UNIVERSITY AND EDUCATIONAL NEWS

THE Sheffield Scientific School of Yale University has received from Messrs. George G. Mason and William S. Mason $250,000 for a laboratory of mechanical engineering.

FOR the establishment of the George Peabody College for Teachers at Nashville, Tenn., the sum of $1,000,000 has now been given by the board of trustees of the Peabody Fund for the Advancement of Education in the South. This gift was promised some time ago conditional on the granting by the state of Tennessee, the county of Davidson and the city of Nashville of a sum approximating $750,000.

ADDITIONAL gifts amounting to $450,000 to seven institutions were announced after the seventh annual meeting of the General Education Board held in New York City on February 2. These are the appropriations: Williams College, Williamstown, Mass., $100,000 on condition that the college raise an endowment of $1,000,000; Wesleyan University, Middletown, Conn., $100,000 toward $1,000,000; Cornell College, Mount Vernon, Ia., $50,000 toward $200,000; St. Lawrence University, Canton, N. Y., $50,000 toward $200,000; Georgetown College, Georgetown, Ky., $25,000 toward $100,000; the Women's College of Brown University, Providence, R. I., $50,000 toward $200,000; the Salem College for Women, Winston-Salem, N. C., $75,000 toward $300,000.

THE trustees of the bequest of $2,000,000, left by Mrs. Amanda W. Reed, are, as has already been announced, about to establish a college at Portland, Ore., to be known as Reed Institute. Dr. J. H. Tufts, head of the department of philosophy at the University of Chicago, has recently spent some time in Portland on the invitation of the trustees, to advise as to the scope of the institution.

A MEDICAL library of 1,100 volumes has been given to the medical school of the University of Wisconsin by Dr. Byron F. Robinson, a graduate of the university in the class of 1878, now professor of gynecology and abdominal surgery in the Illinois Medical School.

ACCORDING to the *Madras Educational Review*, as quoted in *Nature*, Sir F. D. Lugard, the governor of Hong Kong, has reported to the British government that Mr. H. N. Mody has offered to present the colony with the building necessary to start a university. A committee has been formed, with the governor as chairman, to promote the undertaking. Mr. Mody's original offer was to give a sum of £30,000 for this purpose and a further £6,000 towards the endowment. Plans of the necessary buildings were prepared, and as the director of public works estimated that the cost would not be less than £58,000, Mr. Mody undertook to provide them in accordance with the plans, stipulating, however, that he should use on the buildings he £6,000 originally given for endowment if it should be required.

ALBERT JOHANNESEN, Ph.D. (Johns Hopkins), of the United States Geological Survey, has been appointed assistant professor of mineralogy and petrography in the University of Chicago.

DR. CHARLES C. MCFARLANE, principal of the Brockport State Normal School, and formerly professor of geography, has been appointed to the newly-created office of comptroller in Teachers College, Columbia University.

MR. R. C. PUNNETT, superintendent of the Museum of Zoology at Cambridge University, has been elected to the professorship of biology recently vacated by Professor W. Bateson.

DISCUSSION AND CORRESPONDENCE

THE SOUTHERNMOST GLACIATION IN THE UNITED STATES

IN a recent number of SCIENCE[1] H. W. Fairbanks and E. P. Carey report evidences of "Glaciation in the San Bernardino Range, California," in latitude about 34° 7′ N. Concerning this interesting discovery the writers say: "it has hitherto been assumed that the southernmost point of glaciation in the United States was in the Sierra Nevadas, nearly two hundred miles to the north" (north of latitude 36° N.). If their observations are correct, they have found the most

[1] January 7, 1910.

southern instance of satisfactory evidence of glaciation in this country, so far as I recall; but there are several records of glaciation farther south than the point in the Sierra Nevada referred to by them. Brief references to these may be of interest.

SCIENCE for November 22, 1901,[2] contained a "Note on the Extinct Glaciers of New Mexico and Arizona," by George H. Stone, in which he reported evidences of glaciation in one of the Rocky Mountain Ranges "as far south in New Mexico as a point not far north of Santa Fé" (latitude about 35° 41′). In a later paragraph we read:

> The farthest south and west I have found traces of extinct glaciers is at Prescott, Arizona. Around Prescott are numerous moraines. The highest part of the névé of this glacier could not have been much above 9,000 feet. The central part of the glacier is approximately in n. lat. 34° 30′. The occurrence of an ancient glacier so far south as this was probably due to a very great snowfall owing to the proximity of the ocean. . . . Probably there were then small glaciers in some of the cirques of northern exposure among the mountains directly southeast of Prescott.

R. D. Salisbury published an article on "Glacial Work in the Western Mountains in 1901," in volume 9 of the *Journal of Geology*, 1901. Beginning with page 728 is a brief description of glacial features in the mountains near Santa Fé, between 35° 45′ and 36° north latitude. Some 50 cirques were found, and about 80 ponds and lakelets. One of the glaciers had a length of seven miles. Moraines, striæ and roches moutonnées were observed. In 1902 I had an opportunity to visit this same region, and I entertain no doubt as to the ample proof of local glaciation in those mountains.

In the *Journal of Geology* for 1905[3] is a paper by Wallace W. Atwood on the "Glaciation of San Francisco Mountain, Arizona." This writer describes and figures terminal and lateral moraines, and an outwash plain, and reports the occurrence of striated boulders and polished and grooved bedrock. I have briefly mentioned evidences of glaciation on this same peak, attributing a somewhat greater amount of erosive work to the glacier than is recognized by Atwood, and mentioning what I then believed to be a terminal moraine located near the mouth of a cirque.[4] The latitude of San Francisco Mountain is about 35° 21′ N.

F. J. H. Merrill reports in SCIENCE for July, 1906,[5] "Evidences of Glaciation in Southern Arizona and Northern Sonora." In the vicinity of Nogales, and elsewhere, were found deposits which he believed to be of glacial origin, while the surface had "the rolling topography and pitted surface of a moraine." Nogales is in latitude 31° 20′ N.

The above references may be but a partial list of the published reports of glaciation south of the point in the Sierra Nevada referred to by Fairbanks and Carey; I have made no effort to prepare a complete list. Of these reports, the one on glaciation near Nogales is the most striking, because of the low latitude and low altitude in which the deposits are found. The evidence as reported does not appear sufficiently convincing, in view of the strong probabilities against the occurrence of glacial deposits in the region in question. Merrill's descriptions suggest a landslide origin for the deposits which he took to be glacial. With reference to the glaciation of San Francisco Mountain I wish to add the following paragraphs.

On my visit to San Francisco Mountain I ascended the volcano by the northwest slope, and I descended into the northwestern part of the "crater." I was impressed with the cirque-like form of the depression, and came to the conclusion that the original crater had been destroyed by stream and glacial erosin, and that the encircling cliffs were to be regarded as cirque-walls rather than as crater-walls. The great central depression of the volcano consisted of several more or less distinct cirques uniting downstream. Near the mouth of one of these was what I interpreted as a crescentic terminal

[2] Vol. 14, p. 798.
[3] Vol. 13, p. 276.
[4] *Technology Quarterly*, Vol. 19, p. 410, 1906.
[5] Vol. 24, p. 116.

moraine, rising 150 feet or more above the valley floor. But there were certain associated features which puzzled me at the time. Upstream from the supposed moraine the floor of the cirque appeared to be deeply buried by an accumulation of rock débris which was generally as high as and near the head of the cirque distinctly higher than the morainal ridge. This débris was in places, especially near the marginal walls, arranged in parallel ridges trending with the axis of the valley; and in the depressions between the ridges were patches of snow and some small ponds. Thus the moraine had a steep frontal slope, but at the back merged with the ridged rock débris which rose to still higher levels. There were some depressions in the rock débris, 25 to 40 feet deep, which I took to be ice-block holes. No bedrock was seen in the cirque floor.

During the recent meeting of the Geological Society of America, Professor H. B. Patton, of Boulder, Colorado, exhibited some photographs of the rock streams of Veta Mountain, Colorado. One of these photographs showed the high and steep front terminus of a rock stream, and resembled very closely the front slope of the supposed moraine in the San Francisco cirque. Others of his pictures showed the longitudinal parallel ridges which characterize some rock streams, with bands of snow lying in the hollows between the ridges, just as was the case in the San Francisco cirque at the time of my visit. If the concentric wave-like ridges pictured by Howe[6] were present in the San Francisco deposits, I did not notice them.

I am inclined to believe that the features which puzzled me at the time of my visit may have been due to landslides or rock streams. This does not mean that the depression in which the features occur is not a glacial cirque; nor that the moraines reported by Atwood are not true moraines. It simply means that I am not wholly satisfied with the evidence of glaciation as reported by myself. It would seem that the possibility of a landslide or rock stream origin for features apparently due to glaciation must be carefully considered, especially when glaciation in doubtful localities is involved.

D. W. Johnson

[6] "Landslides of the San Juan Mountains," U. S. G. S. Professional Paper, No. 67.

THE TEACHING OF ELEMENTARY DYNAMICS IN THE HIGH SCHOOL

To the Editor of Science: I have just finished reading "The Teaching of Elementary Dynamics in the High School," by Wm. Kent. I believe that Mr. Kent is right in most respects except his last paragraph, where he states: "It is high time they [teachers of physics in the high schools] change their methods and try the method that was successfully used fifty years ago." As one of the physics teachers in secondary schools, I wish to say that my own practise for many years has not been materially different from that of Mr. Kent and I wish to put in just a word for the most of the physics teachers of my acquaintance when I say that their practise and that of Mr. Kent do not differ in any essential particular.

Again and again the discussion of the *force* $=$ *mass* $\times$ *acceleration* formula has come up among groups of teachers and, in every case, the verdict of the teachers has been that it was not a formidable matter. Each knew a way to teach it so that the pupil got the gist of the matter even if he could not write a text-book on it afterwards. And this is true whether the instruction is given in English or metric units. One is as easy as the other.

Mr. Kent has evidently assumed from the large amount of discussion on this question of dynamics (kinetics) that there is something radically wrong with the teaching of secondary school physics and that the chief cause of any lack of efficiency is to be laid at the door of that one little formula—$f = ma$. We all may easily observe that those who are doing the teaching are not the ones who are doing the talking. It might be as readily discovered that the great majority of teachers are going ahead in a reasonably sensible way and are teaching physics (and other subjects as well) according to the dictates of common sense