13. The outwash deposits of the two Wisconsin stages are likewise relatively thin, being generally underlain at slight depths by one or the other of the older formations described.

14. Three groups of artesian wells have been recognized: (1) the deep Cretaceous wells, (2) wells in the Jameco gravels, and (3) shallow wells in the Pleistocene deposits of the north shore.

15. The deep Cretaceous wells are found both on the north and south shores. In both localities the water horizon has a regular southeastward dip. The source of the water in the south shore wells, except in the Barren Island well, is probably in the highlands of the island itself where the beds rise to the surface. In the north shore wells and in the Barren Island well, which perhaps obtains its supply from the same water-bearing horizon, the original source of the water is not yet established, although the problem is under investigation.

16. The Jameco wells obtain their supply from the glacial gravels (Kansan) occupying the deep and well-defined channel extending beneath Jamaica and Jamaica Bay and underlying the thick clays of the succeeding (Yarmouth) interglacial stage. The supply is derived from the ground water entering the gravels under the landward edge of the overlying clay. Because of the coarseness of the gravel the water is given up freely.

17. The shallow north shore artesian wells are generally restricted to the upper halves of the deep reentrant bays, generally at the base of steep slopes. The source of supply is from the ground water of the glacial gravels and sands, the flow taking place by virtue of the freer passage afforded by the wells than by the gravels.

18. The great thickness of the sandy layers of the Cretaceous under the higher portions of the island, the extent to which the Cretaceous water-bearing sands have already been developed and the probability that a number of water horizons have been previously overlooked because of search for a coarse gravel like the Jameco, makes the recommendation made by Professor C. S. Slichter regarding the advisability of sinking deep wells with casing perforated at each water-bearing horizon particularly pertinent.

M. L. FULLER,
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CURRENT NOTES ON METEOROLOGY.

BLOOD COUNTS AT HIGH ALTITUDES.

Nos. 8 and 9 of Vol. III., *Bulletin of the Hadley Climatological Laboratory of the University of New Mexico,* deal with 'Cold as a Causal Factor in the Blood Changes due to High Altitude,' and with 'Further Observations on Increased Blood Counts due to High Altitude.' The first paper is by John Weinzirl, M.S., and the second, by the same author with the cooperation of C. E. Magnusson, Ph.D., is a study the prosecution of which was aided by a grant from the Elizabeth Thomson Fund. The fact of an increased number of red blood corpuscles at high altitudes is well known, and has been investigated by Bert, Egli-Sinclair, Viault, Müntz, Egger and others. By means of blood counts in the cases of human beings and of rabbits, the authors of these papers come to the conclusions that cold is an important, though not the only, factor in producing blood changes at high altitudes, and that the increase in the number of red corpuscles due to altitude is temporary (as, it should be noted, has already been shown by several writers), this temporary increase being very largely due to the change in the temperature and not to the diminished pressure.

WEST INDIA HURRICANES.

ON the 'Pilot Chart of the North Atlantic Ocean' for September last there is a brief but well-arranged summary of the most important facts regarding West India hurricanes, prepared by James Page, of the United States Hydrographic Office (reprinted from H. O. Publication, No. 86). Of 56 hurricanes recorded by the Hydrographic Office between 1890 and 1900, 41 occurred in September and October. Instead of the old 'Eight Point Rule,' which is now known to hold only for the central portion of the storm, seamen are at present instructed that 'six

points (67° 30′) have been accepted as the value most frequently met in actual practice.' Taking this value, the following rule approximately fixes the bearing of the storm center from a vessel in the northern hemisphere: Stand with back to the wind; the storm center bears six points to the observer's left. It is, nevertheless, perfectly clear that the angle between the wind direction and the gradient often differs considerably from this average value, not only in different storms, but also in different parts of the same storm. No simple rule of thumb can ever replace the careful judgment of the individual seaman who has a good understanding of the law of storms, and who makes an intelligent use of his own local meteorological observations.

CLOUD OBSERVATIONS AT SIMLA.

Cloud observations and measurements were made at Simla during the twenty months from June, 1900, to January, 1902, under many disadvantages of unfavorable weather and lack of time on the part of the observers. Photogrammeters were used, but only about 47 fairly good observations were obtained during the period. The average heights above sea level, and above Simla, of the clouds for the year were as follows:

Cloud.	Above Sea Level.	Above Simla.
Cirrus	37,664 feet.	30,440 feet.
Cirro-cumulus	25,083 "	17,859 "
Cumulus	14,528 "	7,304 "
Fracto-cumulus	13,143 "	5,919 "

These heights do not agree very closely with those previously obtained at Allahabad (Indian Met. Memoirs, Vol. XI.). Cirrus clouds are most frequent at Simla between 16,000 and 40,000 feet above the earth's surface, and the other forms of cloud between 16,000 feet and the surface. (W. L. Dallas: 'Report on Cloud Observations and Measurements at Simla,' Ind. Met. Mem., XV., Part II., Calcutta, 1903.)

R. DeC. Ward.

SANITATION AND THE PANAMA CANAL.

A small committee representing the American Medical Association, the American Association for the Advancement of Science and the New York Academy of Medicine, called on President Roosevelt, November 25, for the purpose of presenting resolutions passed by the organizations mentioned, urging the President to appoint upon the Panama Canal Commission a medical man who shall be an expert sanitarian.

The committee consisted of Drs. Musser, of Philadelphia, Welch and Osler, of Baltimore, and Bryant, of New York, representing the American Medical Association; Dr. Howard, of Washington, representing the American Association for the Advancement of Science; Dr. A. H. Smith and Dr. Loomis, representing the New York Academy of Medicine.

The resolutions were presented to President Roosevelt by Dr. Welch, who made a brief statement urging that the sanitary problem connected with the building of the canal was quite as serious as the engineering problem and pressing the point that a medical expert should be a member of the commission rather than a servant of the commission.

The views of the joint committees were received by the President with interest, but while he was evidently perfectly aware of the enormous importance of the sanitary problem connected with the project, he gave no assurance that he would adopt the specific suggestion of the committees.

RESOLUTIONS OF THE FACULTY OF CORNELL UNIVERSITY ON THE DEATH OF PROFESSOR ROBERT H. THURSTON.

The faculty and instructing staff of Cornell University wishing to give voice to the sentiments evoked by the death of their colleague and friend, Professor Robert Henry Thurston, Director of Sibley College, have directed the following to be entered upon the records of the university faculty and communicated to his family.

Professor Thurston came among us in 1885 when the university had barely entered upon its present era of development, and the college over which he came to preside was still small in numbers and poor in equipment. During the eighteen years of his labors he witnessed the progress of the university in all of its de-