is well shown in relation to the broader valley up and down stream. Five new sheets of the detailed charts, 1:20,000, were issued during the year.

The report on the Missouri announces that it is impracticable to attain permanently useful results in controlling the river at the present rate of expenditure; $317,000 having been spent on river corrections during the year. Along with numerous maps representing various engineering works, the report contains a large number of excellent photographs illustrative of different methods of protecting the river banks, from which an excellent idea of the appearance of the river and of the works undertaken upon it can be gained. A series of detailed charts covering the river from its mouth to Kansas City (400 miles) on a scale of five inches to a mile with five-foot contours, have been drawn but not yet published.

GLACIAL LAKE OUTLETS IN MICHIGAN.

THE 'thumb' of Michigan, enclosing the Saginaw bay branch of Lake Huron on the southeast, is of moderate altitude, yet sufficient to have divided two lobes of the ice sheet of the last glacial epoch, which deposited their interlobate moraines along the axis of the thumb. During the retreat of the ice, the depressions evacuated by these lobes were occupied by lakes; the southeastern by Lake Maumee, overflowing through the outlet past Fort Wayne, long ago described by Gilbert; the northwestern by Lake Saginaw, whose outlet was through the Grand river channel, a magnificent ancient river bed, a mile wide, fifty miles long and sometimes cut over 200 feet deep in the drift. Further retreat of the ice uncovered a point on the crest of the thumb of less altitude than the Fort Wayne outlet; then the southeastern lake drained across the thumb to the northwestern lake, the connecting river carving the Ubly channel, which follows the outer base of an interlobate moraine. The channel is twenty miles long, a mile wide, and from 20 to 100 feet deep. At its southeastern end, its level agrees with that of the shore lines of the lake that it drained; its bed is strewn with bars of gravel and sand, indicating a flow from southeast to northwest; its further end opens upon a delta-like body of gravel at the level of Lake Saginaw. Like the ice-border channels near Syracuse, N. Y., discovered by Gilbert, or those of north Germany recently summarized by Keilhack, the Ubly channel is a geographical feature of marvellous significance in connection with the glacial theory; the interpretation of this excellent example being due to Taylor, in whose admirable series of independent studies it constitutes but one of many items (Ice dams of Lakes Maumee, Whittlesey and Warren, *Amer. Geol.*, xxiv., 1899, 6–38, maps).

CHICAGO AND ITS ENVIRONS.

THE first Bulletin of the Geographic Society of Chicago contains an essay on the 'Geography of Chicago and its Environs' by Salisbury and Alden (pp. 64, 30 figs.). A relief plate as frontispiece shows very clearly the smooth floor of the ancient expanded lake rising towards the rolling uplands through which the lake outlet cut its broad and well-defined channel. The text describes the several physiographic areas, with special reference to the successive stages of the falling lake, of which three are recognized (Glenwood, Calumet, Tolleston). The dunes of the ancient beach ridges that curve around the southern end of Lake Michigan, familiar objects to travelers by rail from the east, are mapped and described.

W. M. DAVIS.

CURRENT NOTES ON METEOROLOGY.

COMPENSATION IN WEATHER.

THE question of seasonal forecasts is considered in the Annual Summary for 1899 of *Climate and Crops: Colorado Section.* The temperature and precipitation data for Denver during the past 28 years have been compiled in order to bring out whatever relation successive seasons bear to one another, in the hope of throwing some light upon the so-called theory of compensation in weather. This theory, stated in a few words, is that a season with an excess or defect of temperature or precipitation is followed by compensating conditions in the succeeding season. The records show that the temperature for a season, or a longer period, furnishes no certain index of the conditions to be expected during the coming season. An ex-

ceptionally warm spring or summer following an abnormally cold winter is found to be the exception rather than, as is generally believed, the rule. The conditions with respect to precipitation are much more variable than those connected with the temperature. Notably dry or wet seasons are more likely to be followed by nearly normal ones, than by seasons having compensating, or opposite, characteristics.

In *Nature* for January 25th, MacDowall contributes a further note to this discussion. The subject of this inquiry is the sort of relation subsisting between the cold of a given winter and that of the 30 winters preceding. The cold of the winter seasons is measured by the number of frost days from September to May. The results of the study are as follows: (1) The six mildest winters (since 1871) were each preceded by a 30-year group having more than the average of frost days. (2) The six coldest winters were each preceded by a 30-year group having less than the average of frost days. (3) Of fifteen 30-year groups with excessive cold (*i. e.*, over the average), as many as 12 were followed by mild winters, and only 3 by severe winters.

Studies of the sort here referred to are always interesting, but it must be remembered that the results, so far as they go, relate only to a limited area in each case, and that no definite general conclusions can be reached in this matter without much longer and much more accurate series of observations than we now have.

MONTHLY CLIMATE AND CROP BULLETIN.

The *Climate and Crop Bulletin* of the Weather Bureau for January contains a new feature. This is the addition of a diagram indicating the average daily departure from normal temperature for each day during the month at certain selected Weather Bureau stations east of the Rocky Mountains. These stations are St. Paul, Galveston, Boston, Jacksonville, and Cincinnati. These five cities are believed to represent the general temperature conditions prevailing east of the Rocky Mountains as well as any other like number of stations. Simple graphic representations are always welcome additions in discussions of meteorological phenomena, and this new diagram is certain to meet with approval on the part of all who make use of the *Climate and Crop Bulletin*.

R. DeC. Ward.

Harvard University.

THEODORE POESCHE.

On December 27, 1899, died in Washington, D. C., Theodore Poesche, one of that coterie of scholars of whom Professor Henry said, no one has ever asked me a question that some of them could not answer correctly. Poesche was born at Zoeschen, near Merseburg, graduated at the University of Halle, and was driven to England for participating in the revolution of 1848.

Coming shortly after to America, he published with the coöperation of Carl Copp, a little book entitled 'The New Rome,' in which a comparison is drawn between the hereditary enmity between Rome and Carthage on the one hand and between England and America. In 1857 Poesche came to Washington, where during forty years he served as statistician in the Treasury. In this capacity he was sent in 1872 to advise Bismarck about the working of our internal revenue system. In 1878 appeared his masterpiece, 'Die Arier,' in which the origin of the blonde Aryans, of whom Poesche was a splendid example, is found in the Rökitno marshes of White Russia. The book is a protest against the Asiatic origin of the blondes and contributed no little at the time to change the prevailing opinion. In all his work Mrs. Poesche was the amanuensis of her husband and occupied a prominent place in the Washington literary circle.

O. T. M.

SCIENTIFIC NOTES AND NEWS.

At the meeting of the Royal Geological Society on February 16th, Mr. Henry White, Secretary of the United States Embassy, received on behalf of Mr. G. K. Gilbert, the Wollaston Medal.

Lord Rayleigh, Professor Ramsay, Dr. W. Hittorf and M. Moissan have been elected honorary members of the German Chemical Society.

The polling for the election of a member to represent the University of London in Parlia-