

to the advance of human culture. The ear, as well as, and even more readily than, the eye, becomes the avenue by which ecstasy is approached; and the wonderful effects of martial strains, or the deeply touching notes of the human voice, have always been among the poet's favorite themes. Ecstasies of thought, of contemplation, are vouchsafed to the few. Kant declared that nothing so filled him with awe as the starry heavens above and the moral law within, thus indicating two approaches to ecstasy. The flights of poetic imagination, creating worlds harmonious and beautiful, are of a kindred nature. The swaying of the masses by the eloquence of a born orator, who forgets himself and his hearers and feels himself inspired for the occasion, is another phase of this same ecstasy. The intoxication of power that so often leads to its abuse, and has given rise to the phrase 'insanity of power,' is again a type of ecstasy. Finally, all those moments of fruitful discovery when the mysteries of nature are glimpsed, a new contribution to human knowledge made, a novel train of thought begun, are moments of creative ecstasy. In every field of human activity there are possibilities of greatness; and all these have a common element, just as the views from all high mountain-peaks present a close similarity. From the study of these ecstasies, we return with a fuller appreciation of their grandeur and their value, with a realization of their dangers when diverted into morbid channels; we realize, too, what a great rôle they have played in human history; and they suggest that man cannot be more aptly described than by defining him as an inspirable animal.

NOTES AND NEWS.

D. C. HEATH & Co. will publish shortly a translation of Paolo Mantegazza's 'Testa, a Book for Boys.' It is a companion book to De Amicis' 'Cuore.' The translation will be made under the supervision of Prof. L. D. Ventura of Boston, and of the Sauveur Summer School of Languages. — Cassell & Co. have nearly ready a second edition of 'Yachts and Yachting.' The original work consisted of four papers, — 'A History of American Yachting,' by Capt. R. F. Coffin; 'The Mayflower and Galatea Races of 1886,' by C. E. Clay; 'American Steam-Yachting,' by E. S. Jaffray; and 'British Yachting,' by C. J. C. McAllister. These papers had one hundred and ten illustrations by F. S. Cozzens, comprising pictures of all the famous yachts of recent times. C. E. Clay has now covered the subject from 1886 to date, and Mr. Cozzens has provided sixteen new cuts. — The J. B. Lippincott Company have in press 'An Elementary Treatise on Human Anatomy,' by Joseph Leidy; 'A Cyclopædia of Diseases of Children,' by Dr. J. M. Keating; 'Animal Life of the Seashore,' by Angelo Heilprin in the International Scientific Series; and 'A Popular History of Music,' by James E. Matthew, with one hundred and fifty illustrations, consisting of portraits, musical instruments, facsimiles of rare and early musical typography, etc. — Frederick Warne & Co. have in preparation 'A Pictorial Natural History Library,' in three volumes, which will teach with more than a thousand illustrated pictures the facts that children devour so greedily. — W. B. Clarke & Co. (successors to Clarke & Carruth), 340 Washington Street, Boston, will publish shortly 'Among the Theologies,' by Hiram Orcutt, LL.D. — Ginn & Co. have just ready Benjamin Franklin's autobiography, with notes and a continuation of his life, by D. H. Montgomery; 'Topics in Ancient History,' by Miss C. W. Wood of Holyoke Seminary; 'Arabian Nights,' in their series of Classics for Children; 'Cæsar's Army,' a study of the military art of the Romans in the last days of the Republic, by Harry Pratt Judson of the University of Minnesota; 'Descriptive Geometry,' by Linus Faunce of the Massachusetts Institute of Technology; 'Entrance Examination Papers,' compiled by Dr. John S. White of the Berkeley (New York) School; and questions prepared to accompany Fiske-Irving's 'Washington and His Country,' as a help to teachers using this as a text-book of United States history. — Scribner & Welford have just ready a volume entitled 'Princetoniana' — Charles and A. A. Hodge, with Class and Table Talk of Hodge the Younger,' by a Scottish Princetonian, the Rev. C. A. Salmond, which contains a full biography of Rev. Dr. Charles Hodge (1797-1878), and of his son, the Rev. Dr. A. A. Hodge. Excellent portraits of the two professors, as well as one of Dr.

McCosh, contribute to the attraction of this volume. They have also just ready a volume on 'Tropical Africa,' by Henry Drummond, who gives a remarkably interesting account of his recent travels in Central Africa, with one or two chapters of natural history, and notes regarding the latest phases of the slave-trade and African politics generally. They will shortly issue 'The Letters of Frederica Sophia Wilhelmine, Margravine of Baireuth, and Voltaire.' — Harper & Brothers published on the 15th inst. 'Stepniak's' last book, 'The Russian Peasantry,' for which it is claimed that it is the most instructive and interesting work that has been produced by this remarkable writer, and is written evidently with self-restraint. They will soon issue in book form the practical house-keeping articles which have been contributed to *Harper's Bazar* by Christine Terhune Herrick, a daughter of Marion Harland. — *The Chautauquan* for July gives the location of forty-three summer assemblies modelled after the original one at Chautauqua, N.Y., and an outline of the work done in each. Of these assemblies, forty-one are located in twenty-one different States and Territories of the United States, one is in Canada, and one in England. The sessions vary in length from three days to two months. — In John Bogart's article on 'Railway Engineering Feats,' in the July *Scribner's*, will be a full account of life in a pneumatic caisson, far below the surface of the water, during the construction of bridge foundations.

— *Nature* states that the following were elected foreign members of the Royal Society on Thursday, May 31: Prof. Edmund Becquerel of Paris, distinguished for his researches on the effects of light on bodies, especially with reference to phosphorescence; Prof. Hermann Kopp of Heidelberg, for his researches on atomic volumes and boiling-points; Prof. Eduard F. W. Pflüger of Bonn, for his researches in physiology, especially in relation to irritability of nerves, respiration, and animal heat; and Prof. Julius Sachs of Würzburg, for his researches in botany, especially vegetable physiology.

— A despatch from Brussels dated June 18 states that the Kongo officials here think that the report received from a messenger from the Aruvimi was due to confusion regarding Ward's journey. Still they are anxious as to Stanley's fate, chiefly because Emin Bey had heard nothing of Ward, and had received almost positive confirmation of the hostility of tribes between the Aruvimi and Wadelai from officers who had journeyed there. Several Belgian explorers offer to go in search of Stanley, but only by the Kongo route and with a caravan of at most twenty men.

— The House Committee on Appropriations proposes to reduce the field force of the Coast and Geodetic Survey from sixty-two to fifty-eight men.

— The commissioner of fish and fisheries has asked for an appropriation of thirteen thousand dollars for the establishment and maintenance of a fish-cultural station, under the United States Fish Commission, in the Ozark region in south-western Missouri. The commissioner says that the neighborhood of Neosho, Newton County, Mo., affords favorable conditions for the establishment of such a station.

— Mr. William Walter Phelps has introduced into Congress a bill to purchase from Stephen Vail of Morristown, N.J., the original telegraphic instrument, or recording receiver, invented by his father, Alfred Vail, and used upon the first telegraphic line ever constructed, — that between Washington and Baltimore, — and to transmit the first message ever sent: "What hath God wrought?" The purchase of this instrument is strongly recommended by the officers of the Smithsonian Institution. The price is ten thousand dollars.

— In *Science* of March 26, 1886, our Vienna correspondent referred to the then newly invented gas-lamp of Dr. Auer of Welsbach, Austria. The principle of Dr. Auer's lamp is no new one. Every one knows the Drummond light, in which a cylinder of lime is brought to incandescence by a burning mixture of hydrogen and oxygen. But all lights of that character have failed to come into commercial use, because the material to be acted on by the heat has always been present in considerable mass, and has required gas under pressure and a very high temperature to bring the mass

to incandescence. In the Welsbach light, now on exhibition in New York, the incandescent substance is used in an extremely thin or attenuated form, requiring the minimum heat to produce the maximum of light. The principle of the invention will be understood when it is described as a hood or mantle of finely divided but perfectly coherent refractory oxides of lanthanum, zirconium, and yttrium round the flame of a Bunsen burner. The lamp has given satisfactory results so far.

— We learn from the *Engineering and Mining Journal* that the Alliance Aluminium Company has been formed in London, England, with a capital of £500,000, for the purpose of manufacturing aluminium, sodium, and potassium. The company owns the English, German, French, and Belgian patents of Professor Netto for the reduction of aluminium from its compounds, and for the manufacture of sodium and potassium; the processes of Mr. Cunningham for the reduction of the above metals; a process for the manufacture of artificial cryolite by the regeneration of its slags, provisionally protected by the inventor, Mr. Forster, Lonesome Chemical Works, Streatham; a process invented by Professor Netto and Dr. Saloman, of Essen, Germany, by which this metal can be raised to the highest standards of purity on a commercial scale. Exhaustive experiments have been made at the works of Krupp at Essen to test the practical value of the processes, and it is stated that he has the means of making the metal in tons. Instead of beads or marbles, solid chunks of the purest aluminium known, weighing from five pounds to one hundred pounds (according to the size of the converter), are deposited at every fusion of the ingredients, chief among which are sodium and cryolite. The company has a contract with the owners of the cryolite-mines in Greenland to supply it with practically the entire output. It is stated that the patents of the company enable it to manufacture it at considerably less than one shilling per pound.

— An interesting fact in the history of the movement for industrial training in the public schools of Washington is its connection with Cooper Union, that unique institution of which New York is so justly proud. As already stated in *Science*, industrial drawing, including moulding in clay, and construction in card-board, etc., has long been a feature of the Washington schools. The supervisor of drawing, Mrs. S. E. W. Fuller, who for fifteen years has guided the work, was trained in the Cooper Union in those early days when, with an enthusiasm and thoroughness not excelled by later institutions and a wise prevision of coming demands, it brought art and industry into their proper relation as means and purposes of education.

LETTERS TO THE EDITOR.

. Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Twenty copies of the number containing his communication will be furnished free to any correspondent on request.

The editor will be glad to publish any queries consonant with the character of the journal.

An Unusual Auroral Bow.

I WAS much interested in Mr. D. S. Kellicott's communication in your issue of June 1, describing a peculiar form of northern lights; particularly so, as it was my fortune to witness a similar phenomenon in 1881. On July 2 of that year, the day on which President Garfield was shot, at about 9.20 in the evening, faint streaks of light were observed on the northern horizon. I then observed a streak of cloud-like light ascending at about the east-south-east horizon. Looking around, I saw a similar streak at an opposite point. In a short time these streaks blended into one in the zenith, forming an arch overhead. There was a bend or crook in this arch; just at what point I do not remember, as I made no note of it, but I think at or near the middle. Presently the streak began to grow narrower; then it changed and broadened again, until it became wider than it was at first; then the southern edge resolved itself into parallel bars at right angles with the arch; shortly after, the northern edge resolved itself into similar bars, which moved rapidly towards the west; presently the bars at the southern edge of the arch either vanished or blended with the others, and they all glided swiftly by towards the west; the bars gradually became fewer and fewer, until they could be seen only here and there

gliding along; and at last the whole arch faded entirely away. During all this time the lights in the north had been shining, and when I retired for the night they were still to be seen.

I have copied this description from notes which I took at the time. I have seen other interesting auroras, but never have seen the arch overhead since.

FRANCIS H. ALLEN.

West Roxbury, Mass., June 13.

Concerning the Montville Serpentine.

THE statement made by your correspondent in your issue of June 15, regarding work done by me on the Montville, N.J., serpentine, induces me to add a few additional particulars on the subject. This I am the more inclined to do, since the paper giving the full results of my work is as yet unpublished, but is awaiting its turn in the Government Printing-Office.

The origin of serpentinous rocks, by a process of metasomatism, from the various members of the pyroxene group, is a matter by no means new to petrographers in general, and has been noted by Dana in the limestone-beds of Westchester County, N.Y., as well as by Emmons and Cross in those of the Leadville region. None of the cases, however, can compare in point of beauty with that at Montville. Here, in a coarsely crystalline, highly magnesian limestone, were originally embedded numerous large and small spheroidal and lenticular masses of a gray or pure white monoclinic pyroxene approaching diopside in composition. These, through a process of metasomatism commencing on the outer surface, have become converted wholly or in part into a very pure, though highly hydrated, translucent green and light amber-yellow serpentine. In the process of quarrying the limestone for flux, these nodules are thrown out; and from the quarry dump have been gathered samples showing most beautifully every stage of the change, from that in which the serpentine exists as merely a thin coating, to that in which all traces of the diopside have disappeared, and a solid block of compact serpentine alone remains. The nodules vary in size from the fraction of an inch to two or more feet in diameter. I have as yet, however, never seen blocks of the serpentine more than six or eight inches in greatest diameter. The process of change must have been exceedingly slow and gradual, as the line of demarcation is very sharp; so sharp, indeed, that at first glance such an origin as I have attributed appears impossible. On exposure to the weather, the serpentinous coating undergoes a shrinkage, and breaks away from the unchanged nodule almost as clean as the burr from a chestnut. Nodules in the museum collections, which have been freed from their serpentinous coating, have the appearance of some easily soluble substance, like limestone, that has been suspended freely in a dilute acid until all its angles and irregularities of surface have disappeared.

In my paper which is shortly to appear in the Proceedings of the United States National Museum are plates showing the nodules and the transition stages from diopside to serpentine, as shown in thin sections under the microscope. I have gone into considerable detail in my description, not merely on account of the beauty of the resultant serpentine, but because this is an unusually fine illustration of the process of metasomatism. The beautifully slickensided surfaces, and other indications of the expansive force generated during the process, are also very suggestive.

The readiness with which samples can be procured which show in a single small specimen all stages, from perfectly fresh and unchanged diopside to beautiful compact serpentine, makes the material particularly valuable to teachers. The small size of the serpentine blocks obtainable, together with the invariably fractured condition of the mineral, renders it of practically no importance as an ornamental stone.

GEORGE P. MERRILL.

U.S. Nat. Mus., Washington, June 16.

Queries.

33. DIPHTHERIA CARRIED BY TURKEYS. — Referring to the paragraph 'Diphtheria carried by Turkeys,' in *Science* for May 11, I beg to inquire if the disease among barnyard fowls known as 'roup' has been investigated as a germ disease, and its relations with other animal orders (if it have any) made out or sought.

J. T. W.