John A. Parkhurst, in a volume issued through the Carnegie Institution. This contains the results of observations by the author, during twelve years, of twelve variable stars of long period, and includes photometric determinations of the magnitudes of the comparison stars, measures of the light of the variables, and detailed and mean light-curves. Many of the recent measures were made with the forty-inch refractor, and are invaluable, since they furnish our only information in regard to the minima of some variables of large range.

Excellent photographic charts of the regions of the variables are given. It is unfortunate, however, that astronomers are not in agreement in regard to the scales of star charts. For terrestrial maps definite scales are generally employed. For astronomical charts a scale of one minute to the millimeter seems to be a natural one, with simple multiples and divisors of this scale, when necessary. This subject might be referred to a national or international committee.

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Current Notes on Meteorology

Climate and Climatic Changes in Kashmir

Ellsworth Huntington, whose work on Turkestan as a member of the Pumpelly Expedition of a few years ago is already well known, and who has more recently been engaged in further exploration of Central Asia, notably of Chinese Turkestan, contributes to the *Bulletin of the American Geographical Society* for November, 1906, an account of his studies in the Vale of Kashmir in 1905. The climate is described as warm and damp from June to August, though but little rain falls; mild and delightful in April, May, September and October; and cold and snowy in winter, when 'bracing' is not infrequently less true to the actual conditions than 'rigorous.' Of late years there has been an increasing influx of English summer visitors from India, who seek relief from the heat of India in the cooler and more favorable climate of the Vale of Kashmir. A study of the physiographic features of the region, especially of the river terraces, as well as of the human history, leads to the conclusion that there has been a transition from colder or damper climatic conditions two thousand years or more ago to warmer or drier conditions to-day. This transition appears to Huntington to be part of a wide-spread climatic change extending at least from Persia and the Caspian Sea on the west to the borders of China proper three thousand miles away on the east.

Monthly Weather Review

No. 9, Vol. XXXIV., of the *Monthly Weather Review,* contains the following articles of general interest: 'The Relation of the Weather to the Flow of Streams.' In this paper F. H. Brandenburg, District Forecaster at Denver, shows how many factors, meteorological and physical, control the run-off of streams. A 'Phenomenal Rainfall at Guinea, Va.,' on August 24 last, is reported by E. A. Evans, Section Director at Richmond, Va., to have yielded nine and a quarter inches in about thirty minutes. Professor Arthur Searle, of the Harvard Observatory, contributes a paper on 'The Zodiacal Light,' in commenting on which Professor Cleveland Abbe says editorially: "As this article by Professor Searle definitely settles the old question as to whether the zodiacal light and *Gegenschein* are atmospheric or celestial phenomena, we shall hereafter commend the publication of such material to the astronomical journals, and reserve the columns of the *Monthly Weather Review* for meteorology proper." 'The Direction of Local Winds as affected by Contiguous Areas of Land and Water,' by T. H. Davis. 'The West Indian Hurricanes of September, 1906,' by Professor E. B. Garriott. The development of hurricanes in this month was exceptionally active, a fact which the writer attributes, in part at least, to an unusually strong flow of air from the more northern latitudes toward the tropics. One of these storms, it will be remembered, caused serious damage at Pensacola and at Mobile.

A Disappearing Lake

Additional evidence regarding the desiccation of Lake Chad, in central Africa, is

accumulating. Captain Tilho, of the recent Anglo-French Boundary Commission, points out that since the explorations of Barth and Nachtigal the form and area of Lake Chad have been profoundly changed. Navigation is only possible in certain places, and boats continually run aground. Instead of the great waves which, during strong winds, gave the lake the appearance of an ocean, there is now a tendency toward the development of a vast marsh (*Ciel et Terre,* November 16, 1906). It may be noted, in this connection, that there is nothing unreasonable in the supposition that Lake Chad is undergoing a temporary desiccation, which may again be followed, after some years, by another period of high water.

R. DEC. WARD

JOHN M. BROOKE

AT his home on the outskirts of Lexington, Va., on December 14, within one week of his eightieth birthday, Colonel Brooke passed away.

John Mercer Brooke was born December 18, 1826, near Tampa, Florida. His father, General George M. Brooke, of Virginia, was a distinguished officer in the war of 1812, and his mother, Miss Thomas, was a native of Massachusetts. At the age of a little over fourteen years he became a midshipman in the navy, and three years were spent in cruising. In 1847 he was graduated from the Naval Academy at Annapolis, and soon afterward was assigned to work in the coast survey. From 1851 to 1853 he was stationed at the Naval Observatory in Washington, where began his life-long friendship with Matthew F. Maury, the distinguished hydrographer.

For several years prior to the civil war Lieutenant Brooke was engaged in making hydrographic surveys in the Pacific Ocean, particularly in the archipelago and along the coasts of China and Japan. It was in 1854 that Commodore M. C. Perry induced the Japanese to sign their first foreign treaty by which trade was opened with the United States, and good treatment was promised to shipwrecked crews. Brooke was thus allowed ready access to Japan, and while he was sojourning in Yeddo in 1859 his ship was destroyed by a typhoon. He remained a number of months at Yokohama, during which he did much to develop the confidence of the Japanese in their foreign friends. They decided to send an embassy to the United States and invited Brooke to accompany it. So highly was he esteemed that he was invited by the Japanese ambassadors to help himself from a large chest of native gold, but this he declined. On the arrival of the embassy at Washington the first request of the ambassador was that the services rendered by Brooke to Japan should be recorded in the archives of the United States.

It was during his extended hydrographic work in the Pacific that Brooke thoroughly tested his deep-sea sounding apparatus, the invention for which probably he became best known. He had previously originated it at the Naval Observatory. With but few modifications his method has continued in use to the present time. It has been one of the most important elements in extending our knowledge of ocean depths and in rendering possible the first successful ocean cables.

Soon after Brooke's return to America the country became rent by civil war. Along with Maury he cast his lot with the seceding states, and the rest of his life was spent in Virginia. As a Confederate officer he gave his attention especially to naval ordnance. While Parrott was experimenting at West Point on the improvement of cast-iron cannon by reenforcement of the breech with a wrought-iron jacket, Brooke was absorbed in similar experiments at Richmond and Norfolk, and the Brooke guns were conceded to be the best made at the south. While Ericsson was developing his *Monitor* at Greenpoint Brooke and his associates were building the first Confederate ironclad, known as the *Merrimac,* which took part in the dramatic naval engagement at Hampton Roads. He remained at the head of the ordnance department of the Confederate navy until this navy ceased to exist.

After the close of the war Maury and Brooke became associated as professors in the Virginia Military Institute at Lexington, where Maury died in 1873. Brooke continued