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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.

MUSHROOM AUTOMOBILE FIRMS.

There has been a general consensus of opinion among those who are qualified to judge of good mechanical work, that the bulk of the automobiles exhibited in the New York Show this year are marked by design and workmanship of a very high order. Indeed, it is the recognition of this fact that enables the most conservative well-wisher of automobiling in America to assert with positive conviction that our leading manufacturers have moved up to the front rank, and are turning out machines that compare in design, workmanship, and beauty with the very best of foreign make. An excellent opportunity for comparison was offered by the method of classification adopted, which gathered the foreign machines in a room by themselves, and enabled one, after familiarizing himself thoroughly with foreign workmanship, to pass into the main exhibit, and make immediate comparison with the best American machines. French manufacturers had so many years' start of this country, that their superb automobiles have naturally become the mark of excellence at which our own builders have aimed; and, therefore, the fact that in the few years covered by the exhibitions held in this city, we should have been able to make up the handicap of several years that was against us, is deeply gratifying. But having said this much of the exhibit as a whole, justice to the industry, and a regard for the interests of the purchaser, demand that a word of warning should be spoken against a certain type of exhibitor whose whole plant, capital, output, and experience is represented by the one, solitary machine that he had on exhibition, but who nevertheless does not hesitate to solicit orders, in the hope that he may place enough of them on his books to guarantee the purchase of a few more tools and the employment of a few more hands at his so-called establishment. Now, we do not for a moment charge that there is any suspicion of fraud attaching to these people. What they lack, and most completely lack, is the invaluable experience and the capital which alone can enable an automobile manufacturer to turn out a really reliable machine. The history of all the first-class makers in this country has been that they passed through a period of patient investigation and exhaustive and costly experiments before they felt justified in putting a new type of construction on the market. The firms that have gone by this slow but sure road, and these firms alone, have to-day an established reputation.

But now that the period of experiment is over, and the growing confidence of the public in the automobile is resulting in a remarkable growth of the industry, we are witnessing a rush of inexperienced and often completely unqualified people into the trade (just as happened a few years ago in the bicycle industry), with the result that a lot of crude machines, which are made up largely of poor imitations of standard makes, are being offered to the public, long before they have had that exhaustive trial which alone can establish them as fit for the severe demands of everyday service on the road. Of course, these mushroom firms will, in most cases, meet with the inevitable fate of such; but not until many an inexperienced purchaser has paid dearly in providing for these firms the experience which by right they themselves should have gained before they placed a single machine on the market.

It is a most serious matter to undertake the manufacture of automobiles. We do not know of a single form of mechanism that demands such supreme excellence of workmanship and materials as this; and while it is impossible to prevent speculative people from rushing thoughtlessly and without due preparation into the making and selling of machines, it is sincerely to be hoped that the automobile press, the various clubs throughout the country, and the private

purchaser will discourage the mere speculator, and give their support only to those makers who can show the proper credentials.

THE RACING AUTOMOBILE AND ITS RELATION TO THE DEVELOPMENT OF THE PLEASURE VEHICLE.

To the casual spectator, the sight of a huge racing machine dashing around a track at a mile-a-minute clip is in itself an interesting and more or less thrilling spectacle. The higher the speed and the greater the risk run by the operator, the more intense is the excitement as he makes the dangerous turns amid clouds of dust. When several evenly-matched cars are running together, rounding the turns at express-train speed and in imminent danger of collision, while the chauffeurs strain every nerve in their efforts to steer them and get out of them the highest speed possible on the straight stretches, one is reminded of the mad excitement of the ancient chariot races of the Romans on the oval track of the great arena.

But apart from the excitement and exhilaration of the race, such competitive speed trials are of the greatest benefit to the automobile designer, first because, sometimes through failure and sometimes through success, they point the way to improvements in construction which, when tested and proven, are incorporated in the regular stock machines; and, secondly, because they give a chance for comparison of different forms of construction under conditions of very severe strain.

Abroad, the benefits of racing have been more generally taken advantage of, and races have largely been held on the highways, which, because of their wide, smooth surfaces, form almost perfect courses for the testing of automobiles at high speeds and over long distances. Generally a circuit fifty or seventy-five miles in circumference is laid out, and the contestants traverse it several times. The annual race for the Bennett trophy, which is an international affair, has become the classic race abroad; and, if it is ever won by an American machine, it will have the effect of introducing road racing into this country, as the race follows the cup and is always held in the country whose team won the previous year. France, England, and Germany have each had the trophy, and the race next year will be held in the last-named country. The success of the German "Mercedes" machine in 1903 has been attributed by many to the use of ball bearings in the transmission gear and other important parts, and, as a result, many of the foreign manufacturers, as well as some here, have readopted this familiar form of anti-friction bearing on their 1904 machines.

In America, racing has been largely confined to the ordinary race-track, with occasional straightaway speed trials. During the latter part of the past season, the Winton eight-cylinder racer, which failed to make any showing in the Bennett race last summer, demonstrated the soundness of its principles of construction by winning many races and making new records on various race-tracks throughout the country. Driven by Barney Oldfield, it made a mile in 55 seconds; 10 miles in 9 minutes, 32½ seconds; and 15 miles in 14 minutes, 21 seconds, all of which are track records for machines weighing over 1,800 pounds. A four-cylinder racer of the same make holds the mile, 5-mile, and 10-mile records for machines weighing from 1,200 to 1,800 pounds. The figures for these are 59.1-5 seconds; 4 minutes, 58 4-5 seconds, and 10 minutes, 6 seconds, respectively. A Decauville racer driven by Henri Page holds the 15-mile track record of 15:07 1-5 for this weight machine, while Dan Wurgis, on an Oldsmobile chassis, holds the 1 and 5-mile records for cars weighing less than 1,200 pounds, at 1:07 2-5 and 5:49.

Steam track records up to 5 miles were made last year by George C. Cannon, with his special racer equipped with a fire-tube boiler and simple steam engine. The first mile was covered in 1:01, and the five miles in 5:56 3-5. J. L. Hedges, on a White steam racer equipped with a flash generator and compound engine, made a 10-mile record of 12:20 4-5.

New track records for electric automobiles of a mile in 1:24 4-5, 5 miles in 6:29 3-5, and 10 miles in 17:58 were made last year by the Baker electric torpedo racer, in which are incorporated all the features used on the stock cars, such as ball bearings, but few cells of battery, and a low-voltage electric motor of high efficiency.

The Ormonde-Daytona beach on the east coast of Florida, pictures of which were published in our last Automobile Number, is said to be the finest speedway in the world. The second annual race meet, in which the best American, French, and German racers are entered, is being held there this week. New straightaway records were recently made there by the Packard "Gray Wolf" racer, driven by Charles Schmidt, and a Stevens-Duryea chassis, driven by Otto Nestman. The former machine has a 25-horsepower, four-cylinder motor, and weighs 1,400 pounds, while the latter has two double opposed-cylinder motors that develop 14 horse power, and weighs complete 900 pounds. Both have the same sized engines as are fitted to their respective firm's regular stock cars. The Packard 1904 "Voiture

Legère" has been directly developed from the experiences of the Packard Company with its racer throughout the past season, while the Stevens-Duryea racing chassis was built to demonstrate the speed possibilities of that company's motor. This machine showed its rapid hill-climbing abilities at the Eagle Rock, N. J., hill-climbing test last Thanksgiving Day, by ascending the one-mile hill in 1:37, which was only ¼ second less than W. K. Vanderbilt, Jr.'s, time on his 60-horse power Mors racer. At the recent attempts to break records with this machine in Florida, it covered a mile in 57 1-5 seconds, thus lowering by 9 seconds the previous record for machines of this class, which was made at the same place by the Oldsmobile racer a year ago. A new 5-mile record of 4:57 3-5 was also scored. The "Gray Wolf" succeeded in coming within 2-5 of a second of tying the world's record for heavy cars (46 seconds), while its 29 2-5 seconds for the kilometer equals the record made by Baras on a light car.

Spurred on by these newly-made records on the Florida sands, Henry Ford next made an attempt to beat them on a specially prepared course on the ice. The trial was made with the reconstructed Ford-Cooper racer, and it was successful. The astonishing time of 39 2-5 seconds was recorded by the official timekeepers, which means a speed of 90 miles an hour. This new record makes it seem as though a speed of 100 miles an hour will soon be realized. Such speeds are in themselves of no benefit, yet there is no denying the fact that the strains to which they subject the mechanism of the racing cars are so far in excess of those met with by the every-day runabout or touring cars, that if these are built with practically the same strength of parts, the factor of safety must be very great. In other words, just as a piece of steel that is incorporated in a modern auto must have several times the strength necessary to withstand the stresses that are likely to be put upon it, so the complete machine should be so constructed that it as a whole has a large factor of safety. Just how strong to make every part is at first somewhat a matter of experiment, and it is far better to risk the life of one man who realizes his danger, than to jeopardize the lives of numerous purchasers who ride about unconscious of the risks they are taking. Before the development of the racing car and the trying out of parts upon it, the automobilist was liable to serious accidents, such as the breaking of the steering gear or of the rear axle; but now, as a result of these exhaustive and machine-racking speed tests, a purchaser buying a car from a firm that has had racing experience is pretty sure to obtain one that is not structurally weak, and with which there is not much chance for a dangerous breakdown.

THE FOURTH ANNUAL NEW YORK AUTOMOBILE SHOW.

The exhibits in the Fourth Annual New York Automobile Show were of such general excellence that it can, we think, be truthfully said that America has caught up with France, or, at any rate, that she is close at her heels. Many of the noteworthy features of the Paris show were found on American automobiles, such as, for example, numerous honeycomb radiators, as well as flanged tube radiators incased like those of the honeycomb type; and mechanically-operated inlet valves arranged in the cylinder head and, in some cases, placed in a single combustion chamber on one side of the cylinder. Cylinders appear generally to be cast separate and to be made interchangeable, which is also the latest foreign practice. Several of the motors were of the horizontal type, either single cylinder or double opposed. This is a strictly American type of engine, and one that is rarely met with abroad. Another motor that is gaining in popularity with the manufacturers is the air-cooled type. There were half a dozen new machines of this type that attracted general attention. On most of them copper heat-radiating flanges were shrunk on the cylinders, and the motor was placed in front where it could get the full blast of air, a fan also being employed. Cylinders four inches in diameter can, it is now claimed, be successfully cooled this way, even in the warmest weather. When this fact becomes generally known and thoroughly substantiated, we shall expect to see a revolution in the construction of gasoline automobile motors, for who would not dispense with the troublesome water circulating systems if he were sure that a simple fan could be made to do instead? A description of some of the novel methods of air cooling will be found on another page.

Many of the older manufacturers whose cars have a well-established reputation, besides making a few minor changes, have added canopy tops with glass fronts and side curtains, thus making the machines serviceable in all kinds of weather. The minor improvements consist chiefly of mechanical lubricators, giving a positive oil feed to all important bearings; the use of ball bearings in the transmission gear and rear axle; and the employment of carbureters that are automatic and that require little or no adjustment to obtain the proper mixture at all speeds of the engine.