determine the best condition for each experiment, and in many cases the directions given are undoubtedly better than those given in my (R's) book." Frequently, however, the only difference in the directions is that in the text-book they are more or less general, whereas in the manual they are given in great detail and, though the student may thus fail less frequently the first time he tries to make a substance, the educational value is diminished. Often more is learned by failure than success. The student must determine the necessary conditions himself. Thus he becomes self-reliant and learns to think chemically. This fault of the manual is to some extent compensated by the questions asked on almost every page. On the whole, the book will be found a valuable aid, especially in those laboratories in which the instructor can not devote much time to each student.

Felix Lengfeld.

University of Chicago.

NOTES AND NEWS.

INVESTIGATION OF THE GOLD AND COAL RESOURCES OF ALASKA.

Congress at its last session ordered a special investigation of the gold and coal resources of Alaska, appropriating $5,000 therefor. The investigation will be made under the direction of the U. S. Geological Survey, and will be under the immediate charge of Dr. George F. Becker, the well known gold expert. With Dr. Becker will be Dr. Wm. H. Dall, paleontologist, who has a superior knowledge of the geography and the general geology of the region. These experts and a single geologic assistant will comprise the party.

The party will leave Washington City, May 15, and it is proposed, with the sum available, to spend three months in actual field work, spending a month in each of three distinct districts along the Alaskan coast. Work will be begun in the Sitka area, where both gold and coal are known to occur. Transportation into and about the various inlets and bays to the north and west of Sitka will be furnished, through the courtesy of Secretary Herbert of the Navy, by the U. S. S. Pinta, which will be stationed in those waters. From the Sitka region the party will go to Kadiak Island and Cook's Inlet by mail steamer. In this region both gold and coal will be looked for also. The district to be visited last is Shumagin, to be reached by mail steamer from Kadiak. In the last named region, as in the other areas, gold and coal will be the main objects of inquiry, though the district is otherwise of very considerable geologic interest on account of its fossil remains and the presence of an active volcano.

The search for coal is one of especial interest to the Navy Department; if coal suitable for use as fuel in the war vessels and revenue cutters in the Pacific were found to be available in quantities, it would be of incalculable advantage to the Government.

It will not be feasible with the limited fund available to carry this investigation of gold and coal resources as far as might be desired. There is demand, for example, for an investigation of the gold placers of the Yucon river, but to do this work effectively the geologist will have to remain in the Yucon region through one summer and through the ensuing winter.

A REDFIELD MEMORIAL.

The botanical section of the Academy of Natural Sciences, of Philadelphia, which had under consideration the subject of a monument commemorative of the services to botanical science of the late John H. Redfield, Conservator of the herbarium of the Academy, has issued a circular, saying:

"It has been decided that no better monument to the memory of John H. Red-

field could be erected than to arrange for completing and caring for the work he loved, and to which he gave freely so many years of his life—namely, the Herbarium of the Academy of Natural Sciences. Mainly through his disinterested labors, it stands to-day scarcely second to any in the United States, containing, besides many unnamed, over 35,000 named species of flowering plants and ferns, the half of which have been verified and fastened down.

"No one can probably be found to give the years of time he so freely gave. In order to carry on the work, and add to the collection, as exploring expeditions afford the opportunity, it has been proposed to establish a Redfield Memorial Herbarium Fund.

"Mr. Redfield's will provides that his herbarium, minerals, shells and scientific works shall be sold to help the herbarium, thus furnishing a nucleus for the proposed fund. It is in mind to raise $20,000, but the interest of any sum that may be contributed can at once be made available.

"Statements will be furnished from time to time to contributors, keeping them informed of the progress of the contributions. Checks may be made payable to the order of Thomas Meehan, Director, or Stewardson Brown, Treasurer, and mailed to either at the Academy of Natural Sciences, Nineteenth and Race streets, Philadelphia."

THE MOTION OF CLOUDS.

AT a meeting of the *Royal Meteorological Society*, of London, on March 20th, Mr. W. N. Shaw, F. R. S., delivered a lecture on 'The Motion of Clouds considered with reference to their mode of formation,' which was illustrated by experiments. The question proposed for consideration was how far the apparent motion of a cloud was a satisfactory indication of the motion of the air in which the cloud is formed. The mountain cloud cap was cited as an instance of a stationary cloud formed in air moving sometimes with great rapidity; ground fog, thunder clouds and cumulus clouds were also referred to in this connection. The two causes of formation of cloud were next considered, viz.: (1) the mixing of masses of air at different temperatures, and (2) the dynamical cooling of air by the reduction of its pressure without supplying heat from the outside. The two methods of formation were illustrated by experiments.

A sketch of the supposed motion of air near the centre of a cyclone showed the probability of the clouds formed by the mixing of air being carried along with the air after they formed, while when cloud is being formed by expansion circumstances connected with the formation of drops of water on the nuclei to be found in the air, and the maintenance of the particles in a state of suspension, make it probable that the apparent motion of such a cloud is a bad indication of the motion of the air. After describing some special cases, Mr. Shaw referred to the meteorological effects of the thermal disturbance which must be introduced by the condensation of water vapor, and he attributed the atmospheric disturbances accompanying tropical rains to this cause. The difference in the character of nuclei for the deposit of water drops was also pointed out and illustrated by the exhibition of colored halos formed under special conditions when the drops were sufficiently uniform in size.

THE DISCRIMINATION OF COLORS.

PROFESSOR ARTHUR KÖNIG (*Zeitschrift für Psychologie*, Feb., 1895) has calculated, from experiments previously published, the number of hues or colors that can be distinguished in the spectrum. Differences in hue cannot be perceived beyond $\lambda = 655\ \mu\mu$ and beyond $\lambda = 430\ \mu\mu$; between these limits the normal eye can distinguish about

160 hues. According to König, the dichromatic eye (green or red blind) can distinguish nearly the same number of hues, its accuracy being greater than that of the normal eye in certain regions. The seven colors inherited from Newton should be abandoned. Physically, any three wavelengths, sufficiently separated, suffice to produce all the colors; psychologically, we can distinguish about 160 hues, or, as Leonardo da Vinci stated, there are four distinct colors—red, yellow, green and blue. In the same paper König calculates that about 660 degrees of intensity or brightness can be distinguished between the light that is just visible and the light so intense as to be blinding.

THE KARAKORAM HIMALAYAS.

In a lecture before the Imperial Institute of London, Mr. William Conway described the expedition to the Karakoram Himalayas made in 1892 under the auspices of the Royal Geographical Society, the Royal Society, the British Associotion, and the Government of India. The party consisted of the Hon. C. G. Bruce, Mr. A. D. M'Cormack, the lecturer, and two others, with an Alpine guide. The lecturer stated, according to the report in the London *Times*, that starting from Abbottabad, they went to Srinagar, the capital of Kashmir, thence by the Burzil pass to Astor and Bungi, in the Indus valley. The party followed the road to Gilgit, and a month was then spent in exploring the glaciers at the head of the Bagrot valley, and the great peaks in the neighborhood of Rakipushi. Returning to Gilgit they ascended the Hunza-Nagar valley, and visited the towns. From that point two long expeditions were made into the snowy region to the south and southeast before pushing forward to Hispar, which was at the foot of the longest glacier in the world outside the polar region. Dividing themselves into two parties, they made the first known passage of Europeans up the Nushik pass, and the first definitely recorded passage of the Hispar pass. The two parties united at Askole, in Baltistan, and, proceeding up the Braldo valley, arrived at the foot of the remarkable Baltoro glacier. Having forced their way to the very head of the glacier, they camped for two nights at an altitude of 20,000 ft. The Pioneer peak, which was 3,000 ft. above the camp, was also climbed, thus making, it was said, the highest ascent yet authentically recorded. Returning to Askole, they crossed the Skoro pass to Shigar and Skardo, whence they rode up the Indus valley to Leh, the capital of Ladak, or Western Tibet. The Zoji pass to Kashmir was traversed, and the party returned from Srinagar to England.

GENERAL.

Professor James D. Dana died at New Haven, on April 14th, at the age of eighty-two years.

The sixty-fifth meeting of the British Association for the Advancement of Science will commence on Wednesday, the 11th of September, under the presidency of Sir Douglas Galton, well known for his works upon sanitation, and as an adviser of the Government in matters of sanitary engineering. An invitation is issued to the philosophers of England and other countries, by the Secretary, to support this meeting by personal assistance and written contributions. Americans who have been the guests of the British Association know how admirable the arrangements are for the conduct of these meetings and how, by invitation to the General Committee and the Sectional Committees, a visitor from a foreign country is soon made to feel that he is a part of this great scientific organism.

At the last meeting of the Victoria Institute, of London, Sir George Stokes, Bart, F. R. S., in the Chair, papers by Sir J. W.

Dawson, C. M. G., F. R. S., Professors E. Hull, F. R. S., Parker and Duns, the Rev. G. Whidborne, and Mr. J. Slater, F. C. S., were read upon the questions in regard to natural selection and evolution, treated by Professor Huxley in his recent address on 'The Past and Present.'

ON May 4th the Association for the Education of Women is to hold a general meeting in the Schools, Oxford, to consider the question of a petition to the University for the admission of women to the B. A. degree.

DR. SHERRINGTON, now Superintendent of the Brown Institution, London, has been appointed to the George Holt chair of Physiology at Liverpool, vacant by the removal of Professor Gotch to Oxford.

DR. H. WEBER, Professor of Mathematics in the University of Göttingen, has accepted a call to the University of Strassbourg, and Professor Hilbert, of Königsberg, has been called to the vacant chair in Göttingen.

DR. E. R. L. GOULD has accepted a call to the Professorship of Statistics in the University of Chicago.

MR. THEODORE T. GROOM, of St. John's College, Cambridge, has been appointed Professor of Natural History in the Royal Agricultural College, Cirencester, succeeding the late Professor Harker.

DR. JOHANNES BRUMMER, Professor of Agriculture in the University of Jena, died recently at the age of forty-three years.

THE death is announced of the Irish Naturalist, Mr. A. G. More.

THE Appalachian Mountain Club, of Boston, announces the following excursions for 1895: April 19, Long Walk; May 11, May Walk—Nobscot Hill and Wayside Inn; May 30, Mt. Tom and Mt. Holyoke; July 1–8, Field Meeting—Seal Harbor, Mt. Desert; August, A probable excursion to the Selkirk mountains in British Columbia, occupying an entire month.

A PSYCHOLOGICAL INDEX, being a bibliography of the literature of Psychology and cognate subjects for 1894, has been published by Macmillan & Co., as a supplement to the *Psychological Review*. The index has been compiled by Mr. Howard C. Warren, of Princeton College, and Dr. Livingston Farrand, of Columbia College. 1312 titles are given, distributed as follows: General 135, Genetic, Comparative and Individual Psychology 259, Anatomy and Physiology of the Nervous System 190, Sensation 107, Consciousness, Attention and Inhibition 176, Feeling 50, Movement and Volition 116, Abnormal 278.

SOCIETIES AND ACADEMIES.

THE MINNESOTA ACADEMY OF NATURAL SCIENCES, MINNEAPOLIS. JOINT MEETING WITH THE ST. PAUL ACADEMY OF SCIENCE.

March 6th, in the rooms of the St. Paul Commercial Club.

The Physical Features of the Lake of the Woods: PROFESSOR CONWAY MACMILLAN, State Botanist.

Psychic Effects of the Weather: EDWARD S. BEALS, Observer U. S. Weather Bureau, Minneapolis.

Geology and Flora of the Mountain Region of Northwestern Montana: D. R. MCGINNIS, Secretary St. Paul Commercial Club.

April 2d in the Public Library, Minneapolis.

Fatigue; its Cause and Social, Religious, Economic and Educational Aspects: H. S. BAKER, PH. D., Principal of the Jefferson School. St. Paul.

Some Queer Forms of Shellfish: PROFESSOR H. L. OSBORN, Hamline University, St. Paul.

C. W. HALL, *Secretary.*

NEW YORK BRANCH OF THE AMERICAN FOLK-LORE SOCIETY.

ON the evening of Saturday, April the 6th, the annual meeting of the New York Branch