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### THE ROCHESTER MEETING OF THE AMERICAN ASSOCIATION.

In one respect the transactions of the American Association for the Advancement of Science might be made more available, if not more valuable, by following the example set by the American Society of Civil Engineers. The latter issues in advance, strictly for private use, official abstracts of all papers to be read. The result is to shut off much desultory discussion, to embody in more definite shape the work done, to make accessible the substance of papers that one fails to hear, and finally to facilitate the work of conscientious reporters trying to gather crumbs from the intellectual feast for the general public. The present plan is bewildering. Every morning a printed programme is distributed with lists of topics for the eight sections, and a definite time allotted to each topic. Practically the programme is trifled with. A paper may get an hour for which only fifteen minutes had been allowed, or the whole order may be set aside to suit some whim. We went to a certain section anxious to hear certain papers that had been announced, but not one of which was read. We were treated instead to a rambling discussion, not on the programme, that was prolonged until noon, and our morning was wasted. Men of science should be men of system and should stick to their programme.

Among the many papers that were presented, 182 in all, we can only notice a few. In the chemical section, an important topic discussed was "The Post-mortem Imbibition of Arsenic." The paper was by Dr. W. P. Mason, of Troy. He asserted that in some cases, where an autopsy had showed arsenic in the stomach and other organs, its presence might possibly be accounted for by imbibition after death. In proof of this he cited an instance in which a person was supposed to have been poisoned, because arsenic had been found in the stomach. It was testified, however, that cloths saturated with an embalming fluid had been laid on the face and other parts of the body. This fluid contained zinc as well as arsenic. Tests were applied and both metals were detected. In the discussion on this paper several similar cases were described, all going to show that metallic poisons may be absorbed through the pores of the skin after death so as to be found in In the Blanco beds occur three species of mastodons, appreciable quantities in the interior organs. The bearing of this on medical jurisprudence is obvious.

Professor George E. Hale explained to the astronomical section the working of the spectroheliograph, and the results of the study of the sun by its means at the Kenwood Astro-physical Observatory, at Chicago. The lantern illustrations were admirable, being undoubtedly the most accurate photographs yet taken of the sun. A series of slides showed the rapidly succeeding phenomena of an enormous solar eruption. First was shown a large black spot shaped quite like a terrestrial volcano. Next was seen the same, only a vast fiery cloud rolled up from the crater, by which and its color changes from a dark red loam to a whitthe spot was entirely concealed from view. The shape ish marl. The poverty in fossils makes its determinaof the flery m: 3s changed incessantly, marked differences being sible even in photographs taken only one minute apart. The entire activity lasted but an important bearing on the subject of continental evoluhour and forty minutes; at the end of which time the tion. original black spot reappeared hardly modified in either shape or magnitude.

paper on "The Volcanoes of the United States." Tropical America presents some of the most superb volcanic spectacles in the world. In Ecuador are motions, the conjunction of cosmic bodies, and also by twenty volcanoes from 16,000 to 22,500 feet high, eighteen of them being crowned with eternal snow, and eleven had never been scaled by any living creature. twenty-one in Mexico, chief of which is the lordly Popocatapetl. The peninsula of Southern California is a mass of ancient volcanic debris, with many be approximately correlated with historic or cosmic craters still smoking. Only in April, 1892, the earthquake shocks from one of these shook the whole State ingenious diagrams, without which it might be diffiof California. The volcanic field of the United States cult to make the author's meaning clear. He dis-Mexico, and northward through Idaho, Oregon and the geologist and the physicist—the former demandthan the combined heights of the Eiffel Tower and pology to mediate between the two extremes. In re-Washington Monument. Should Mount Capulin become active again, its flames would be visible from Denver to Galveston. Scores of extinct volcanoes are visible in the vicinity. Around the San Francisco mountains extends a lava field covering 20,000 square miles and including over three hundred peaks.

In Southern Utah stands Mount Filmore and other volcanic cones of still more recent date, and farther to the north are the lava beds of the Modocs. Skirting the east front of the Sierras are volcanic openings whose forces seem to be only slumbering. The great range terminates in Northern California with Mount Shasta, Mount Hood, Mount Adams, Mount Rainier and Mount Baker. We must go further north to see the most interesting volcanic features of our country, in Alaska and its islands, whose sixty-one volcanoes have been in eruption more than fifty times during

the United States; but many believe it to have been within the last two hundred years.

Some problems of the iron ore found in the Mesabi range in Minnesota were discussed by Professor N. H. Winchell. He claimed that the theory of the substitution of iron for limestone was opposed by the nonexistence of any limestone in the region. Also that the idea of a change from carbonate of iron to the oxide of iron was opposed by the non-discovery of any spathic iron in the formation, even in any of the deep borings passing through the ore horizon. The decay of ferriferous schists is negatived because of the absence of any schists contiguous to the ore. Accumulation in troughs formed by dikes cutting tilted strata is impossible, because no such dikes occur in the region. The geological relations of these ores and their kinds were described. There is but one known cause acting with sufficient force on sufficiently wide geographic area to explain the distribution of this ore, and that is oceanic sedimentation. It is evident that there has been a profound change; but whether it took place before or after consolidation, and whether in Taconic or in recent time, is unknown. There seems to have been something peculiar either in the nature of the sediments of this horizon or in the influences to which they have been subjected, and this peculiarity is expressed on both sides of the Lake Superior basin.

A paper was read by Professor E. D. Cope, on the Cenozoic Beds of the Staked Plains of Texas." This vast plain, covering 50,000 square miles, has a gentle synclinal structure, depressed to the east, overlying beds of the Triassic and Permian, and was once occupied by a fresh lake with changeable boundaries. There are no springs, but the underlying clays are watertight and can be reached anywhere in two or three hundred feet. The northern and eastern edges are cut by canyons resembling in color and stratigraphy the features of the Grand Canyon of the Colorado. The edge of the plain is marked generally by a steep palisade. Professor Cope found three horizons of the Cenozoic. The Equus beds are considered identical with the Lafayette formation. No marine fossils were found anywhere. In the Equus beds were the remains of two species of horses and also elephants. and one of megalonyx. In the Loop Fork beds occur three-toed horses along with mastodons.

The Lafayette formation referred to above was more fully described as to its continental distribution by Mr. W. J. McGee. It is one of the most recent and also extensive formations known. It extends from Baltimore to Florida, thence across to the Mississippi, and up the valley of that river as far as Southern Illinois, and across to New Mexico. The formation exposes about 100,000 square miles, with about twice as much more overlaid by the Columbia and other formations. Its thickness varies from fifty to three hundred feet, tion difficult, but it is thought to be in general a littoral deposit. The lessons which it has to teach have an

Professor McGee also read an important paper on comparative chronology. He considered the subject: Professor R. T. Hill, of Texas, read an extended First, with reference to natural time limits—the day, month, year, chang, narus, and Platonic year. Second, historical eras, as determined by rhythmic and cyclic artificial eras, dating from catastrophes, the founding of nations or from great religious events. Third, biologic periods, indicated by the introduction of dif-Fifty more exist in the Central American region, and ferent forms of life, from its faintest signs up to man, which cannot be reduced directly to cosmic or historic terms. Fourth, the geologic periods, which can only terms. This portion of the paper was illustrated by extends from California through Arizona and New cussed in a spirit of fairness the controversy between Washington. Hundreds of lava flows can be traced, ing a hundred times as much as the latter is willing and vast piles of ashes rise above the plains higher to grant. He believed it to be the office of anthroply to an inquiry, he said that the antiquity of man probably extended only about ten thousand years into the past, and that of his anthropoid progenitor about forty thousand years.

> Appropriately following the above was a highly original and valuable article by Prof. W. H. Holmes, on the aboriginal quarries of flakable stone, and their bearing upon the question of paleolithic man. The conclusion reached by the author, and generally concurred in by others, was that in view of ascertained facts, the matter needed thorough revision, and that every case arising should be decided on its own

An illustrated lecture was given in Music Hall by Prof. G. K. Gilbert, of the United States Geological Survey, on "Coon Butte, and Theories of its Origin." This is the locality to which attention was called in conthe last three hundred years. Outside of Alaska it is nection with the last annual meeting, since when Prof. impossible to say when the last eruption took place in Gilbert and Mr. Marcus Baker had visited it, in order to

determine its origin. The impression which had previ- western elongation on the 19th, at 1 h. A. M., when ously prevailed that this remarkable butte, found in she is 46° 5' west of the sun. Henceforth, she will ap-Arizona near to the Canyon Diablo, was caused by the proach him, rise later, change from retrograde to fall of a meteorite, gave way before a volcanic theory direct motion, and slowly make her way toward the which was established as correct.

The next annual meeting of the A. A. A. S, will be year closes, she is still morning star. held in August, 1893, at Madison, Wis. Prof. William Harkness, of Washington, D. C., was elected president; junction with Venus, on the 16th, at 4 h. 56 m. P. M., Prof. F. W. Putnam, of Cambridge, Mass., permanent | being 7° 36' north. secretary; T. H. Norton, of Cincinnati, general secretary; and H. L. Fairchild, of Rochester, secretary of the council. Officers were also chosen for the various and she is in the constellation Gemini. sections. It was announced that an anthropological congress would be held at the Columbian Exposition during the week following the next annual meeting of the A. A. A.S., with representatives of every Americantribe, from Terra del Fuego to the Esquimaux of the Arctic zone. As an outgrowth of this congress, it is meant to found a museum of ethnology at Chicago, materials for which are now being collected by the ship load in Yucatan, Ecuador, Peru, Chile and elsewhere. A committee was appointed to secure rooms for the various sections of the A. A. A. S. to be used as headquarters during the entire period of the exposition, each room to be in the building the contents of which are most closely allied to the branch of science represented.

In connection with, and at the close of, the Rochester meeting, delightful excursions were made to Niagara Falls, Watkins Glen, Stony Brook Glen, the State Fish Hatchery near Mumford, to Mount Morris, Portage, and other localities. At the closing session Secretary Putnam announced that 65 members had been made fellows at this meeting; that 175 new members had been elected, and that 456 members and fellows had been registered as in attendance.

In our Supplement this week will be found an interesting paper read before the association on explorations at Copan, Honduras, by Mr. M. H. Saville, and also a paper on mineralogical exhibits at the World's Fair, by Mr. Geo. F. Kunz.

## POSITIONS OF THE PLANETS IN SEPTEMBER.

MARS the opposition of 1892 is an event of the past. He made his neighborly call, nearly a month since, and is now speeding his course away from the earth, while his and 30° south latitude. ruddy luster is fading, and his marvelous size is diminishing. We place him first on the September annals on account of the widespread popular interest aroused by his unusual appearance. It is to be hoped that full reports may speedily be received from all the observatories that have made a specialty of the study of the Martian planet, and that thus all unreasonable expectations may be laid to rest. There are two points among the problems concerning Mars that are of special interest. One is the solution of the question regarding the nature of the so-called canals and their doubling. The other is the displacement of Mars among the stars at the time of opposition, in order to determine the solar parallax. When the observatories on both sides of the Atlantic have made full reports, and when these reports have been corrected, compared, and made into maps, we may hope to learn something of what was really seen on the face of Mars

small. Mars contributes an important event to the record of the month. He is in perihelion, or nearest the sun, on the 7th at 3 h. 53 m. P. M., when he is 13,000,000 miles nearer the sun than when he is in aphelion or most is morning star. He reaches his greatest western distant from the sun. If perihelion and opposition elongation on the 11th, at 8 h. A. M., when he is 17° had occurred together, Mars would have been a more 55' west of the sun, and may be visible to the naked distinguished object, but the most perfect conditions eye under favoring weather conditions. united are rare in celestial phenomena. The war god was satisfactory, though not arrayed in his most gorgeous garments.

in the opposition of 1892. The earliest time to look for

reliable tidings is in October, and the addition to our

knowledge of the Martian planet will probably be

Mars is stationary on the 4th, and then changes his course, moving eastward or in direct motion for the 30th he rises at 5 h. 24 m. A. M. rest of the year.

## OCCULTATION OF MARS.

ington and vicinity. The immersion in Washington constellation Taurus. mean time takes place, on the 4th, at 1 h. 22 m. A. M., and the emersion at 2 h. 6 m. A. M., the occultation 30th he rises at 8 h. 38 m. P. M. continuing 44 m.

The moon is in conjunction with Mars on the 4th at 0 h. 50 m. A. M., being 44' north.

The right ascension of Mars on the 1st is 20° 45', his declination is 24° 17' south, his diameter is 24".0, and he is in the constellation Capricornus.

Mars sets on the 1st at 2 h. 26 m. A. M. On the 30th he sets at 1 h. 1 m. A. M.

morning sky, rising about four hours before the sun. he is in the constellation Virgo. Her luster is, however, fading, though it will take Uranus sets on the 1st at 8 h. 32 m. P. M. On the bright eyes to perceive it. She reaches her greatest 30th he sets at 6 h. 41 m. P. M.

sun, until she is lost in his brilliant beams. When the

The moon, four days before her change, is in con-

The right ascension of Venus on the 1st is 7 h. 44 m., her declination is 17° 25' north, her diameter is 29'.8,

Venus rises on the 1st at 1 h. 53 m. A. M. On the 30th she rises at 2 h. 7 m. A. M.

is morning star. If Mars takes the first place on account of the great expectations aroused in the popular mind that important discoveries were obtained during his recent opposition, and Venus wins the second place from her exceeding beauty as morning star, Jupiter merits the third place, for he is lord of the ascendant in the solar community. He shines with increasing luster every night as he looms grandly above the horizon, appearing on the middle of the month at 7 o'clock, outshining Mars in his decadence, and reigning supreme over the star-lit sky, until Venus rises to bear him company. September is the month preceding his opposition, which occurs on October 12. The month before and the month after culmination include the best conditions for the observation of planets. This is eminently true of Mars, but in the case of Jupiter needs to be modified, for this giant planet is bright as long as he can be seen, shining with a radiant luster that seems never to grow dim. Jupiter will be the starry gem of the September nights, as, rising with majestic grace, he makes his way to the zenith, and slowly descends in the western sky until his light is lost beneath the western hills.

The moon makes a close conjunction with Jupiter on the 9th, at 7 h. 57 m. A. M., being 15' north. The conjunction is invisible, occurring in the daytime, but moon and planet will be near together on the evening of the 8th, and the celestial exhibition will be passing is evening star. His great work is accomplished, for fair. The conjunction will be an occultation for observers who see the moon in her geocentric position, and who are within the limiting parallels of 56° north

> The right ascension of Jupiter on the 1st is 1 h. 32 m., his declination is 8° 0' north, his diameter is 45".2, and he is in the constellation Pisces.

Jupiter rises on the 1st at 8 h. 2 m. P. M. On the 30th he rises at 6 h. 12 m. P. M.

is evening star until the 25th, and then morning star. He is in conjunction with the sun on the 25th, at 5 h. 25 m. P. M., when he passes from the eastern side of the sun to the western. This, according to astronomical calculation, ranks him as morning star. The law is that planets on the western side of the sun rise before him and are called morning stars, while planets on the eastern side of the sun set after the sun, and are called evening stars.

The moon the day after her change is in conjunction with Saturn, on the 21st, at 3 h. 48 m. A. M., being 1° line of vision, as the sky above the objective station 1' north.

The right ascension of Saturn on the 1st is 12 h. 5 m., his declination is 1° 49' north, his diameter is 15".0, and he is in the constellation Virgo.

Saturn sets on the 1st at 7 h. 21 m. P. M. On the 30th he rises at 5 h. 32 m. A. M.

## MERCURY

The right ascension of Mercury on the 1st is 9 h. 59 m., his declination is 9° 46' north, his diameter is 9'.6, and he is in the constellation Leo.

Mercury rises on the 1st at 4 h. 36 m. A. M. On the

is morning star. He is in quadrature with the sun on The moon, two days before the full, occults Mars on the 3d, at 5 h. A. M., being 90° west of the sun. His the 4th, the planet disappearing on the dark edge of right ascension on the 1st is 4 h. 40 m., his declination the moon. The phenomenon will be visible in Wash-is 20° 36' north, his diameter is 2°.6, and he is in the

Neptune rises on the 1st at 10 h. 32 m. P. M. On the

is evening star. The moon makes a very close conjunction with Uranus on the 23d. at 8 h. 10 m. P. M., being 5' south. The moon occults the planet for observers who see her in her geocentric position. Jupiter is occulted under the same conditions. The moon therefore occults four planets, Mars, Jupiter, Saturn, and Uranus, during the month.

The right ascension of Uranus on the 1st is 14 h. 4 m. is morning star. She will be superb in the September his declination is 12° 8' south, his diameter is 3".5, and

Venus, Jupiter, Mercury and Neptune are morning stars or on the sun's western side at the beginning of the month. Mars, Saturn and Uranus are evening stars or on the sun's eastern side.

## A New Hybrid Oak.

A glance at the last edition of Gray's "Manual of Botany" will show a list of hybrid oaks, and it will be observed that Quercus nigra, the black jack oak, has given rise, as one of the parents, to two forms, and that Quercus ilicifolia, the black scrub oak, has given rise to one. Thus nigra crosses with the shingle and the willow oaks and ilicifolia probably with the scarlet oak. These forms are recognizable, particularly the first two, which have in consequence received names. The fact that nigra crosses with ilicifolia, however, has not been recorded, but a number of interesting trees of this parentage may be seen on the sandy soil at Watchogue, on Staten Island.

Quercus nigra is plentiful there, and so is Quercus ilicifolia, and among these trees, which are easily separated, stand a number of forms that have in part the characters of each. They resemble nigra in being erect in growth, in the abruptly tapering branches, and in having the leaves rusty-pubescent beneath. They resemble ilicifolia in being small, in their smooth, light-colored bark, and in the retention of their catkins throughout the summer. Occasionally a Q. nigra will retain its catkins late into the year. but it is not a usual feature of the tree, as with ilicifolia.

These trees vary considerably individually, and are as interesting in this respect as the hybrid oaks reported from Richmond Valley, Staten Island, in the SCIENTIFIC AMERICAN of November 10, 1888. A more extended account is being prepared, but this will serve to give an idea of this interesting hybrid. As it is a recognizable form, I wish to propose for it the name of Quercus brittoni, after Dr. N. L. Britton, who was born on the island, and who, with Mr. Arthur Hollick, has done so much in making known its flora.

WILLIAM T. DAVIS.

### A Mountain Search Light.

A splendid electrical search light has lately been installed at the little hotel on the summit of Mt. Washington, N. H., and several very interesting experiments have been tried with it recently. By throwing the light toward the sky at an angle of about 45° the reflection was seen in the air above Portland, Me., a distance, air line, of 85 miles; but the angle transversed by the light flashes was 110 miles. Telegraphic messages by means of these flashes were sent from Mt. Washington to the Western Union Office in Portland, and answers returned by wire.

It would be an interesting experiment to locate another flash light of equal power on some elevated point far distant from Mt. Washington, and thus establish flash light communication in both directions. Long distance signaling by sunlight by means of mirrors has been practiced for military purposes. But this requires the signaling stations shall both be in the line of vision. Moreover, the system can only be worked during sunshine. With the electric system it is not necessary the stations shall be in the direct receives the illumination.

## Precautions Against Cholera.

Official information having been received of an epidemic of cholera in Russia, and in view of the large immigration into the United States from said country. and of the danger that exists of the introduction of cholera into the United States through the medium of personal effects and baggage of said immigrants, it is by the Treasury Department ordered that on and after September 18, 1892, no vessel having on board personal baggage, bedding, clothing, etc., belonging to immigrants from Russia or belonging to immigrants from any cholera-infected district, shall be admitted entry into the United States unless accompanied by a certificate from the consular officer at the port of embarkation to the effect that said personal effects, baggage, etc., have been disinfected in accordance with the methods hereinafter described.

For the disinfection of said articles one or more of the following methods will be used, all articles to be unpacked and freely exposed for disinfection:

- 1. Boiling in water not less than one hour.
- 2. Exposure to steam not less than one hour, the steam to be of a temperature not less than 100 degrees Centigrade (212 degrees Fah.), nor greater than 115 degrees Centigrade (239 degrees Fah.), and unmixed with
- 3. Solution of carbolic acid of a 2 per cent strength. This method (No. 3) may be applied only to leather goods, such as trunks, satchels, boots, shoes, to rubber goods, etc., the articles to be saturated with the solution.

ACCORDING to the Street Railway Review, there are now nearly 1,000 street railway companies in the United States, of which fully 400 are electrically operated, in whole or in part.