

manufacture of glue, with which the name of his inventive and philanthropic grandfather, Peter Cooper, is associated, he devised noteworthy improvements in apparatus and means for glue-making, among which may be mentioned a glue-manipulating machine, a process of purifying glue, a glue-stock cutter and feeder, an evaporator, and a drier. Besides these, the long catalogue of his inventions includes a condenser, a spring-tire, a centrifugal machine, an apparatus for aerating liquids, an apparatus for manufacturing beer, a sheet spacer, and a leaf for flybooks. Mr. Hewitt has for the past few years bent his energies principally to the perfection of the above-mentioned vapor lamp, which bears his name and for which he has taken out a score or more of patents.

Like his brother, Mr. Edward R. Hewitt has also devised improvements in glue-making, among which is a preparation of glue-stock for boiling. In the fields of physics and mechanics he has also come forward as an inventor. Several years ago he patented a new method of printing photographs in color, and recently began a series of researches in those branches of engineering with which the names of Sadi-Carnot and Dr. Maynard are linked.

Still other well-known wealthy inventors are David Wolfe Bishop, Anson P. Stokes, Jr., and Clarence G. Dinsmore. Mr. Bishop, as one might infer from the prominent part that he has taken in the development of automobilism in America, has been concerned chiefly with improving the motor carriage. Mr. Stokes has invented an ingenious apparatus for playing golf indoors. Mr. Dinsmore has patented a tire-removing and replacing device, and has applied for a patent on a pneumatic-tire protector.

Incomplete though this list may be, it serves to indicate a serious purpose on the part of some of our young men of wealth, which is sure to be highly commended.

#### RECORD OF AMERICAN AUTO SHOWS.

Although it is barely two years ago since the advisability of holding an automobile show was first seriously considered by the few makers then in the field, even the most enthusiastic of the promoters betrayed signs of a lurking suspicion that despite every effort to make the thing popular, it might fall short of expectations.

Nowadays, no sane man would raise the question, for fear of making himself the laughing stock of the trade and the public. It would be difficult to find simpler and more direct evidence of the sweeping progress made by the automobile industry. Large, well-equipped plants have been laid down, numerous minor factories have sprung up all over the country, mechanical repair shops have entered vigorously into the competition, and many manufacturing establishments have added a factory department for automobile building, not to mention the nearly two thousand individual makers of automobile machine parts, fittings and accessories.

Nowhere has this unique and imposing industrial result been better expressed collectively and comprehensively than at the present Chicago Automobile Show. Almost every type of vehicle, every feature or device which serve as improvements, are to be found there. It is, however, rather difficult to trace the stages by which the present development has been reached, for old pattern vehicles are scarce, and show promoters, no matter how hard they may try, have never succeeded so far in making a collective exhibit disclosing the truly representative stages marking the practical progress in automobile building since it became an industry worthy of the name.

The first American auto show of January 1, 1900, was really more of a compromise with the cycle show, in conjunction with which it was held at Madison Square Garden, than anything else. It was ninety-nine per cent "bike" and one per cent "horseless." The automobile was put into the bicycle show as a special feature to attract the public, which it did in a way not foreseen by the cycle makers; for the spectators seemed disposed to ignore the presence of bicycles and prefer gazing at the baker's dozen of automobiles displayed. So that the auto feature accomplished much more than the exhibitors had hoped for, and proved instrumental in breaking the ice for future shows. It was a trial balloon, showing the makers which way the wind was blowing, and it was sent up just in the nick of time.

Immediately there was a renewed interest in automobilism and a corresponding activity among the makers. Chicago, jealous of New York's "horseless" affair, moved into line with an automobile show, which was intended to be a good deal more than it turned out to be. It was held in September, 1900, at the Washington Park, under the auspices of the Chicago Automobile Club. It was an outdoor affair, with plenty of room for track events and exhibitions of every conceivable kind. There were some thirty-odd exhibitors, ensconced behind very creditable-looking stands. It was to be a big treat, but—it rained, the crowds went home, the makers lost courage, the special hill-climbing events and track tests were slovenly and unsatis-

factorily conducted by people apparently entirely unfamiliar with such exhibitions, and everything seemed to go wrong. In spite of this setback, the show did some good, and the impression produced by it was by no means lost. Improvements in the vehicles displayed were easily noticed, and there were many indications that the automobile industry and the popular interest in it had taken a forward stride since January.

The question of making the automobile show a permanent institution now came up for vigorous discussion, and in November, 1900, New York city was able to muster at Madison Square Garden an automobile show in which practically all the makers took part. This show was a clean-cut exhibition exclusively devoted to automobiles, and under the efficient management of the Automobile Club of America, it proved a commercial as well as a popular success. All doubts as to the instrumentality of such shows were swept away. The industry was copiously and intelligently represented by motor-vehicle types of a variety of designs and for many purposes; the spectacular feature was signally supplied by a small speeding track on which vehicles in motion were displayed; the public patronage continued large throughout the week; and the commercial result was such as to encourage the exhibitors greatly. The Automobile Club of America at this show made the first attempt on record toward the getting up of a historically instructive feature by a very judiciously-arranged collection of models—curious and significant "stepping stones" in the line of motor vehicle construction.

No sooner did the doors close upon this show than another one, under different management, took place, during the following week, at the Grand Central Palace. This exposition was in reality arranged previously to the Madison Square Garden affair, and the management stuck to its date, even when it was found that it would practically cause a collision between the two shows. The Central Palace exhibit proved to be more of mechanical interest than was anticipated, as a few makers that had not shown at the Garden took an opportunity to display some new things at the Palace. Commercially the show was fairly profitable, but it lacked the popular patronage of its immediate predecessor.

Inspired by the brilliant success of the Garden show in New York city, Boston, Washington and Philadelphia produced automobile shows of their own during the winter of 1900.

Under the auspices of the National Automobile and Sportsman's Exhibition Company, Washington made a very respectable bid for honors in the auto show field. The exhibits were mainly gotten up by the local branch managers, and proved ultimately to be of direct trade benefit to them. The attendance was very good, but the show was mainly of local interest.

In Philadelphia the Automobile Club and the Cycle Board of Trade waged a war of dates for some time, the outcome of which was two mediocre shows in foolish competition, when conditions were favorable for making a national impression by joining hands in the promotion of one single show. The Cycle Board of Trade's show was half cycle and half auto, and the Philadelphia Automobile Club's show had the largest number of exhibits.

The Boston show was given up because the promoters, who, by the way, were none too enthusiastic, failed to secure the patronage of a sufficient number of makers.

During the last week of March, 1901, Chicago again forged to the front with a prodigiously advertised show at the new Coliseum, and again—it rained. But this time the show was indoors, and despite six days of steady downpour, and contrary to all expectations, it turned out to be a commercial success of no mean order. At all the stands sales were constantly reported, and the class of people who paid admittance were obviously mainly divided between those who were mechanically interested and those who wanted to make a careful pick before buying.

The January, 1901, automobile show of New York at Madison Square Garden was held under the management of the Automobile Club of America. This was a "mixed" show, in which the bicycle again fought it out with the automobile, and it did not attract much attention. The practicability of the motor-cycle was fully demonstrated, and the chief interest seemed to center around those self-propelled "silent steeds."

The second annual automobile show was held at the same place and under the same auspices during the first week of December, 1901. This was the most important automobile exposition ever seen in this country. It was in every way a well-arranged, tastefully furnished, elegantly appointed exhibition, showing in a compact, convenient form the immense mechanical progress made in motor-vehicle building from the perfecting of parts and accessories to the modeling of bodies and the structural feature of motors and manipulating devices. Nearly all the important makers were represented; the attendance was very large; and the result decidedly gratifying and extremely flattering to the American automobile industry.

#### SCIENCE NOTES.

L. Vanino (Berichte) finds that when guncotton is treated with a 20 per cent solution of formaldehyde its sensitiveness to shocks is greatly diminished and almost entirely destroyed. When moistened with formaldehyde solution and dried on the water-bath the guncotton loses its explosive power without suffering decomposition. By removing the deposited paraform by means of boiling water, the original properties of the explosive are restored.

A new source of malarial fever has been discovered by one of the assistants of the Liverpool School of Tropical Medicine now at work on the west coast of Africa. Hitherto this complaint has been attributed to the bite of malarial mosquitoes, but the result of recent investigation proves that there is another parasite which is equally as deadly in the propagation of this malady. The new disease-bearer is said to resemble the insect which causes "fly disease" among horses in South Africa.

The workmen digging the foundations for the enlargement of a religious building in Turin discovered, at the depth of about six meters below the soil, a number of articles of great archæological interest. The most important is a hollow bronze head, life size, and a masterpiece of art, in excellent preservation. The hair, the ears, and the eyes show traces of gilding. It is supposed, from comparison with other heads of the same period, to represent Tiberius. It is hoped that further research may lead to the recovery of other parts of the statue.

Out of the 4,200 species of plants gathered and used for commercial purposes in Europe, 420 have a perfume that is pleasing and enter largely into the manufacture of scents, soaps, and sachets. There are more species of white flowers gathered than any other color—1,124. Of these 187 have an agreeable scent, an extraordinarily large proportion. Next in order come yellow blossoms, with 951, 77 of them being perfumed. Red flowers number 823, of which 84 are scented. The blue flowers are of 594 varieties, 34 of which are perfumed, and the violet blossoms number 308, 13 of which are pleasantly odoriferous.

The expedition which started last year under the auspices of the British Royal Society, to explore the cave fauna of the Malay Peninsula, has accomplished some very interesting biological work, and many geographical observations have been made which prove existing maps of this country to be erroneous. The expedition has crossed the Peninsula from Singora to Kedah, and has discovered that the high mountain range marked on maps does not exist in that part. About 120 miles north of Penang the mountains are over 6,000 feet high. The chief object of this scientific expedition is to study tropical cave fauna with a view to ascertaining whether it will throw light on the history and evolution of cave-dwelling animals.

Dr. E. Ule contributes to Engler's Jahrbuch (30, Beiblatt) some interesting observations on "ant-gardens" in the Amazon region, where they abound on a large number of woody plants. They are generally spherical in form and about the size of a walnut. They are formed by several species of ant, which appear to collect the seeds of many different plants and to sow them in these nests, covering up the seedlings with humus when they begin to germinate. In the structure of these "ant epiphytes" the foliage and the roots display characters which especially adapt them for the situation in which they grow, and promote also the protection of the ants themselves in their nest. Quite a number of the epiphytes were found by Ule as denizens of the ant-gardens and nowhere else. Among them were three species of Piperaceæ, five of Bromeliaceæ, five of Gesneraceæ, one of Moraceæ and one of Cactaceæ.

The extraordinary dust fall in Europe a year ago (March 9-12, 1901) has been studied by Hellmann and Meinardus, whose memoir has lately appeared in the *Abhandlungen of the Royal Prussian Meteorological Institute*. It is shown beyond dispute that the dust came from the Sahara, and not from South America, as the famous Ehrenberg concluded for similar dust-falls many years ago. Dust storms were observed in the Algerian Sahara during the days immediately preceding the dust fall in Europe. South of the Alps there was a stormy sirocco; further north, the lower air was relatively quiet, but the higher currents were strong from the south, their velocity of seventy kilometers an hour agreeing with the rate at which the dusty area was extended northward. The microscopic analysis of the dust showed it to be a mineral composition such as the Sahara could furnish. Around the Mediterranean the dust fell during the dry sirocco, but further north, especially in northern Germany, the dust came down with rain and snow. Most of it fell south of the Alps. Further north the size and the specific gravity of the particles were reduced. The average weight of a grain of quartz dust in northern Germany was 1-3,200,000,000 gramme. The total fall is estimated to have weighed 2,000,000 tons.