



THE INDUSTRY AT HOME AND ABROAD.

MOTOR vehicle construction is advancing with very rapid strides wherever throughout the world the recreative instinct combines with a popular interest in railless transportation. This is particularly the case in the United States, France, the Netherlands, Germany and Great Britain. The automobile productions of each of these countries not only reflect in a singularly direct manner the current mechanical practice from which they have been severally developed, but they serve to index different national conceptions of the problems embraced in the whole scheme of self-propulsion, and also to create a multitude of special individualities in the course of their outworking. Hence the prodigal diversity in theories and designs at the present time exhibited by the international industry. The field is new and wide; scarcely any motive power or general type of machine has yet been brought to sufficient all-around satisfaction to encourage mere imitation or adaptation; contemporaneous lines are regarded as but the fundamentals for future effort; originality is both the hope and aim of further progress.

DIFFERENT OPPORTUNITIES FOR DEVELOPMENT.

Surprise has been at times expressed that France should have at first assumed and so far maintained an unchallenged leadership in the manufacture and use of the automobile; while, on the other hand, it is not generally understood why Great Britain, and in particular the United States, should have so much later recognized the demand for horseless vehicles. The reasons why these conditions have prevailed are more apparent upon reference to some pertinent historical facts. Motoring has been a cherished dream of European and American mechanical engineers for upwards of a hundred years, but especially since 1850. Various devices looking toward that end have been practicable, though usually very imperfect mechanisms, for decades. Since the valuable experiments of Richard Trevithick, a Cornish engineer, made in 1802-3-4, there has always been at some place or other one or more models of horseless vehicle capable of actual movement on railless surfaces, under control by the operator. The latter has until recently been called almost exclusively by the title of "engineer," as will be noticed upon examination of old-time files of leading scientific publications here or abroad. The reason therefor is obvious in view of the fact that steam was for a long time the only motive power seriously considered for this purpose.

In this country an unparalleled era of railway construction and extension—called for by reason of the great distances necessary to be traversed by passenger and freight traffic in internal commerce—spanned the past half century, and

placed all other forms of conveyance at a disadvantage for constructive energy and financial support. British commerce was, meanwhile, expanded to world proportions, mainly by means of factory, foundry, and loom products. Incomparably ahead in long-distance carrying—the American on land, and the Briton on sea—they had both lagged considerably behind in the devising of efficient methods for covering shorter distances with economy and speed. The unpreparedness of most highways in the United States had much to do with our national backwardness in this respect, as had also the wide separation—well-nigh isolation for road locomotion—of our centres of population. The introduction of the automobile into England was correspondingly delayed by the lack of the small automatic machine tools in which she was outclassed by this country, as well as by her continental neighbors.

CONTINENTAL FORWARDNESS EXPLAINED.

French laboratories and shops quietly busied themselves with work along these lines to a far greater extent than has been willingly credited by the experimenters of other nationalities, with, latterly, fruitful results in the way of vehicles of limited range. Extraordinary speed and extreme lightness of weight have been, as a rule, secured at the expense of unified strength, rigidity, and ampleness of service. The average machine of this system of production is small and slight, with a suggestion of incompleteness of combustion and inadequacy of power. There is on the whole a lack of symmetry, though points of graceful and useful design and construction may often appear. Its temper is seemingly one of fickleness, brought to the mind possibly by its inclination to vibrate on small pretext, and by an irregular puffing at the exhaust. Electricity as a motive power for automobiles has made but little real headway, and nowhere else in Europe has it won anything like the favor it has received in this country for limited range service. Petroleum, combustion, steam, alcohol, compressed air, and electric motors are in use, the order named being without doubt that of their numerical importance. Of these the alcohol type is almost exclusively continental.

The superior roadways of France offer encouragement for the amplest use of all practicable machines. This fact goes far to explain the astonishing popularity in that country of the motor cycle and tricycle, types of construction much less known in England, and almost entirely unknown on this side of the Atlantic. Among civilized peoples the French are the most enthusiastic in their appreciation of new and novel inventions, and are the most prompt in reducing them to tangible forms. Thus has the national temperament—seldom over-critical in the face of a new opportunity to lead the world in fashion—seized upon every near-to-hand production, and for the time being the Parisians excel all others in the ardor of their devotion to the recreation and sport of automobilism.

SPECIAL CONDITIONS IN THE NEW WORLD.

The industry in the United States is of a fundamentally different character. Every type known in Europe save one—the alcohol motor—

is in some stage of production here, and such advances as are made have especially in view the meeting of the severest requirements of all-around service. Neither high speed nor lightness can safely be had at the expense of strength and durability. Roads must be taken as they are to-day, not as they ought to be, or as they will be a generation hence. Street pavements and road surfaces of many kinds are to be passed over, and mud, mire, and standing water gone through. Up-grades and down-grades must needs be negotiated without hesitation or danger, and even usual snows be made to yield. The light roundabout and the heavy autotruck are to overcome much the same obstacles, but in ways and by means essentially different. Thus it would be possible to continue indefinitely, simply cataloguing the various trying conditions in which an American automobile might, within a single sixmonth, be expected to give a good account of itself.

Never before in the history of mechanics have so many designers and constructors of the first order of ability been placed so thoroughly upon their mettle as now in the field of international motor-vehicle manufacture. The only known quantities are the stern requirements to be met, and the only guiding principles are those gratuitously contributed by general industry or gathered from experiment with recent productions. On the other hand, there are no limits to the values of superior conclusions. The host of challenges hurled at the trade have been accepted with a zest which is even now winning new laurels for our mechanical engineers, and which promises within a few years to popularize the use of the automobile through the offering to all comers of models of various types at fair, not necessarily low, prices.

Contemporaneous tendencies in American manufacture incline to specialization, to the building of certain kinds of motors and their carrying bodies for particular purposes. Thus the heavy electric machine is offered primarily for use under circumstances best suited to its kind and most conducive to its satisfactory performance, while encouragement is carefully withheld from any and all attempts to go beyond its proven capabilities. Though with broad provinces distinctively their own, the steam and combustion systems to a certain extent thrive on the limitations to which electricity as a motive power is subject. In a country like this, possessing many populous cities and picturesque, widespread domains, so much wealth and internal traffic, and with a constitutional liking for mechanical accessories to personal effort in work or sport, there is room, yea need, for the amplest development of all practicable types. This very refinement of specialization not only forecasts ultimate leadership to the automobile products of the United States, but even now our built-to-order equipments surpass their counterparts in all other countries, and to-day bring the highest prices in European salesrooms.

SUNDRY OVER-SEA OBSERVATIONS.

Less fertility of resource in planning and building is manifested in Great Britain than in either France or America. British ideas in motors are for the most part patterned after those of France, and the constructive details of most machines follow more or less the corresponding

models of this country. Nevertheless some very excellent results are obtained in both speed and power with the anglicized products. Of the other industrial nations of Europe, Belgium and Germany, Austria and Russia show the most progressive activity. Road conditions in the Netherlands are exceedingly favorable for easy touring, and the vehicles there produced are very similar to those of France, i. e., light and swift, but of limited range. The automobile tournaments held at convenient times of the year in many cities and towns on the German Rhine are at present unique. Austria is giving especial attention to military dispatch and transport service by horseless means. In the streets of St. Petersburg the autotruck for heavy cartage has become a familiar sight, while there and elsewhere in European Russia the electric vehicle has made distinctive headway, bringing into being at least one plan elsewhere untried, consisting of a great steam-driven traveling van equipped not only to recharge exhausted storage batteries, but also to make emergency repairs on the road. Italy, Sweden, Denmark and Spain are more or less conscious of the importance of self-propulsion, but there is little real mechanical progress to record.

AMERICAN OUTLOOK BRIGHTEST.

The commercial basis of the automobile industry in the United States is well calculated to lead, within a few years, to the production of large numbers of highest-grade mechanisms in advantageous price-and-quality competition with the world. After the motor is provided the manufacture of these vehicles is very largely a matter of superior automatic machinery and intelligent workmanship, in both of which directions the new world excels. A very important element in wood-and-metal manufacture is the supply of raw materials of the best qualities; these are abundant in this country, Industrial capital, though difficult to interest in idle pursuits, is available in plenty for the expeditious outworking of every favorable conception and device. The upspringing of numerous companies with vast authorized capital represents, on the whole, relatively small investments. These are often exploited to guard or test some invention or series of patents more likely to fall than to stand in the close-sifting process already proving disastrous to the less substantial ones. With the clearing of the atmosphere—which will come with more intelligent discrimination between the true and the false in design and construction, on the part of buyers—this riot of incorporation will give way to able financing and to a high order of managerial ability. Public interest and confidence will be thereby encouraged to the point where sufficient support for every reasonable need of the industry will be freely forthcoming, and doubtless generously sustained.

King George of Greece, already a cyclist, has recently purchased an automobile.

Akron, O., has a motor-driven police patrol wagon, weighing about 5,500 pounds. It is equipped with a propelling strength of eight horse-power, and cost \$2,300.

Automobiles are taxed in a number of Belgian cities, usually according to size and weight. The rates vary from twenty to fifty francs per annum.