Proceedings of the American Association for the Advancement of Science.

This Association is looked upon by the great mass of our people as the embodied representative of American science, but in our opinion its proceedings come short of entitling it to such a distinction. Its Eighth Annual Meeting, recently held in Albany, N. Y., was the largest ever witnessed, and more papers were read and more discussion elicited than at any previous meeting. Reports of these have been circulated by the daily papers in awful quantity throughout the length and breadth of the land, and to us they appear to misrepresent the real practical scientific characteristics of our people. What is science but well arranged facts derived from study and observation? It is not mere speculation—hypothesis,—it is positive truth. This being the case, those papers on merely speculative subjects read and discussed at the late meeting of the Association, were little better then idle reveries. Hours were spent in discussing whether the worlds of the solar system once existed in the form of gas, and whether the matter of the asteroids once revolved as a huge flat disk. How vain, for it never can be positively determined how the worlds were made. Conjecture and calculations respecting a state of matter that may *never* have existed is not science.

The undue prominence given by the Association to papers of no practical utility whatever, has characterized all its meetings. Agassiz is justly, we believe, characterized as the greatest naturalist living, but really, the information which even he has presented is more curious than useful; and the same may be said of the great mass of the papers presented at the late meeting; they were ponderable in quantity, but imponderable in quality. The world would have lost nothing useful had they never been made public.

The ideas of some of the *savans* seem to be as fossiliferous—so far as they relate to useful information that would benefit mankind—as the fossil elephant, mastodon, megatherum, and hippopotamus.

One of the most useful papers read was by Prof. Henry, of the Smithsonian Institute, on the proper mode of constructing public buildings, according to the laws of acoustics, for speaking; and yet, one of our daily papers stated that "it was more a practical than a scientific paper," and this, we suppose, is just the idea which too many have of science. We contend that science is scarcely worthy of the name if it is not practical; hence we assign the chief place to that kind of information which is the most useful and practical.

No papers were read on new discoveries in chemistry relating to its applications to the arts; none on any of the great manufacturing interests of our country, which require so much real science to conduct and carry on; none on civil or mechanical engineering; none on practical mining; none on shipbuilding; —none on any of the useful arts whatever.

We hope that the succeeding meetings of this Association will be more fruitful in the elemination of new and useful discoveries than the past, and that science in *deed*, and not in name, will characterize all the papers which may be presented.

The following continues the condensed extracts of some of the most interesting papers read, from page 410, last Vol,

New Astronomical Instrument.—Mr. Alvan Clark, of Cambridge, Mass., read a paper on a new instrument of his own invention for measuring the distance apart of stars too distant to be brought into the field of view of a telescope. Within a year from the first thought of the instrument entering his mind, he had built a telescope of six inches aperture and 103 inches local length, mounted it equatorially, governing its motion by Bond's spring governor clock, provided the two eye-pieces, and as a substitute for a filar micrometer, arranged a mode of using pieces of glass ruled with a ruling machine. Experiments had demonstrated the feasibility of using the two eye-pieces in this way, and of obtaining by them very accurate measures of the distances of stars, which are from three to one hundred minutes of space apart. The success of the instrument was, however, greatly due to the spring-governor, which keeps each star upon the wire accurately bisected.

Prof. Pierce rose and said that the new mounting of the telescope—a modification of the Munich—was exceedingly beautiful, more so than even the Munich, and vastly superior in convenience and value. The spring governor also was put into the best condition for good action there, the heavy mass of the telescope acting directly as a balance wheel, and controlling all irregularity of movement. In short, the instrument satisfied all reasonable requirements for equatorial mounting.

Prof. Hackley bore testimony to the value of the instrument, which he also had visited.

A Great Barometer.—Prof. Henry, of the Smithsonian Institution, read a paper upon a large barometer in the hall of the Institute. Attempts have several times been made to form barometers of water instead of mercury. One was by Prof. Caniell, in the hall of the Royal Society, in which a glass tube was employed, filled with boiled water while in a boiling state—the lower surface of the water was covered with castor oil to prevent contact with the air, but this precaution was found not to be sufficient. Air was absorbed by the oil, and the nitrogen of this air absorbed by the water. Another atttempt was made to exclude the air by a thin film of gutta percha left after the evaporation of naphtha. But a valid objection to water arises from the vapor which will fill the top of the tube. Prof. Henry had decided to use sulphuric acid which does not give off any appreciable vapor, nor absorb any air. The objections to its use are the liability to accident, and its affinity for water. But care can guard against accident, and the moisture can be aborbed from the air which touches it by a drying tube apparatus containing chloride of calcium. The construction was intrusted to Mr. James Green of New York. The tube is two hundred and forty inches long and three-fourths of an inch in diameter, inclosed in a brass case two and a half inches in diameter. The mechanical details of the instrument we need not repeat. The whole of the apparatus is inclosed in a glazed case one foot square.

Electrical Experiments.—Professor Henry described a most interesting set of experiments with electricity. He has discovered conclusively that there are not two kinds of electricity, according to Dufaye, but that it is an identity—rather a force or an ether that operates in oscillations by direct and reflex motions. He has discovered that thunderstorms exert an influence over a great extent of country. He magnetized needles by thunder storms seven or eight miles distant. The principle of magnetising a needle he explained by considering that if the direct wave of the fluid or electricity imparted say 50 units of magnetic force to the needle, and the reflex wave took 10 units from it, then the next direct wave imparted 5 units, the expression would be $50\ p. - 10\ n. + 5\ p. = 45$ units of magnetic force with which the needle would be magnetized.

One night a terrific thunder storm took place in Washington, and being in the Smithsonian Institute he heard some loud noise, as if something was knocked down in the tower, which is over 120 feet high. He sent up a man to see what was the cause, who, after going up and making an examination, came down, and reported that nothing was injured, but that he heard a loud hissing noise, which he could not understand. The Professor mounted up to investigate the phenomenon, and found the point of the conductor glowing with electricity, and the hissing noise proceeding from the rod. He attributed this to the successive discharges of the fluid producing an intermittent vacuum around the rod, and that the small explosions were produced in some such manner. His experiments also led him to conclude that it is not safe to carry electric conductors down through the holds of vessels, because sparks are liable to be given off from them, and these might ignite a cargo of cotton or other combustible substance. He thought it would be more safe to connect the conductors outside with the sheathing of the vessel.

This Association adjourned on the 29th ult. to meet on the 12th Aug. 1857, at Montreal, C. E. Prof. Bailey of West Point, was elected President for next year. Vice President, Prof. Alexis Caswell, of Rhode Island. General Secretary, Prof. John Leconte, of South Carolina. Permanent Secretary, Prof. Joseph Lovering, of Cambridge.

Preserving Timber.

MESSRS. EDITORS—In an article on "Boucherie's Process for Preserving Wood from Decay," in your issue of August 23d, you state that "in Lowell there is a factory for preserving timber by the use of a solution of chloride of zinc (Burnett's process) which is a good preservative, but this is the only factory of the kind, we believe, in our country, thus showing that there is little demand for preserved timber," &c.

It is true that timber is so plenty that the subject of preserving it could not be expected to receive the same attention here as in Europe, still you will doubtless be gratified to learn that the factory above mentioned is *not* the only one established in the country.

The Vermont Central Railroad Co. has, at Northfield, an extensive apparatus for "Burnettizing" ties, bridge timbers, &c. Many thousand ties preserved by this process were laid down four years since upon their road, and as yet exhibit not the least signs of decay. Our telegraph company has had some poles so prepared this season, by way of experiment. The expense does not exceed sixteen cents each.

It is beginning to be felt that telegraph lines, to pay, must be substantially and reliably built. There is an increasing demand, by companies, for the most durable kinds of timber, and I doubt not that the "Burnettizing," or some other process for its preservation will, at no great distance of time be generally adopted. J. H. NORRIS.

White River Junction, Vt., Aug. 21, 1856.

[We are obliged to our correspondent for the above letter. After many inquiries we were unable to learn of any establishment for preserving timber in our country, excepting the one at Lowell. It affords us pleasure to hear from him of the one connected with the Vermont Central R. R., also the testimony he has presented as to the value of this method of treating timber. We are confident that all our large railroads would find it profitable to adopt the same means to preserve their railroad ties, &c.

Improvements in San Francisco.

MESSRS. EDITORS—In this city the extensive metallurgical works of Messrs. Wass, Urnay & Harasty commenced a few weeks ago. They purchase the *tailings* from quartz mills, and operate upon them to extract all the gold. Hitherto these tailings were thrown away at the quartz mills; they are the refuse of the gold quartz after it has been operated upon with mercury by the miners. It has long been known that these tailings contained much gold, but the question was, how to extract it. In the works named above, these tailings are melted with fluxes, and the gold recovered. It is believed that millions of gold which was formerly considered lost will now be obtained.

The great idea of building a bridge over the Bay of San Francisco to Contra Costa—a distance of at least ten miles—is now mooted in this city. A company has been formed to carry out the project, and application for a grant has once been made to the Legislature, and will be renewed.

A large sugar refinery is also about to be built, so that, you will perceive, our industry, our arts, and manufactures are progressing amid all the turmoil and exciting scenes with which we have lately been visited.

J. MOSHEIMER.

San Francisco, Cal., Aug., 1856.

Spontaneous Combustion.—Valuable Warning.

MESSRS EDITORS—In No. 51, last Vol. of the SCIENTIFIC AMERICAN, I observed an article on the Spontaneous Combustion of Sawdust used as packing around steam pipe. Having a large steam pipe packed with it, I proceeded without a moment's delay to examine it, and found the dust completely charred, apparently ready to ignite. Of course, I ordered it removed at once. Believing that this one article may have saved my property, amounting to many thousands, I think it will be only a little short of *absolute insanity* to be without so valuable and faithful a monitor. And every business man—yes, in fact, every man who desires to succeed in the world, would find a very great auxiliary to his success by taking and carefully reading the SCIENTIFIC AMERICAN. G. W. SMITH.

Glen Aubury, Broome Co., N. Y.

Coal Burning Locomotives.

MESSRS. EDITORS—In No. 50, Vol. 11, SCIENTIFIC AMERICAN, there are two notices of Coal Burning Locomotives. I never thought before that master mechanics and the officers of railroads were so ignorant of the manner of consuming coal in locomotives. Mr. Clark, of the Illinois Central R.R., has put the company to some unnecessary expense in the alteration of the engine in question: all that was necessary for him to do was to take a bar of wrought iron four inches deep and one inch thick, and forge it into a frame for the bars to rest upon, and also make grate bars of the above named bar iron, and put them in the furnace one inch apart. These raise the grate high enough, and fit it to burn coal. And in order to keep the smoke box clear of sparks, all that is necessary is to put a lifting pipe (like that which Ross Winans uses in the smoke box of his engines), and curve the exhaust pipes to suit. EDMOND MAHONY,

Alleghany City, Pa.

Magnetism of Railroad Rails.

MESSRS. EDITORS—On our railroad here there is an uphill grade, running N. W.; of 80, or 90 feet to the mile, on which each of the individual rails are magnets—the upper end a south pole and the lower a north pole. I presume all railroads are the same that have an inclination, no matter what direction they run, or from what mine the iron came from, because there is a law of magnetism that all bars of iron become magnets the moment you raise them from a horizontal position. The lower end becomes a north pole and the upper a south pole. This is north of the equator, but south the opposite. This magnetic law has not been considered enough on board vessels in relation to local attraction, and has doubtless been the cause of their running on shore sometimes. J. O.

Bloomfield, N. J., Sept., 1856.

Main Springs of Watches.

MESSRS. EDITORS.—I received a watch lately in order to set it in repair, and found the main spring broken into as many parts or pieces as there were coils around the reel.—The fracture formed a straight line from the center to the circumference. I examined it, and found that it could not have been effected by a visible tool. During twenty years experience I found no main spring broken at more than one place at once. I supposed that electricity had done this. When I inquired, the owner said that he stirred something in the watch with the blade of his pen-knife, which was magnetized. Does not this fact indicate a powerful effect upon cohesion? To all acquainted with magnetism, &c., it is well known that other parts in watches are greatly affected by this agent; and as I have for many years seen no remarks upon this point in public prints, some good hint would, no doubt, be of value to many of your readers, though the most of them may be familiar with these matters, a demonstration of so plain and so instructive a fact should induce more carefulness with valuable watches than is usually bestowed upon them. HENRY ZUPPINGER.

Bloomsburg, Pa., Sept., 1856.

Barometers.

MESSRS. EDITORS.—I see by a late number of the SCIENTIFIC AMERICAN, that a correspondent in Indiana states that he has a barometer which does not operate correctly. It may not be a good one, but I think the barometer requires to be marked in some respects according to latitude. I have one that I bought of Capt. Eldridge, of the Collins line of steamships; it was made by Blunt, of New York, and with but one mark upon it, and that was 'change." Other marks I have put on myself, and I must say it will indicate the changes of weather correctly ninety-nine times out of a hundred. I have owned it two years.

T. B. JOHNSON.

Medford, Mass., Sept., 1856.