs. Stream-worn pebbles occur in the cañon of the McCloud, at Baird, as high as 750 feet above the river. The deposit in the cave dates from a time when the river flowed at a higher elevation than it does now, but not at the 750-foot point, otherwise the cave would have been flooded, and of this there is no evidence. At this time the cave was, in part at least, an open fissure receiving material washed in during the wet season.

There are three well-defined terraces in the cañon of the McCloud. The lowest of these is about 25 feet above the mean low-water level of the river. A second terrace occurs about 30 feet higher. The best-developed terrace is about 75 feet above the stream. The cave deposit was probably formed before these terraces were cut, since a comparatively short time has been required for the river to cut down to its present level from the level of the upper terrace. This terrace is rock cut with a thin veneer of gravel on its surface. When the river flowed at the level of this terrace, it is not believed that the region was topographically adapted to the existence of tapirs and the large proboscideans, except perhaps along the stream.

A full report embodying the results of further work on the cave and descriptions of new species will appear later, in the Publications of the University of California.

Wm. J. Sinclair.

University of California,
Berkeley, California.

## *CURRENT NOTES ON METEOROLOGY.*

### HELM CLOUD IN THE BLUE RIDGE OF NORTH CAROLINA.

When wind is forced to cross a mountain ridge, standing waves may be produced in the air currents to leeward of the ridge. If the involuntary ascent of the air is sufficient to bring about condensation, clouds are formed in the ascending portion of these waves. The best known of these clouds is that called the *Helm Bar*, which is frequently observed when a damp easterly wind blows over the Cross Fell range, in northwestern England. Attentive observation in mountainous districts ought to bring record of the occurrence of many such clouds in different parts of the world. W. M. Davis (*Bull. Geogr. Soc. Phila.*, III., No. 5, 1903) calls attention to a similar cloud which he observed during a recent field trip to the Blue Ridge in North Carolina. On a morning with a clearing northwest wind, while standing on Mt. Mitchell, he noted that a rolling helm cloud was formed above the Blue Ridge escarpment. The cloud held its place, continually forming and dissolving, for more than an hour, while many detached fragments of the cloud floated away and disappeared during this time. This is the first mention of the occurrence of helm clouds in this section.

### METEOROLOGICAL PHENOMENA OF VOLCANIC ERUPTIONS.

An ascent during an eruption of the volcano Puracé, near the city of Popayan, the capital of the Department of Cauca, in the Republic of Colombia, is described by R. B. White in the *Scottish Geographical Magazine* for February. The eruption occurred in October, 1869, and Mr. White was requested by the natives to ascend the mountain during the eruption, in order that he might report to them regarding the danger that threatened the neighborhood. A number of interesting phenomena were noted, one of which was the sudden tremendous flood which came down the river Cauca, produced by the almost instantaneous melting of 'at least 8,000,000 cubic feet of snow that lay on the mountain.' The column of steam reached a height of three miles, having the appearance of immense cumulus clouds, and spreading out at the top like the crown of a great tree. (Similar mushroom-shaped clouds were noted, and photographed, during the Mont Pelée eruptions of last summer). During the night frequent torrents of mud and rocks rushed down the mountain sides. These, Mr. White believes, came from the melting of the heavy snow which had resulted from the condensation of the great volumes of vapor thrown up from the crater. This snow melted rapidly on the

heated cone, and the water rushed down hill, gathering loose earth and rocks as it went.

### JAMES GLAISHER.

JAMES GLAISHER, who died on February 7, last, although he contributed in many ways to the advancement of meteorology, will always be remembered chiefly for his famous balloon ascent on September 5, 1862, with Coxwell, when these two intrepid aeronauts reached a height of about 37,000 feet above sea level, and established a record for high ascents. With the recent rapid development of balloon meteorology, attention has naturally very frequently been directed to this famous balloon voyage, and Glaisher's account of it, published in his 'Travels in the Air,' has doubtless been more generally read within a few years than it was when the book first appeared. Glaisher made many scientific balloon ascents during the early '60's, the results of which were communicated to the British Association, and for more than fifty years he contributed reports on the meteorology of England to the periodical returns of the Registrar-General of Births, Deaths and Marriages for England and Wales. He also published some hygrometrical and temperature tables; a report on the meteorology of India, and another on the meteorology of Palestine, and was one of the founders of the Royal Meteorological Society.

### ATLAS OF THE ATLANTIC OCEAN.

THERE has recently been published a second edition of the valuable 'Atlas of the Atlantic Ocean,' issued by the Deutsche Seewarte in Hamburg. This atlas, with the accompanying 'Segelhandbuch,' embodies the latest and most complete information concerning the meteorology of this ocean. Atlases and sailing directions have also been published for the Indian and Pacific Oceans. Of the charts in these atlases perhaps the most striking are those showing the generalized winds. These charts bring out, in the most emphatic manner, the great wind and calm belts of the doldrums, trades, horse latitudes and prevailing westerlies. It is a pity that no enlargements of these admirable charts of winds are available for school use.

### NOTES.

IT is very significant of the advance that has been made within a few years in balloon and kite meteorology, that the results of the meteorological observations made in the free air during ascents from the Prussian aeronautical observatory have, since last November, been published daily in three Berlin newspapers. R. DEC. WARD.

### *GEOGRAPHY IN THE UNIVERSITY OF CHICAGO.*

THE University of Chicago has established a department of geography, and Professor Rollin D. Salisbury, of the department of geology, has been placed at its head. The arrangement between the departments of geology and geography is such that Professor Salisbury retains his connection with the former, as heretofore, at the same time that he assumes the headship of the latter. The close connection of the two departments appears from the fact that Professor Salisbury will also act as head of the department of geology when Professor Chamberlain is not in residence, and Professor Chamberlin will act as head of the department of geography in Professor Salisbury's absence.

The department of geology has heretofore offered courses, both elementary and advanced, in physical geography, and elementary courses in meteorology. Other courses of a geographic character have been offered by other departments, notably geographic botany by the department of botany, zoogeography by the department of zoology, and commercial geography by the department of political economy. These courses will continue to be given, as heretofore, by these several departments, except that meteorology will be under the auspices of the new department. The new department will not duplicate the geographic courses already given, but will, at the outset, provide courses which supplement those already established. The immediate aim of the new department will be to occupy the ground intermediate between geology and