MOTOR NOTES FOR MEDICAL MEN.

BY H. MASSAC BUIST.

HOW TO READ THE SCOTTISH TRIAL RESULTS.

WHILE the Royal Scottish Automobile Club, like the Royal Automobile Club, is unable to create what might be called new fashions in cars, nevertheless by recent enterprise both organizations are helping to pave the way to the production of vehicles that will suit the needs of owner-drivers in particular better than those hitherto available. Thus even in the case of the Manx motor racing for the Tourist Trophy and for the "Fifteen Hundred" Trophy, which is really one of the final phases of experimental work, very valuable progress has been made under three headings, among many others—namely, in the direction of the evolution and use of mixed fuels with power alcohol as an essential ingredient; in the evolution of brakes to all four wheels; and in the demonstration of the fact that the corded type of tyre makes for amazing durability and economy and will presently be available, without undue weight, on the straight-sided principle with light rim. The mixed-fuel proposals will interest medical men in very practical fashion at no distant date, for some of our largest fuel-distributing organizations have already completed plans for engaging in the business on a commercial scale. These mixed fuels are evolved in measure as the liquid-fuel internal-combustion engine is developed.

THE COMING OF MIXED FUELS.

If the standard car trial in Scotland, or the special racing cars run in the Isle of Man, or, more particularly, those which will be raced for the Grand Prix on the Strasbourg circuit in the middle of this month, be examined, it will be found that the greatest progress is being made in the direction of producing more power from smaller engines. This is made possible by the use of compression ratios far higher than those formerly employed. For example, when the war broke out a $5\frac{1}{2}$ to 1 compression ratio was considered almost too high even for aircraft engines; whereas the Vauxhall cars raced in the Isle of Man had compression ratios of about 7 to 1, and several cars that will figure on the Strasbourg circuit will have at least that. One result is that we are getting 90 h.p. out of a 2,000 c.cm. engine, or what we should call approximately a 14-h.p. type Treasury rating. But these powers, which are capable of propelling chassis at extraordinarily high speeds, are being developed with an amazing fuel economy, particularly if we cast our minds back to the days when we were racing with engines of ten times the volume that figured in the "Fifteen Hundred T.T.," the earlier vehicles achieving only 60 per cent. of speed on an easy course and under better weather conditions than obtained in the Isle of Man last month, when the miniature engined vehicles were raced. In other words, a glance at the story of racing reveals plainly that we have been reducing car weight, increasing reliability, and reducing the engine space in relation to the chassis space, as well as the fuel and tyre consumption in relation to the work done. Special bi-fuel carburettors are ready for standardization; and the motorist will have the opportunity of choosing either to develop greater horse-power or to save 25 per cent. of his fuel bill and develop as much power as at present, or to combine parts of the two gains.

But at present, though the straight-sided tyres certainly make for economy under the most severe test of all—namely, racing, wherein the wheels have to be skidded round the corners and the side strains are therefore at the maximum, nevertheless the weight of the detachable rims is at present an objection to their immediate universal use. Information of which I am possessed, however, leaves me no manner of doubt that this particular weight problem will be solved at no distant date. Further, the risk of the detachable rim rusting *in situ* is likely to be eliminated by the materials that will be employed. Already it is possible with the corded tyre on the beaded-rim principle to obtain an average of two and a half times the tyre mileage that was possible with canvas tread tyres. When it shall become possible to use a straight-sided tyre without extra weight and without any possibility of the rim rusting, tyre mileage will be increased still more. Thus already we have reached the point at which tyre costs are lower than they were before the war if we put them on the only possible scientific basis—namely, cost per car mile.

POINTS ABOUT SMALL CARS.

In the recent trial of standardized small cars by the Royal Scottish Automobile Club, the awards in connexion with which were published in these columns last week, it is interesting to note that, though under the heading of tyre trouble each competitor was allowed sixty minutes during the whole week in the course of 1,020 miles running without being penalized, only one competitor of the forty-four who started exceeded that allowance, and that by a margin of three minutes only. From this the conclusion might be drawn that these cars are adequately tyred as a class. But I think it would be an erroneous one. At least, the impression I gathered myself when watching some of the hill-climbing work in the Highlands was that there is a tendency by the trade to under-tyre small cars as a class. Curiously, in the other extreme there is a tendency in some of the middle-class cars to over-tyre. One useful result of the Scottish trials will, I think, be to cause some of the leading makers of small cars to fit larger tyres next year. But as long as we use the beaded-edge type of tyre, which is likely to be with us for another season or two in the majority of cases, there is no question that it is necessary to have proportionately somewhat larger tyres, both for comfort in riding and as to the air space, to ensure the necessary strength. Vast improvements have been made in the corded tyre, and I gained another impression in Scotland concerning tyres for small cars. I am quite sure some of the competitors strove to save their springs in what was certainly a punishing test—many of the road surfaces were of an extremely irregular character—at the expense of their pneumatics by running them somewhat slacker than the tyre makers specify. This is a foolish policy and is bound to lead to trouble. No car owner should ever slacken his tyres with a view to saving his springs; it is sure to result in nipping, ripping, or otherwise destroying the tubes, while the wrong sort of play occurs to the walls, particularly when corners are taken; therefore the treads get worn out untimely.

THIS YEAR—AND NEXT.

In face of the very great proportion of hill climbing that had to be done in the course of the tour and of the fact that some of the ascents over which the competitors were not timed were of more severe gradient than those over which they were it means a deal for these little cars to average 20 miles an hour from point to point. Indeed, I have in mind one particular hill climb, not in the timed area, along the descent following which we were riding in a big 6-cylinder car at from 10 to 12 miles an hour only because the back axle was crashing against the side members of the car frame every now and again the moment we went any faster, so irregular was the surface of the mountain road. The driver of this non-competing, lightly laden car tried to soothe our anxiety when we hinted that we might be getting home somewhat late by saying that it was impossible that the small cars could go as fast as we over that route. I pointed out, however, that according to their showing they would keep up the schedule, though, admittedly, on some of the steeper ascents they could not average 20 miles an hour on the climb; therefore their only chance of keeping to schedule was to go over the ground we were traversing at 10 to 12 miles an hour at 25 or 35 miles an hour. That is precisely what they did; it being quite remarkable how closely these little vehicles kept to schedule. I saw them come in at the end of that day's run, as on other nights. Quite 80 per cent. of the competitors came in within a minute of their schedule time on a day's run of anything from 160 to 180 miles. The tests showed clearly that these little vehicles can be built to stand rattling over bad roads. Further, the club's method of examining the cars that appeared to do best in the Trials at the end of the test, to make sure that they really were in good condition before granting awards, is a wise move, and makes such awards of additional value.

Some would urge that the trials should be extended next year to embrace vehicles with engines up to 2,000 c.cm. volume, instead of setting the limit at 1,600 c.cm. as this year, but that would be a mistake. There is no particular need to try vehicles as large as 2,000 c.cm. engine volume in tests of this sort next year. There will be forthcoming then quite as many 1,600 c.cm. vehicles as even the Royal Scottish Automobile Club itself could handle because many members of the British, and European, industry who abstained this year have suddenly recognized the value of what is the most scientifically conducted and all-round test of standard small cars ever attempted; moreover, the relatively few awards given

increased their value. Next year also the American industry will have fully entered on the light car business, and as the Scottish classification of standard vehicles is on a price basis the Americans, with their low costs, would have every advantage in competing, and will assuredly do so in considerable numbers. We should therefore rather reduce the engine volume from 1,600 to 1,500 c.cm. than put it up from 1,600 to 2,000 c.cm. for the 1923 Scottish standard small car trial, in which German products are sure to be represented.

ASPECTS OF FUEL CONSUMPTION.

The report on the trial published by the Royal Scottish Automobile Club occupies 39 foolscap pages, and is the most valuable document any intending purchaser of a small car can study. The figures under all heads are of extreme interest, including brake tests, acceleration, six different hill climbs, and fuel consumption tests. The last-named are particularly interesting when fresh forms of fuel and carburetors suitable for their use are about to be developed. The leading carburetor firms are fully prepared for the coming change, which will give us still further economy to an extent aggregating some 25 per cent. on present performances. Yet some of the present-day performances in the small car class, as now certified by the Scottish trial figures, are extremely economical.

It does not follow, however, that cars which are the most efficient as standardized in relation to one another, or to their classes, will necessarily make the greatest appeal under this head to the average user. It depends entirely on what the vehicle does. For example, if we take the order of merit in all classes for the entire competition, we find that the first place went, as was mentioned last week, to a 11.4-h.p. 4-seater Citroën car. It happened to be one of the heaviest cars in the trial, weighing 2,502 lb., and did 41.112 ton miles to the gallon; but because of its weight the actual road miles that car did to the gallon of fuel was 36.802. To the non-technical, therefore, there were plenty of cars that ran cheaper than this. For example, one 10-h.p. 2-seater G.N., which came out 19 in the order of merit of fuel consumption, and weighed 1,394 lb. when competing, did 30.342 ton miles to the gallon only, but travelled 48.723 road miles to the gallon. The motor owner has to pay the petrol bill for his vehicle in terms of road miles to the gallon; consequently one wants to consider the statistics under their two headings. Again, sometimes there are unexpected variations. Thus, a second 11.4-h.p. Citroën car, which weighed somewhat more than the machine that came out best under fuel consumption, scaling 2,527 lb., did 37.485 ton miles to the gallon and 33.243 road miles to the gallon as a 4-seater.

TON MILES v. ROAD MILES.

I find that a 2-seater 10-h.p. G.N. which competed in the lowest class for cars costing not more than £250, did 35.123 ton miles to the gallon, which, however, in the case of this car, which scales 1,442 lb., worked out at 54.59 road miles to the gallon. The two 9-h.p. air-cooled Stoneleigh cars, which also competed in this class, and which did best on the hills alike on time and on formula, and in many other respects came out first and second in their class, were notable for carrying three passengers throughout the trial, and weighed 1,691 lb. and 1,617 lb. respectively, did 35.990 and 38.582 road miles to the gallon respectively. Among the 2-cylinder water-cooled two-seater cars one 7-h.p. Wolseley weighed 1,647 lb., did 22.527 ton miles to the gallon, and did 30.623 road miles to the gallon; while a sister machine weighed 1,579 lb., did 21.71 ton miles to the gallon and 30.796 road miles to the gallon. The 10-h.p. 4-cylinder water-cooled Swift weighed 1,786 lb., did 35.178 ton miles to the gallon and 44.113 road miles to the gallon; but it did not distinguish itself on the timed hill climbs. One of the two-seater 8-h.p. 4-cylinder overhead valve engined Talbots weighed 1,778 lb., did 31.267 ton miles to the gallon and 39.425 road miles to the gallon, doing notably well on hills, as did the sister machine, which weighed 1,745 lb., did 31.521 ton miles to the gallon and 40.501 road miles to the gallon. By contrast one 10-h.p. 2-cylinder air-cooled B.S.A., which, like the sister machine, carried two persons throughout the trial, weighed 1,795 lb., did 30.565 ton miles to the gallon and 38.135 road miles to the gallon, but did not distinguish itself particularly on the timed hills. Nor did the sister machine, which weighed 1,817 lb., did 28.206 ton miles to the gallon and 34.767 road miles to the gallon. The 11.9-h.p. Star cars did notably well on the hills, and in other respects, one, weighing 2,391 lb., doing 37.120 ton miles to the gallon and 34.727 road miles to the gallon; while the sister machine weighed 2,425 lb., did 34.492 ton miles to the gallon and 31.879 road miles to the gallon. The 11.9-h.p. A.C. weighed 1,953 lb., did 24.156 ton miles to the gallon and 27.712 road miles to the gallon, being thirtieth out of forty-four competitors in order of merit in fuel consumption, in the whole trial, and last but one of its class in order of merit on hill climbs and speed tests on formula. One of the 12-h.p. Talbot-Darracqs, both of which carried four men throughout the trial,

weighed 2,934 lb., did 35.932 ton miles to the gallon and 27.432 road miles to the gallon; and the sister machine weighed 3,018 lb., did 33.205 ton miles to the gallon and 24.655 road miles to the gallon.

BRAKES, ACCELERATION, AND HILL CLIMBING.

The order of merit in regard to the brake test showed that the following came out best in their respective classes:

9-h.p. Stoneleigh, 7-h.p. Wolseley, 10-h.p. Swift, 11.9-h.p. Star, and 12-h.p. Talbot-Darracq. The order of merit in each class in the acceleration test showed the following cars did best: 9-h.p. Stoneleigh, 8-h.p. Amilcar, 8-h.p. Talbot, 11.9-h.p. Star, 12-h.p. Talbot-Darracq. The hill-climbing and speed tests marks on formula showed the following cars to be the best of their respective classes: 9-h.p. Stoneleigh, 8-10-h.p. Rob Roy, 8-h.p. Talbot, 11.9-h.p. Star, and 11-h.p. Riley.

SOCIETY FOR THE PREVENTION OF VENEREAL DISEASE.

THE third annual meeting of the Society for the Prevention of Venereal Disease was held at the house of the Royal Society of Medicine on June 29th.

LORD WILLOUGHBY DE BROKE, who presided, said that the general situation was the same as when he addressed a similar meeting a year ago. The Ministry of Health had not found itself able to apply the teachings of science to the prevention of venereal disease. There were, however, some hopeful indications that the National Council for Combating Venereal Diseases might presently co-operate with the Society. He quoted from the eight-point manifesto of the Council, published in 1921:

"If an individual has incurred or has reason to think that he or she has incurred risk of infection, it is his or her bounden duty to cleanse himself or herself thoroughly and immediately."

This appeared to be a complete acceptance of the policy of immediate self-disinfection. Moreover, in the *Venereal Clinic*, edited by Dr. E. R. T. Clarkson, formerly a member of the National Council, it was stated that the National Council "have fundamentally moved from their original position to one which is practically shared by the Society for the Prevention of Venereal Disease." Even more telling evidence than this was available. A work by Sir Leslie Mackenzie, which had received the endorsement of the National Council, contained the following:

"It is absurd to say that there is any danger in teaching every person capable of being taught that the venereal diseases are each of them due to a definitely known germ; that, so long as the germ lies on the surface, it can be destroyed with a mild disinfectant or even mechanically removed by soap and water without much trouble; but that when one of those germs enters the channels of the body and infects the lymphatic glands or the blood, the destruction of the germ, which is another name for the cure of the disease, becomes, in at least two of these diseases, a matter of extraordinary difficulty and demands high technical knowledge and skill."

Lately (Lord Willoughby continued) there had been some decrease in the incidence of venereal disease in this country; the decrease synchronized with the public controversy on immediate self-disinfection, and the consequent publication of a great deal of knowledge which had hitherto been concealed from the public. In France, according to the report of the French commission of inquiry, one-tenth of the population were suffering from syphilis, the deaths due directly or indirectly to this cause numbered 140,000 a year, and the cost of syphilis alone was several milliards of francs. He rejoiced in the setting up of Lord Trevethin's Committee, and in this connexion he referred to a letter by Lord Dawson which had appeared in the press, and which urged that—

"Until some conclusion supported by a considerable preponderance of opinion has been reached it cannot be reasonably expected that the Ministry of Health should do otherwise than maintain impartiality and give a fair field and no favour to the two schools of thought and action. As a logical consequence grants of money should be made either to both or neither of the corresponding societies."

Lord Willoughby thereupon proposed a resolution that the Ministry of Health should again be approached with a request for financial support to assist the society in carrying out its policy.

This resolution was opposed by Mr. HAROLD COX, who thought it would be more polite to await the decision of the Committee of Inquiry, and he was supported by Sir BRYAN DONKIN and others. Eventually it was agreed unanimously that as soon as the Committee of Inquiry had reached a decision the Ministry of Health should be approached on the subject.

Mr. WANSEY BAYLY, honorary secretary, gave an account