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Contents

(Illustrated articles are marked with an asterisk.)

Alumnum, soldering. 119 Manufacturing industries, India 148
Anti-rheumatic, salophene as an 152
Anti-rheumatic, salophene as an 154
Anti-rheumatic, salophene as an 152
Anti-rheumatic, salophene as an 154
Anti-rheumatic, salophene as an 152
Anti-rheumatic, salophene as an 152
Anti-rheumatic, salophene as an 152
Anti-rheumatic, salophene as anti-rheumatic, salophene anti-rheumatic, salophene anti-rheumatic, salophene anti-rheumatic, salophene anti-rhe

TABLE OF CONTENTS OF

SCIENTIFIC AMERICAN SUPPLEMENT

No. 975.

For the Week Ending September 8, 1894.

Price 10 cents. For sale by all newsdealers.

- II. ASTRONOMY. Mars.—By Percival Lowell. All about Mars and its markings, with views of the planet.—16 illustrations 15588
- III. CHEMISTRY.—Apparatus for Collecting Samples of Water Some Distance Beneath the Surface.—By WILLIAM I. BURGESS.—Collection of water for bacterioscopic examination.—I illustra-
- IV. ENTOMOLOGY.—Insect Secretions.—By E. A. BUTLER.—A populararticle on a curious phase of the science.—The secretions produced by Insects.

 Some African Pests.—By MARY FERGUSON.—The ants and other insects of Africa.
- VI. HORTICULTURE.—Rubus Japonicus Tricolor.—A∥beautiful addition to flowering shrubs.—1 illustration......
- VII. HYGIENE.—Shoes for Walking.—An interesting contribution to the physiology and hygiene of the feet.—3 illustrations........
- VIII. MEDICINE.—Haffkine's Cholera Inoculation.—Inoculation as introduced in India, with indications of its value......
- IX. METALLURGY.—Notes on Aluminum.—By George Free
- XI. NATURAL SCIENCE.—Scientific Enigmas.—By Lord SAI BURY.—A resume of the great questions now occupying the entific world, with portrait.—I illustration.....
- XII. TECHNOLOGY.—A Great Cotton Mill.—The great Haworth Company's mills, of Salford, England.—Their appliances and pro-ducts.—Zillustrations An Improved Compound for Use in the Manufacture of Matches.—By H. PRIESTER.—Utilization of magnesium and its alloys in matches.

AMERICAN FORESTRY ASSOCIATION.

By the invitation of the citizens of Brooklyn the American Forestry Association held its meetings there at about the same time as the other scientific bodies that have been assembled. It was opened by an illustrated lecture by Mr. B. E. Fernow, chief of the Forestry Division of the Department of Agriculture. The title was attractive and suggestive: "The Battle of the Forest."

forest, which if left to itself would occupy the globe. He described the development of arborescent flora through the past geologic ages. The manner was explained by which the soils were prepared by other forms of vegetation, as well as the pioneer work of certain trees, like the mangrove and bald cypress, which turn water into dry land. The first struggle is between the species themselves for light, which is only secondary to soil as an essential of tree growth. What men style "the virgin forest" is really the product of long contests that may have lasted for thousands of years.

Man's part in the battle was described by word and picture. Twelve views from the French Alps showed how, by ax and fire, over a million acres had been laid bare and eight millions ruined by the detritus thus produced. More than \$40,000,000 have been spent thus far, and four times that much will be needed, to restore the damage thus heedlessly wrought. A small sum spent in protecting the community at large against individual greed would have saved the equivalent of a great revenue. Similar dangers threaten our own land. Ten per cent of the Mississippi uplands have been ruined during the last twenty-five years by the foolish removal of the forests.

The unskillful methods of the lumberman were next criticised. By culling the best species, regardless of the aftergrowth, the future value of the forest is reduced. Intelligent forestry, while using the timber crop, substitutes artificial for natural protection, thus assuring the survival of the most useful. The case of a German spruce forest was cited that contained ten times as much useful material as did the virgin forest. With this was contrasted the destruction wrought in the Adirondacks by fire, water stowage, and wrong methods of lumbering. The State should interfere: for private owners do not seem to care for the future generations. The State should own and manage its woods, and should exercise supervision over private lands to see that the whole community does not suffer from the destructive policy of greedy men. This cannot be done by such "rules of thumb" as a restriction of cutting trees of less than a given diameter, nor can the legislator tell the forest how to grow. He might as well try to legislate on the proportions of an arch. But he can encourage the skill of professionally trained | siasm and interest of those who joined in the meetforesters, instead of leaving the woodland in the hands of careless woodchoppers. The problem of saving and rightly using the forests should be treated as a business matter, to be settled intelligently, like other problems demanding wisdom, common sense, and a certain degree of business capacity.

Meetings of the Forestry Association were held for reading and discussing papers on Wednesday, August 22, in the Packer Institute, at which Hon. George W. Minier presided. Hon. J. C. Chapain, an accredited representative of the Department of Agriculture of Quebec, was introduced and spoke on the forestry of Canada. Prof. W. H. Dall read a paper on "The Forests of Alaska," dividing the Territory into three regions. The northern part is mainly composed of tundra covered with grass and moss; the middle portion is sparsely wooded with spruce, poplar, and birch; the southern part consists largely of islands with no trees except such as have been planted during the last hundred years. The heavy winds cause this prevailing treelessness, as is proved by the forest resources developed in the southeast, where the lands are protected by mountain ranges. The country south of Cook's Inlet is densely wooded with cedar, hemlock, spruce, poplar, and willow. Very little timber has yet been cut, and the forests are mainly in their natural condition.

forests of Arizona, describing their origin, mode of stants of precession, nutation and aberration must be petrifaction, and present condition. They are the remains of a forest of gigantic pines and cedars that once covered thousands of square miles. Inundated by floods of silicious waters, the woody cells were replaced by particles of silex, often stained brilliantly by ores of iron or manganese. Prostrated by earthquakes, the trunks and branches were fractured in every conceivable way, and then embedded in lava sand, some of which remains as a soft kind of sandstone, while mostly it has been removed by the elements. The visitor to this enchanted region sees a million tons of gems in sight, agates, carnelians, jaspers, onyxes, and amethysts. Many carloads of these precious stones have been removed to be polished or otherwise disposed of. The latest news is that these gems are now being pulverized, to be used for purposes similar to those now met by emery. Views were thrown on the screen and specimens, polished and in the rough, were exhibited. Microscopic slides were produced showing that these are so entangled with each other that no

the cellular structure of the wood. A plea was made for the governmental protection of this wonderful region, which is now so rapidly being destroyed.

Prof. G. C. Smock read a paper on "The Forests of New Jersey." The urgent need of State regulations to promote tree culture is acknowledged by the farmers. Along the Kittatiny Mountains deforestation has progressed to an alarming extent. It manifestly affects the water supply. The commercial value of the pine-Mr. Fernow claimed that the earth is a potential ries as sanitariums, like that at Lakewood, was sug-

> Mr. Verplanck Colvin, superintendent of the Adirondack Survey, read a paper giving an account of the region indicated, advocating the State Park, advising the entire non-use of the Alpine regions, on whose preservation the water supply depends, and recommending forestry experiments to restore the over-lumbered districts.

> Gen. G. C. Andrews, of Minnesota, showed that forest fires cost the United States \$25,000,000 annually. He cited European countries which manage to prevent such fires. We can never do so in this country until our forests are patroled and watched by men employed for that purpose. The public forests of Europe yield a steady net income of four per cent, and we might profit by borrowing some of their well-tried regulations.

> As the outcome of the foregoing discussions the following resolution was unanimously adopted: That we approve of the enactment of laws, not only for the care and protection of the timber and other resources in the forest reservations, and on all public timber lands, but also for their rational use. The policy of reserving can hardly be an advantage unless followed by an intelligent administration of the reservations. This Association denies that it advocates the exclusion of large territories from actual use, and affirms that the reservations are for a rational use under proper restrictions. We therefore desire to impress on our representatives in Congress the urgency of making provisions for the better care of our public timber and other forest re-

> The Association, by invitation of the New Hampshire Forestry Commission, held a midsummer meeting after its Brooklyn session and spent several days in exploring the White Mountains. This was not merely to view the noble scenery, but also and particularly to inspect the sawmills, lumber yards, and general lumbering operations of New Hampshire. Mr. G. B. James, editor of the American Cultivator, gave an outline of his plan for preserving the woods of the mountains. The Appalachian Mountain Club also spoke of their unique work. There were other interesting lectures and addresses during the evenings of the excursion; and the result was to add greatly to the enthu-

THE MAGNITUDE OF THE SOLAR SYSTEM,

It is the custom for the retiring president of the A. A. A. S. to give an elaborate address of considerable length, either on some topic or general interest to scientific people or on some special subject belonging to his own department of research. There are certain advantages in the latter plan; but among the objections to it may be mentioned the fact that every specialist is liable to use terms entirely familiar to himself and men of his class, but which may require some explanation for the comprehension of men in other walks of science. Possibly if Prof. William Harkness had taken the pains to explain some of the terms used in his admirable address on the Magnitude of the Solar System, it would have added to the interest taken in it by some of his hearers.

After reviewing the history of astronomy from the days of Pythagoras, Ptolemy and Aristarchus, through the era of Copernicus, Newton, Kepler and Halley, down to our own times, the speaker summed up concisely the methods and results involved in the solar parallax. First among these are the observations made of the transits of Venus, the opposition of Mars, and those of certain asteroids. Then follows the lunar parallax, as found directly and from the study of the Dr. H. C. Hovey gave an account of the vast petrified force of gravitation at the earth's surface. The conobtained from observations of the stars. We must consider the parallactic inequality of the moon; the lunar inequality of the earth; the mass of the earth found from the solar parallax and also from the periodic and secular perturbations of Venus and Mars; the mass of the moon: the masses of all the planets and their satellites: the velocity of light, as obtained by experiments with toothed wheels and reflecting mirrors, together with laboratory determinations of the index of refraction of the air; the light equation obtained from the observation of Jupiter's satellites; the figure of the earth obtained from geodetic triangulations, variations in the pendulum, and the perturbations of the moon; the mean, surface and interior density of the earth.

This large group of astronomical, geodetic, geological and physical quantities must all be considered in finding the solar parallax. And it should be remarked