

## Impressions of the New York-Buffalo Endurance Contest.

BY ALBERT L. CLOUGH.

It is certainly fortunate, upon the whole, that the New York-Buffalo Endurance Test proved no "fair weather" run. Average conditions are the best under which to obtain data for general application, and the weather experienced during the test, though quite rainy, was not much worse than might be expected during any week in the fall. It was, however, of fully average severity, as wet roads were experienced during three days of the five, which imposed conditions of traction adequate to fully "test out" the weak points of design and construction.

To draw any general conclusions, based upon the performance of the machines, is difficult, on account of the lack of certain data and from other causes. No official record was kept of the number or causes of stops made by each vehicle between controls, and it is hard to see how this could have been done satisfactorily.

### THE QUESTION OF REPAIRS.

No official record was kept of the number and character of repair parts which were supplied to the competing machines en route or the hours of labor expended upon their repair.

As no one individual, however circumstanced, could learn of more than a small fraction of the road troubles experienced or repair work done upon the multitude of carriages taking part, the opinion of any one person on the endurance shown by any type of vehicle is of very limited value.

If the repairs permitted upon each carriage had only included those which could be effected by its occupants with materials carried upon it some more definite idea of its endurance could have been obtained; but in this test the facilities for repair work were much more extensive, comprising skilled mechanics, who traveled by other conveyances; repair parts forwarded to stopping points by rail or by other automobiles, and all the resources of the cities through which the test passed. It is evident that a manufacturer who produces a vehicle of very inferior enduring qualities could make a very creditable showing upon the official records by making enough provision for skilled labor and spare parts. This is exactly what was done on a very large scale, and it is not apparent how the management could have prevented it. It would be interesting to know how much certain of the large concerns expended in the way of personnel and materials to keep the vehicles on the road. On the other hand, there were certain of the manufacturers of standard American machines who contented themselves with entering only two vehicles, or even but one, who carried no mechanics or repair parts on a large scale and who did not seem to worry about their ma-

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chines, which arrived at the controls with great regularity. This state of things cannot show on the official records of the run, but is nevertheless the very gist of the question which the test was organized to decide.

Despite the unpreventable difficulties which arose to make the run less a test of the endurance of the machines than a test of the repair facilities of the builders, some valuable conclusions may be drawn.

### THE WEAK POINTS.

The most important inference to which one might be led, in examining the carriages, was that the motive power and the means of transmitting it had been developed to a point more perfect than had the running gear, including wheels and tires, axles, springs and frame. Of course, the road conditions were severe, but no more so than in a cross-country run of the same length anywhere in this county of execrable highways.

Damaged running gears were very frequently to be observed. Some rear axles and steering pivots were broken; quite a good many were bent to a dangerous extent, gradually deflecting further as the test progressed. Wire wheels showed serious lack of stability, on many of the carriages becoming very badly warped in use, and many rims were seen to be dented all out of shape by stone bruising. There were many of the more generously designed wire wheels, however, that stood up all right, and there is no doubt that they can be built perfectly adequate to meet all conditions. The trouble is with the wire wheel business, like many other branches of the automobile trade, that the "trail of the bicycle is over it still." No instance is recalled during the whole run of a wood wheel which had developed internal weakness. The wood wheel business was not developed along bicycle lines. In one or two cases springs were noticed which were evidently too weak for the work in hand. As a whole, the frames of the various machines held up very well. It would seem that much is yet to be accomplished in the correct proportioning of

### AXLES AND STEERING PIVOTS,

both in the size and in the selection of steel of appropriate qualities, and much improvement is needed in the average wire wheel, both in its rim and the suspension. When these problems are worked out the worst obstacle to the adequate endurance of the automobile, barring the tire question, will have been overcome.

### AS TO TIRES

—the biggest question in the industry at present—the endurance test furnishes practically no data. It goes without saying that all the vehicles carried one spare tire, and most of them a pair, which forms a sufficiently ironical commentary upon the state of the art of rubber tire making, so-called, the shortcomings of which are hindering greatly the automobile industry

in its infancy. One thing was noticed, however, that seemed like a healthful sign: Many of the vehicles were equipped with clincher tires and some few with the "non-collapsible" variety, and it may be that a protest is being at length recorded against the thin walled single tube affairs upon which so much money has been squandered. Out of forty-one carriages selected at random nineteen were equipped with single tube tires, while sixteen used detachable and six non-collapsible makes.

There were undoubtedly a good many tire troubles experienced en route, as quite a number of tires were seen being changed and not a few punctures were known to have been repaired on the road. Most of the carriages may be presumed to have started with new tires. It would be of great interest to know the cost of this item for the competing carriages as a whole.

While a great deal of wear and tear was experienced by the running gears, wheels and tires of these carriages, and a very large element of depreciation made evident, the behavior of

#### THE MOTIVE POWER

of the different vehicles seems, on the whole, to have been creditable. No extensive replacing of parts of gasoline engines was noticed, and it is apparent that the motors of the better makes of carriages have reached a point of great reliability. The time for speaking of the unreliability of the gasoline engine is obviously well passed, although one or two of the makes of motors employing jump spark ignition seem to have had more or less frequent trouble with the fouling of their sparking plugs, resulting in occasional missing. The sight, familiar a few years ago, of the frantic and futile cranking of an engine in starting was not once seen by the writer on this test. Minor troubles in considerable number there must have been, but it is not believed that the motors of the low and medium speeds, such as are employed upon the greater number of these carriages, would show much depreciation, due to the test. It is believed that their endurance is quite satisfactory—much more so than the constructions upon which they are carried. The same thing is probably true of the steam engines, though in a less degree, as a considerably larger relative amount of repair work was seen being done upon these motors than upon the gasoline motors. It is safe to say that the depreciation of the steam boilers and engines would be found relatively larger.

#### TRANSMISSION DEVICES.

There certainly could not have been an excessive amount of trouble with the transmission devices of the gasoline carriages, or some such instances would in all likelihood have come under the writer's notice. There were undoubtedly some chains broken and plenty of clutches that needed adjustment, but the generally quiet running of these devices gave a strong im-

pression that their depreciation was only moderate. The deterioration of

#### CHAINS AND SPROCKETS

in all classes of carriages is considerable, and will continue so until means are provided to protect these members from dirt. Quite a number of chains were seen being taken up, and probably the depreciation here is relatively greater than in any of the other "mechanical" parts of the machine.

That there were no accidents to life or limb on the trip is a splendid testimonial to the inherent safety and controllability of the automobile. The conditions were most favorable for serious accidents, as the road surface for much of the way was very slippery and the grades were steep—even as high as 18 per cent. in one instance. The presence of eighty machines in close proximity added to the danger. Machines did go into the ditch in several instances, but apparently not from any failure in brakes or steering gear. Yet the hill climbing contest showed plainly that there was room for improvement in some of the

#### BRAKES,

especially as to their efficiency in holding on the reverse. Several of the competing carriages, when their power failed, had to have their wheels blocked to prevent their running back. There is one thing that must be borne in mind: Most of the vehicles were driven by expert operators, some of them indeed by their designers, and the results in point of safety were naturally the most favorable possible. Just what effect upon the results there would have been had the carriages been driven by ordinary operators it is not easy to say.

#### PERCENTAGES AND AVERAGES.

Of the 74 carriages (exclusive of bicycles) which left New York 49, or 64.9 per cent., were propelled by gasoline, and 26, or 35.1 per cent., by steam, which tends to show that more of the manufacturers are pinning their faith to the former than to the latter system for touring purposes.

Of these 74 vehicles 41, or 54.7 per cent., arrived in Rochester before the close of the control, somewhat more than one-half, according to the best figures obtainable. Of these 41 carriages 28, or 68.3 per cent., were gasoline and 13, or 31.7 per cent., were steam. The relative proportions of the two competing systems is thus seen to be practically the same at the finish as at the start. This would tend to show that if the steam vehicles had had no more extensive repairs performed upon them than the gasoline, their endurance was about the same. This may be true, as both methods of propulsion are equally practical as mechanical propositions. The considerations which will decide their relative superiority will be those of economy and convenience. Of the vehicles which left New York 17, or 22.97 per cent., were of weight less than 1,000 (Class A); 36, or 48.64 per cent., weighed between 1,000 and 2,000 pounds (Class B), and 21, or

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28.38 per cent., more than 2,000 pounds (Classes C and E).

Of the 41 vehicles reaching Rochester the proportions were as follows: 9, or 21.95 per cent. (Class A); 18, or 43.90 per cent. (Class B), and 14, or 34.14 per cent. (Class C).

### FIGURES VALUELESS.

To anyone judging by these figures alone it would appear that the Class A vehicles had better staying power than those of Class B, but that Class C carriages had more than either. The fact is that these figures are of no practical value, on account of the indeterminate factor of repairs en route. To anyone who participated in the test it must have been apparent that the Class A carriages were the ones upon which the largest proportion of the serious repair work was done. The manufacturers who entered the majority of the Class A vehicles had very large facilities in the way of mechanics and repair parts, and seemed to be fully organized to meet all emergencies. In passing through the repair shops at the several night controls the impression was confirmed in the writer's mind that the depreciation upon the Class A vehicles was relatively enormous compared to that of the other classes, and that the very light carriage had shown its practical unfitness for long distance high speed touring over bad roads.

The very light carriages arrived in a highly creditable manner, but it was at the expense of nearly the whole life of the machines in some cases. Still, one is yet more or less in the dark upon this question of the endurance of the different classes, as the weight question is complicated with many others and enough data is not at hand. One can only form a general impression.

As nearly as can be learned from figures at hand 34 of the 74 vehicles arrived at Albany, Herkimer, Syracuse and Rochester before the close of the night control. Of these carriages 23, or 67.64 per cent., were gasoline, and 11, or 32.35 per cent., steam.

64.9 per cent. and 35.1 per cent. would be the relative proportions of the two motive powers which we should expect from the proportions of the two at the start from New York. This may mean that the gasoline carriages are somewhat more to be depended upon for work of this sort, but it is not safe to generalize too broadly upon so narrow a margin of difference.

Of the 34 carriages which made all four controls on time 8, or 23.5 per cent., were Class A; 14, or 41.2 per cent., were Class B, and 12, or 35.3 per cent., were Class C. The figures to have been expected on the basis of the proportion of the three classes at the start are 23.0 per cent., 48.6 per cent. and 28.4 per cent.

The class C carriages are evidently possessed of great endurance for heavy service.

## THE HILL CLIMBING CONTEST

at Nelson Hill demonstrated that a 16 per cent. grade on country roads was beyond the ability of nearly half of the machines entered when carrying their full loads and not stopping for steam to rise or throwing out clutches to gain speed in the gas engines.

A little over one-half of about sixty-five carriages observed went up the hill without stopping and apparently with their normal load.

Possibly many of the machines were geared higher than usual, with a view to high speed, and may have made a less creditable record than otherwise, but it may be said that most of the established makes of American machines showed their ability to deal with the hill in a satisfactory manner. Nelson Hill may be regarded as about as severe a test as an automobile ought to be subjected to on the roads of a civilized country. Some of the machines which had evidently been designed to meet European conditions failed miserably upon Nelson Hill and other grades and cannot be thought of seriously as touring machines as they are at present engined and geared.

## REVISION OF CATALOGUES.

The performance of many of the machines which were unsuccessful enables one to intelligently revise their catalogues under the heading of "Hill Climbing Ability" by striking out the words "30 or 40 per cent." and substituting 10 or 15 per cent. Although the road was perfectly dry, in two cases driving wheels were seen to skid badly, which argued a bad disposition of the weight available for traction.

## A MAGNIFICENT GENERAL DEMONSTRATION.

It is very unfortunate that the real *inside results* of the test will never be known to the general public. The awards, based only upon the times of departure and arrival of a vehicle, and taking no account of its mechanical history in the way of repairs, will convey no idea of the actual endurance possessed by the vehicle. But this is no one's fault. The Endurance Test has accomplished a work more valuable and far reaching than the accumulation of mere technical information relating to an unformed and chaotic industry; it has afforded a magnificent and convincing demonstration to a large body of people of the possibility of mechanical traction under existing conditions and has settled once for all that the people who are devoting themselves to the organized promotion of automobilism are thorough gentlemen and capable executants of a difficult enterprise, the success of which they have deeply at heart.

Nothing but the most cordial good will and interest were aroused by the test wherever it passed. The infrequency with which the criticisms "clumsy" and "noisy" were heard shows how far education has already advanced.

## THE FLASH BOILER.

One point of novelty in this test was the first public appearance in America of the

flash boiler. It certainly earned for itself the respect of all by the very creditable performance which it made, which was, perhaps, the most interesting feature of the test. Nothing could be told as to the endurance of these boilers, as they were all new machines, it is understood. The future of the flash boiler will be watched with great interest.

It is apparent to one who went with the test that

#### THE REAL WINNERS

of the contest, as far as endurance is concerned, are certain American manufacturers whose vehicles came through well and deteriorated very little, but who can, of course, gain no public recognition of the fact. These concerns are mostly conservative people, who have been perfecting their product and dealing with a small but satisfied clientèle, while others have been selling stock and doing useless "stunts." They have not servilely copied foreign methods or confined their tests to boulevards, and have thus developed a distinct type of American automobile with durable motive power and a stout running gear, capable of dealing successfully with American roads. They mostly showed themselves fine, serviceable machines, and when the time comes when it ceases to be necessary to carry along spare tires in order to reach a destination, they will prove actual vehicles of utility to the public at large.

Everything considered, the Endurance Test was a great success, despite the lamentable event which caused its premature close.

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#### Some Conclusions.

BY E. C. OLIVER.

The Endurance Run, except for the unfortunate circumstances leading to its abandonment at Rochester, instead of Buffalo, was an exceedingly instructive affair. With uniformly bad roads and continued rains the run was indeed a test of endurance, not only for the machines but also for the operators. It is only surprising that as many of the machines were able to reach the control Friday night, even with the extensive repairs made at each stop.

It is doubtful if any really reliable conclusions can be drawn from this run as to the actual endurance of a machine for touring purposes, except perhaps that a machine which could successfully negotiate that class of roads could certainly travel over anything likely to be encountered; however, it is not probable that such roads would be attempted under ordinary circumstances.

It is hardly possible that a machine, any standard make, operated by an ordinary driver and carrying only the usual repair parts, could make the trip, as it was only by thoroughly overhauling the machines at each stop by mechanics that they were in condition to continue the next morning.

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even engines and boilers being replaced in some cases to keep the vehicles on the road.

To obtain information concerning the more prevalent troubles was next to impossible because no operator was ready to admit that anything serious had occurred to his machine, and from the standpoint of the observer in a passing carriage the trouble was apt to appear more serious than it really was. From what could be seen at the night controls there were no general failures, the repairs varying from a general inspection and oiling to a complete overhauling of the carriage. It was noticed, however, that regarding motor troubles the single cylinder machines caused by far the least loss of time, the repairs to motors seeming to be much more than proportional to the number of cylinders.

Regarding the advantage of one class of machine over the other, it was evident that the heavier class of gasoline vehicles came through to the end in better condition generally, than the others; still, in this case, as in all others, there were exceptions. Any machine which succeeded in reaching the night control at Rochester was considered deserving of the utmost credit.

From the Albany control the contest was as much one of drivers as of machines, to which fact the tracks left in the soft roads testified. It was with the greatest difficulty that the machines were kept in a straight course, the most unexpected things happening to cause them to take to the ditch or drive for a stone wall at any time, and in not all cases was this prevented. In some instances the machines were turned completely around, greatly straining the axles and rims.

Probably the worst stretch of road was encountered between Oneida and Lyons, the surface being softened by the rains and the stones beneath exposed in such a way as to make their presence very noticeable. An idea of the effect of these roads on the tires may be obtained when it is stated that wheels wound with rope, as is the custom for such roads, had the rope entirely worn through when they reached the next control.

From Lyons to Syracuse the roads improved somewhat, in comparison, but nowhere were they even in fair condition for any distance.

On the start from Syracuse in the morning, even through the city on asphalt and brick paved streets, several of the machines gave out, one passed having a front wheel off, and other failures of a serious nature were noticed, the cause probably being the previous day's hard work and an oversight of the weakened part when making repairs. One feature of the run from Syracuse was the stretch of road built by the Government as a sample road, somewhat over a mile in length. This offered some consolation to the automo-



bilists after what they had endured, giving them hope that some time in the future there would be more miles of such road on which to make an endurance test.

It is somewhat disappointing that there was not even ordinary weather throughout the trip, so that some idea could be formed as to the real ability of an automobile to make such a run with ordinary care.

It also seems that some record should have been kept as to the amount of repairs on the various vehicles and the number, time and purpose of stops, as was originally intended, since the fact that a machine really did get to Rochester does not mean that an ordinary owner, however skillful, could do the same thing with the same machine. On the other hand, it would give the operator starting out on such a trip an idea as to the extent and character of the repairs necessary and the parts he should carry with him.

Aside from the actual operation of the machines, there were several notable features of the trip, not the least of which was the general interest in the affair shown by the people along the route.

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### **Deductions and Cursory Remarks.**

BY HUGH D. MEIER.

If the 100 mile endurance contest of the Long Island Automobile Club can be considered a success the 500 mile contest of the Automobile Club of America certainly was an unqualified success. Fifteen vehicles started in the former run, and ten of these completed the course before the control closed. Eighty vehicles left New York city on September 9 and forty-three of these reported at Rochester at the night control station. The ratios of the number of vehicles that started and the number that finished are practically the same, while, of course, the test was much severer in the latter event.

A good many of the machines that arrived did not require overhauling or extensive repairs at any time, as the vehicles that did call for extensive repairs dropped out of the contest sooner or later. Had the roads been less treacherous most of the vehicles would have made a better showing, and many a break down which caused temporary delays avoided. The writer does not hesitate to say that this contest was a severer trial on the vehicles and their occupants than any similar contest of 1,000 miles or more on European highways has been or could be.

The majority of the machines in this contest were stock machines, and most of them were only recently out of the factory. Many of them, particularly the light steam carriages, should never have started on this run. No matter whether these light vehicles covered the distance in good time or not they were decidedly out of place. Had they been in charge of men not thoroughly familiar with all their details none of them would have reached Albany. One of these light rigs received a new engine