

IN the *Atlantic Monthly*, Mr. Percival Lowell, in the third of a series of papers on the planet Mars, takes up the subject of the canals and discusses their artificial appearance.

THE death is announced, in Underhill, near Matadi, on the Congo, of Mr. E. J. Glave, the African explorer.

WILLIAM C. WILLIAMSON, LL.D., F. R. S., emeritus professor of botany in Owens College, Manchester, died at London on June 23rd, at the age of seventy-eight years.

UNIVERSITY AND EDUCATIONAL NEWS.

HARVARD UNIVERSITY has this year awarded 664 degrees distributed as follows: A. B., 363; S. B., 24; M. D. V., 10; D. D. M., 17; M. D., 65; LL. B., 76; D. B., 6; A. M., 85; Ph. D., 16; S. D., 3.

At a meeting of the board of trustees of Cornell University, June 20th, the following assistant and associate professors were promoted to full professorships: H. S. Gage, anatomy, histology and embryology; E. B. Tiechener, psychology; J. E. Creighton, logic and metaphysics; G. W. Jones, mathematics; R. C. Carpenter, experimental engineering; C. L. Crandall, civil engineering; W. F. Durand, marine engineering; H. J. Ryan, electrical engineering. John H. Barr was made associate professor of machine design.

To meet the needs of the recent reorganization of Columbian University, it is proposed to collect \$75,000 to be expended at the rate of \$15,000 a year. Of this amount \$27,500 has been subscribed, including \$5,000 each from Gardiner G. Hubbard, Eugene Levering and S. W. Woodward.

THE graduating classes of Cornell University contained 363 students. The A. M. degree was conferred on 33 candidates, Sc. D. on 6 candidates and Ph. D. on 13 candidates.

At the commencement exercises of Smith

College, on June 18th, it was announced that two sums of \$5,000 each had been given to the college by donors whose names were withheld.

At Amherst State College L. S. Metcalf has been appointed professor of mathematics, physics and engineering and G. E. Stone professor of botany.

UNION COLLEGE celebrated the one hundredth anniversary of its foundation on June 28th.

At Williams College George A. Hunter has been appointed assistant in biology and Willis J. Milham instructor in physics.

MRS. JULIA A. IRVINE, who for a year has been acting president of Wellesley College, has accepted the office of president. The degree Litt. D. has been conferred on Mrs. Irvine by Brown University.

DR. V. KRIES, of Freiburg, has been appointed to the chair of physiology in the University of Leipzig, vacant by the death of Ludwig.

DR. NIETZKI has been appointed full professor in the University of Basel, and Dr. N. U. Assing has accepted the professorship of mineralogy in the University of Copenhagen.

DR. ERNST MACH, now professor of physics in the University of Prague, has accepted (according to *The Open Court*) a professorship of the history and theory of inductive science in the University of Vienna.

DR. M. ESCHENHAGEN, in charge of the Royal Magnetic Observatory at Potsdam, has been promoted to a professorship.

CORRESPONDENCE.

TOPOGRAPHIC METHODS.

GENERALLY speaking, sketched details of topography will compose the largest part of a map, and the question arises: How are such interpolations best made to produce accurate as well as uniform and artistic results?

The expert topographer, intuitively, separates minor features of the surrounding terrene from those accidents of the ground which characterize forms that may not only be represented in the scale of the map, but which will also materially assist in delineating and representing the general system that may condition such forms. Where the general configuration or surface-modeling conforms to an easily recognizable system, a broader interpretation and a more free treatment of the terrene should be observed than in the case of an area showing diversified forms and having an irregular relief.

Topographic sketching in this sense not only requires artistic sensibilities, but it also demands a correct and comprehensive interpretation of forms, under a supposition which is at variance with the facts, inasmuch as the map is drawn as if the terrene were seen from a point at infinite distance.

The question now arises: How is the young topographer to be best prepared in order to meet the requirements with general satisfaction?

My views fully coincide with those of Professor Davis, given in a recent note in SCIENCE, that 'a very careful and sympathetic study of the origin of land forms on the ground before the topographer' will enable him to 'make less mistakes of interpretation' than one whose principal aim is to give mathematically correct locations without possessing any knowledge of either terrene forms or the agencies which produced them.

Mathematical knowledge in surveying is, of course, a *sine qua non*, but the study of terrestrial relief and the orthogonal projection of the latter into horizontal plan should be made a careful study, and to this the young topographer's attention should be principally directed, guarding him, however, against falling into that error which a thorough familiarity with structural geology and a knowledge of its originating causes are

apt to commit, namely, never to represent on the chart imaginary forms of topographical elements that are not visible from the occupied stations in the field. In other words, the topographer should not, on the strength of a familiarity with structural geology, attempt to sketch the contours on the further (invisible) slopes of hills merely by inference, or, because the contours delineating the visible slopes before his eyes may be well determined, and, in a measure, may suggest the probable shape of the further sides.

I believe with Professor Davis, that "the best course of education for topographers, while yet in school, should include a careful study of the development of land forms," which may be done in various ways.

A 'comparative' study of relief-models with two sets of topographic maps (all on a large scale) of the same area—one set with hill-shading and the other with horizontal equidistant contours—together with a series of panoramic views, covering the same area and taken with a surveying camera, would probably give the student not only excellent means for comparing the 'representative force' of the various conventional methods of indicating topographic forms, but an intelligent comparison of the maps and model with the photographs (or with nature) would train the young topographer into seeing the facts, and he would thus make a good start towards acquiring facility in sketching topographic forms of the terrene spread out before him.

A course of 'iconometric' platting, on a large scale, from photographic perspectives (metro-photography), would also offer an excellent opportunity, not only to demonstrate how the elements selected as characteristic points in the landscape are interpreted or transposed into horizontal plan, but such a course would also offer the student the means to clear any doubt he may have regarding the transposed forms of

features before his eyes, by constructing the orthogonal projection of such features, graphically, in a simple manner, from their perspective views.

J. A. FLEMER.

WASHINGTON, D. C.

THE METEOROLOGICAL AND MAGNETICAL OBSERVATORY ZI-KA-WEI, NEAR SHANGHAI, CHINA.

THE Zi-ka-wei Observatory, founded in 1873 by the French Roman Catholic Mission of Kiang-nan, has been provided by the same with all the instruments necessary for the study of meteorology and terrestrial magnetism, and from that time it has not ceased to pursue actively the study of those two branches of science. The work of the Observatory comprises 3 parts :

(1) The first part is a public service accepted out of good will ; and it may be said gratuitously, in behalf of the port of Shanghai. This manifold service includes : the service of the time-ball by which the exact time is given to the port of Shanghai by the fall of a meridian ball ; a daily bulletin, posted up at Shanghai, contains information on the weather at Shanghai and along the coast of China ; the typhoon and storm warnings by means of signals hoisted up at a semaphore. (2) The second part of our work is composed of hourly meteorological and magnetical observations published in monthly bulletins, which make at the end of each year a volume in.-4to of over 200 pages. (3) The third part comprises special studies on meteorological or magnetical subjects, the whole of which comprises already 26 memoirs.

But up to the present the study of astronomy has been altogether left aside. When the service of the time-ball was inaugurated at Shanghai, twelve years ago, by the care of the Municipal Council of the French Settlement, the Observatory received, at the expenses of that Council, a little transit in-

strument, good for the determination of the time, but altogether inadequate to astronomical observations properly so called. This absence of instruments fit for astronomical studies we have seen it regretted by many learned men. To quote but one only, Mr. A. Tissandier, relating in *La Nature* No. 944 his visit to the Zi-ka-wei Observatory, expressed his regret of seeing us neglecting astronomy. Our too limited staff had prevented us till now, just as much as the lack of pecuniary means, to think seriously about giving to our Observatory a so-eagerly-longed-for development. At present we would be in a better condition even to undertake a series of studies in that so interesting branch of science. But it is quite impossible that the Catholic Mission, which has made so many expenses to found the Observatory and maintain it in its present state, make to itself the expenses for such an establishment. It is even impossible that it can suffice for the cost of the instrument which we wish to set up in the first place, *i. e.*, an equatorial telescope of becoming size. We must then necessarily have recourse to the generosity of those interested in the advance of science and particularly in the studies made at Zi-ka-wei. The city of Shanghai profiting above all by our work, it was then quite natural that we first of all address ourselves to it. And that we have done in demanding from the two Settlements (English and French) to be so kind as to contribute each for a sum of £400 to the setting up of an equatorial telescope at the Zi-ka-wei Observatory. That proposal, brought before the meeting of the Ratepayers of the English Settlement on the 12th March by Mr. G. J. Morrison and seconded by Mr. J. Henningsen, has been received with the marks of the greatest sympathy and voted unanimously.

A similiar reception of my demand has been made at the meeting of the French