

SCIENTIFIC AMERICAN

ESTABLISHED 1845

MUNN & CO., - - Editors and Proprietors

Published Weekly at

No. 361 Broadway, New York

TERMS TO SUBSCRIBERS

One copy, one year for the United States, Canada, or Mexico..... \$3.00
One copy, one year, to any foreign country, postage prepaid, £0 16s. 5d. 4.00

THE SCIENTIFIC AMERICAN PUBLICATIONS.

Scientific American (Established 1845).....\$3.00 a year
Scientific American Supplement (Established 1876)..... 5.00 "
Scientific American Building Monthly (Established 1885)..... 2.50 "
Scientific American Export Edition (Established 1878)..... 3.00 "
The combined subscription rates and rates to foreign countries will be furnished upon application.
Remit by postal or express money order, or by bank draft or check.
MUNN & CO., 361 Broadway, New York.

NEW YORK, SATURDAY, MARCH 1, 1902.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are sharp, the articles short, and the facts authentic, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

INTRODUCTORY.

The rise and growth of the automobile industry forms one of the most striking chapters in the remarkable mechanical development which has taken place in the last two generations. In some respects this development has been absolutely without a parallel, as witness both the remarkably short space of time in which the automobile has grown from the first crude conception to its present highly developed condition, and the unprecedented rapidity with which the industry has assumed proportions of the first magnitude. The steamship and the railroad required several decades to reach the mechanical completeness and financial and industrial importance which have been achieved by the automobile in just as many years.

The year 1901-1902 is likely to rank as one of the most important in the history of the automobile in America, and this for the reason that in no previous year was there evidence that the automobile industry was destined to assume proportions of the first magnitude. At the close of 1901, however, the remarkably successful Automobile Show in Madison Square Garden, in this city, served to demonstrate alike the admirable quality of the machines of American make; the large number and importance of the firms that were embarked in the automobile industry; and what was perhaps most vitally important of all, the thorough awakening of public interest in the automobile as such.

Scarcely have the echoes of that most successful venture died away before the public interest is centered upon another and equally important automobile exhibit which will be held in Chicago on March 1; and in connection with this exhibition, which gives promise of rivaling if not surpassing in importance and results the New York Show, we consider that the time is propitious for bringing out a special automobile issue of the SCIENTIFIC AMERICAN. There is no questioning the widespread public interest in the automobile, and the demand for practical information, not merely as to the construction and manipulation of the machines, but in all the collateral fields which are embraced under automobilism.

And at the outset we are free to confess that it is no simple matter to bring out an automobile number. In the first place, to be successful, it must be entirely without prejudice. From its pages must be rigorously excluded illegitimate and fake enterprises, and only such standard makes must be shown as have stood the test of time and hard usage. From the very first it was realized by the Editor that in a field so vast the choice of subjects would necessarily have to be greatly restricted, and hence it was decided to confine the issue to a description of automobilism as developed in the United States, confining the number exclusively to the description of American machines and the development of the sport and industry as affected by national conditions. Even under such restrictions it was still necessary to exercise a selective choice among the large number of American machines of undoubtedly first-class construction, many of which have had to be omitted simply on the ground of lack of space for their proper treatment. The European automobile does not figure at all in the present issue. There are, furthermore, certain conspicuous omissions which are made for the sole reason that we have so lately given them an elaborate description and illustration in the SCIENTIFIC AMERICAN that it would be superfluous to reproduce them in the special number.

THE AUTOMOBILE ON THE STAGE.

Amid the prospective spheres of usefulness of the automobile in these, the earlier years of its development, probably the most sanguine of its sponsors would hardly have claimed for it any histrionic possibilities; yet it is a fact that the automobile has at last "taken to the boards." In two of this season's most successful

theatrical productions, the automobile plays a not inconspicuous part, and curiously enough it is the "frailties and foibles" of the machine that are selected for emphasis in each case. Thus, in a play known by the classic title of "Beauty and the Beast," some gentlemen burglars make their entrance on an automobile. They are just about to settle down to the practice of their profession, when a policeman's whistle is heard. They make a dash for the machine, which promptly, at the "psychological" moment, refuses to budge. Forthwith they let down the back of the carriage and unload a repair kit (sic) which assumes the proportions of a veritable blacksmith's shop. The repairs proceed apace; tires, sparking devices, motor, and every conceivable end of the machine being attacked in turn. The only manifest result is that the harmless-looking carriage emits steam, smoke, and gas, until it develops into a positive infernal machine, finally rending asunder and blowing up with every conventional element of realism.

In one of the latest society plays running at another New York theater, the whole of the first act is supposed to take place in Central Park. Here the hero and his wife are discovered in a crippled victoria. While the chauffeur is repairing a broken controller, a friend of the wife's enters with a broken bicycle and a sadly dilapidated costume. The rescue comes in the shape of a natty little electric runabout, occupied by an opportune gentleman friend who extirpates the party from their plight. The runabout shows the electric vehicle at its best, and it is skillfully introduced on the scene to bring out the contrast between the reliable electric and the supposedly more ponderous and costly, but more uncertain gas-driven machine. Not to be outdone by melodrama and the society play, comic opera has also called in the automobile, and one of the most popular comedians of the New York stage is nightly assuming the role of a dashing chauffeur.

The burglar, the distressed heroine and the comedian have been duly presented on the boards. Surely the next thing in order in theatrical automobiling should be an up-to-date melodrama, with a real race for life or freedom in two powerful machines. Such an act could be produced with comparative ease; for the much more difficult horse-race has been successfully staged, and there is no question that such a race would be a very decided novelty.

SPECIAL FEATURES AT THE CHICAGO SHOW.

The automobiles exhibited in Chicago this week will have all the improvements that are likely to be put on the various types this year. During the last three months the manufacturers have been doing their utmost to get out new designs and novelties for the March Show, as on the merits of their machines at this time depend in large measure the orders for a year ahead. All the improvements that experience has demonstrated are necessary have been put on the new models, and the fortunate possessor of a 1902 machine should have less difficulty in getting about without breakdowns than he had with the automobile of a year ago. Some of the machines which lack of space has kept us from describing, but which have many points worthy of mention, will be found noted in brief below.

The Friedman Automobile Company's new gasoline runabout has several novel features in the way of a friction disk transmission and an arrangement for starting the motor from the seat. A new form of spark plug consisting of two separate plugs, each inclosing an insulated wire, is used on this machine, the claim being made that it is not so easily short-circuited as the regular type. The motor of the double cylinder opposed type is placed crosswise of the vehicle. The Friedman machine can be seen in New York at the store of the Spalding-Bidwell Company.

The Toledo steam carriage of the International Motor Car Company has an interesting piece of mechanism in the form of a single throttle lever, which it is only necessary to move backward in order to reverse the machine. A special water-tube boiler of original construction is also employed.

The Automobile Equipment Company, of Chicago, show four sizes of Acme steam engines in operation. Boilers, burners and Moore automatic steam air and water pumps will also be shown working. Besides well-known makes of spark coils and batteries, including the Hydra double cell, the company expect to surprise the public with a new gasoline engine igniter that requires no electricity whatever.

The Brown-Lipe Gear Company, of Syracuse, exhibit several different models of their spur gear differentials. Patents have recently been allowed on this new form of equalizing gear, which has obvious advantages over the old style bevel gear type, and has given general satisfaction during the year it has been on the market.

The R. E. Dietz Company, of New York, furnish most of the automobile lamps that are used by the trade when a simple and substantial lamp is desired. Their lamps are constructed on the tubular principle, the air for the burner being

brought down from above through air passages, so that no matter how hard the wind blows this air is undisturbed and will not affect the flame.

Eastman metallic bodies for automobiles are to be seen in the Eastman booth. The metallic body offers many advantages that have not been seized upon by the American as rapidly as by the French manufacturer, who makes use of them frequently because of their lightness and indestructibility.

The new Locomobile touring car is furnished with a gasoline pump attached to the engine for the purpose of pumping the gasoline into a small receiving chamber, where it is kept under pressure and from which it goes to the burner. This does away with the necessity of pumping up air pressure in the gasoline tank, as a few strokes of a hand pump will supply sufficient pressure to start, after which the engine keeps it up.

The Auto-bi of the Buffalo Automobile and Auto-bi Company is one of the most practical motor bicycles on the market. Mr. Thomas, of this company, has had considerable experience in building motor bicycles, and the product of the new concern can be depended upon to be of the very best quality throughout.

The Prescott Automobile Company's steam carriage has been still further improved in appearance since last November by the addition of a neat dashboard to the folding box seat in front. Double-acting brakes are now fitted to the rear wheels, thus relieving the compensating gear of many strains and preventing skidding. The water level is automatically controlled in the boiler, and an improved lighter for the burner has been added.

A PRACTICAL AUTOMOBILE TOURING OUTFIT.

BY HROLF WISBY.

Quite naturally touring has become a favorite pastime with those who patronize automobiling not as a fad, but as a healthful, pleasurable sport—a class of automobilists by the way that is constantly increasing, not only abroad but also in this country. In spite of the wretched condition of American roads, the successful long distance trips made by Arthur J. Eddy and a number of less-known chauffeurs have shown that extended touring in the United States is not only possible but probably more fascinating because of the additional obstacles that are continually presenting themselves to be overcome. In the vehicles also the demand for improved touring types can readily be seen, even by inexperienced eyes, in the effort of the leading makers to produce a machine especially adapted for touring. Nearly all the standard 1902 models include a distinct touring type, and some of the largest manufacturers have made such types their specialty. The tendency in this direction has thus far had a beneficial influence, both in Europe and this country, on the style as well as on the utility of the product. By dropping the racing requirements and centering all their mechanical ingenuity on the production of touring types, in which comfort and convenience must take precedence over the speed feature, automobile makers have at length succeeded, in the 1902 models, in turning out several types of touring vehicles that are decidedly superior to what was offered as a touring vehicle twelve months ago. At the present time nothing so emphatically shows the rapid advance in automobile construction as the particular development of just this class of carriage. Bodies have become lower, wheel bases have grown longer, stouter and smaller wheels have taken the place of comparatively high wheels, and the consequent changes in the vehicle proper have been such as to afford more space for the feet, an easier seat, a handier position of the manipulating devices, and increased storage capacity not only for liquid fuel but for such luggage as may be necessary to make touring convenient and agreeable.

The proper vehicle is, of course, the most important consideration in a complete touring outfit, but now that such machines can be had at a comparatively moderate price, the difficulty of getting them at all has been reduced to the problem of selecting the best one. There are other items to be considered, however. There is really no such thing on the market as a practical automobile touring outfit. Nobody makes it; nobody sells it, and yet there is an unprecedented demand for it by experienced auto-tourists, that is, those who have tried to coax pleasure out of touring without the proper outfit to make it agreeable. Such veterans generally set about making their own outfits, but many wearying experiences may have to be suffered before they possess an outfit that is complete without being unwieldy.

Everyone is familiar with the black leather clothing worn by most chauffeurs. For all-around use this is the proper and most practical clothing, and for long trips it is the only kind which has been found to be convenient and satisfactory.

Such leather clothing is usually made from calfskin, but the very best grade obtainable is invariably taken from the hide of the kangaroo—the skin being more pliable, and on account of its rather oily substance it will shed rain a good deal easier than calfskin. The latest style leather clothing is lined, not with corduroy,