directions given are so clear and concise that the book should be of much utility to probationer nurses, and might also be very useful to those who have to give lectures to them as a source of texts on which to dilate.

The publications of the Association of Standardized Knowledge now include, among others, *The Strategy of Nature, Axioms and Principles of the Science of Organization, Needs and Ideals*, and *Standardization in Education*.¹² They are part of a series now being published under the general title of the Synthetic Series, all being so written as to explain and illustrate the science of organization, as formulated by Mr. Marshall Bruce-Williams. It is claimed that this science is essentially practical and has immediate reference to most of the problems of the day. It rests on the axiom that all society is an extension of the individual, and includes three principles named duality, degree, and the line of least resistance. The essential difference between this and similar attempts to find formulae for the absolute in Nature is stated to be that Mr. Bruce-Williams has provided his science with a theoretic unit—an imaginary individual exceeding all actual individuals in every respect and measuring 100 in every sense, function, and faculty. The president of the organization is Mr. Bruce-Williams himself, most of the vice-presidents being army officers, including several officers of the Royal Engineers. Certain charts used in the pamphlet on *Standardization in Education* are stated to be applicable to all educational work, and enable it to be seen at a glance what progress, if any, is being made. The War Office appears to be making use of some of them.

The official report of the *Proceedings of the National Conference on the Prevention of Destitution*¹³ last summer constitutes a useful record of current thought on a subject having many relations with the problems of everyday medical life. Many of the speakers were medical men, and the president of the public health section was Sir Francis Champneys. The other sections which shared the general work of the conference were entitled Education, Housing, Unemployment, Crime, and Inebriety. Most of the sections seem to have held eight sessions, and the proceedings occupy a royal octavo volume of nearly 800 pages, which, being very closely printed and naturally devoid of illustrations, present a somewhat formidable appearance.

A copy of *Low's Handbook to the Charities of London*,¹⁴ which has reached us, is the seventy-seventh annual edition of this useful reference book. It is the senior publication dealing with the subject, and making its appearance in the third quarter of each year, contains accounts of changes which have taken place subsequent to the issue of other like books. The charities are placed in alphabetical order, and all those seem to be included which have their head quarters in London, wherever the actual work may be carried out.

DIARIES.

The rapidly approaching demise of the year 1912 is borne in upon one by the receipt of a number of samples of a fresh issue of the original *Letts's Diaries*, which for some years have been published solely by Messrs. Cassell and Co. They are of all shapes and sizes, varying not only in the amount of space that they provide for daily entries, but also in regard to the general information they supply. The latter is in many cases carefully specialized, to meet the needs of those who pursue various occupations. How wide is the ground thus covered will be sufficiently indicated by mentioning that the specimens before us range between diaries for social and general business purposes and volumes for printers, nurses, and doctors. The binding in all cases is strong, and in some elegant. A further point not without importance is that each includes an insurance coupon of a comprehensive character. The diary for nurses includes plenty of space for recording details regarding the progress of cases, while that for doctors contains a well-arranged visiting list.

¹² *The Strategy of Nature*. (Crown 8vo, pp. 60. 2s. 6d. net.) *Needs and Ideals*. (Crown 8vo, pp. 14. 3d.) *Standardization in Education*. (Crown 8vo, pp. 14. 3d.) *Axioms and Principles of the Science of Organization*. (Royal 8vo, with many coloured charts and diagrams, pp. 21. 7s. 6d.) London: The Association of Standardized Knowledge, 15-16, Buckingham Street, Adelphi, W.C. 1912.

¹³ *Proceedings of the National Conference on the Prevention of Destitution*. London: P. S. King and Son. 1912. (Roy. 8vo, pp. 793. Price 10s. 6d. net.)

¹⁴ *Low's Handbook to the Charities of London*. Seventy-seventh year of publication. London: Charles H. Sell. 1912. (Post 8vo, pp. 250. Price 1s.)

THE CYCLE CAR SHOW.

FROM THE MEDICAL MAN'S POINT OF VIEW.

By H. MASSAC BUIST.

THERE is no gainsaying that from the medical man's point of view the Cycle Car Show at Olympia, Kensington, which closes on Saturday evening, is a development of very considerable interest. To him it matters not that the Auto-Cycle Union's technical committee are floundering in vain endeavours to define what manner of machine a cycle car is, because he will deal only with those vehicles with a maximum engine volume of 67.1 cubic inches and a chassis weight not exceeding 6 cwt., and will not accept the Auto-Cycle Union's temporary definition by entertaining the idea of any three-wheeled vehicles, which he will regard as being motor tricycles, just as the Treasury does. Instead, the medical man has a present and, more particularly, a future use for what shall be evolved under the name of the cycle car with four wheels, and what shall therefore come under the two-guinea Treasury tax because that department regards any four-wheeled machine as being a car.

Indeed, if we are to be guided by what is staged at Olympia to-day, it is the addition of the fourth wheel alone that need be borrowed to justify the use of the word "car" in the style of this new hybrid vehicle. In the case of the bulk of the material presented for consideration, candour compels one to say that the medical man has no use for it yet. The reason is the very obvious one that too many of these vehicles have been hastily designed and produced at the last moment; in consequence, at least 80 per cent. of them have not been tested to anything like a sufficient extent. Further, inasmuch as reliability is one of the essentials for the medical man's service, and inasmuch as no fresh development can be proved reliable until it has had twelve months' service in the hands of the public—because things occur in these circumstances which never arise when the most conscientious and skilled tester is even deliberately abusing a machine to prove its power of resistance—it follows that the cycle car, as a general proposition, will have a vastly greater interest for him a year hence than it can have to-day.

TWO SCHOOLS OF CONSTRUCTION CONTRASTED.

There are, however, exceptional cases. Take that of the Swift concern, whose cycle car can scarcely be called an experiment, since it departs in so little from its already lengthy experience in small car construction. This machine, which is marketed complete for £125, follows car practice in that the vertical, water-cooled motor is a block casting, the three-speed gearbox is a self-complete unit, the suspension fore and aft is by semi-elliptic springs, the steering pillar is conventional, and the body gives two seats with high doors, the driver's being a little in advance of his companion's, which is recessed, on a principle employed in some of the early *coupe de l'auto* races for light cars, to give the maximum seating accommodation for a minimum car width. But in the matter of the frame, which is of the tubular sort, and the wheels, which are of the wire variety, and in sundry other details, cycle practice is introduced to bring the weight down to the limit of 6 cwt. prescribed for cycle-car chassis. The motor, too, instead of having four cylinders, for which there is alone a market in the car world, is a two-cylinder type of 75 mm. bore by 110 mm. stroke, so that the machine is of 7-h.p., according to Royal Automobile Club rating; actually, it gives considerably more power.

This firm, therefore, departs so little from its previous small car practice, and has, moreover, tested this vehicle to such an extent, that it is prepared to place as many of these machines in the hands of the public as it can produce this year, in contradistinction, for example, to the Rudge-Whitworth policy, which goes along the lines that, beyond having a fourth wheel, a cycle car must embody nothing whatever of motor car practice, but must be, instead, a machine built wholly on motor cycle lines, and, therefore, one which can be looked after by any motor cyclist, hence in the Rudge production there is no change speed gearbox controlled on the gate principle. There is neither chain nor propeller shaft drive, neither bevel nor worm back axle mechanism, nor differential gear. Instead, three belts are employed, also an air-cooled motor with a single cylinder of only 50 per cent. more capacity than the

standard $3\frac{1}{2}$ -h.p. Rudge motor bicycle engine. Yet, by reason of the complete vehicle scaling with body considerably less than the weight limit set for a cycle car chassis alone, this one-cylinder suffices to propel the machine easily at a speed of forty-five miles an hour, and it can be accelerated up to nearly a mile a minute.

It will be seen, however, that, in place of being a vehicle of familiar appearance, this is something fresh to our ken, and therefore necessarily largely experimental. The suspension is extraordinarily low, and, as staged at Olympia, the exhaust pipe has a clearance of scarcely more than 2 in. at one point, but such details as that are to be modified in machines subsequently to be produced. A point to note *à propos* of the Rudge is that these new-style vehicles, with their relatively fast speed powers and extraordinarily light weight, will certainly experience, among other difficulties yet to be overcome, trouble in the matter of holding the road. Hence it is interesting to study the extraordinarily low centre of gravity combined with the proportionately broad track of the Rudge. Most of the cycle cars staged at Olympia are far too narrow in the track, and the centre of gravity is proportionately much higher than in the motor car proper of to-day.

FUEL CONSUMPTION NOT YET STUDIED.

When pondering the question of the cycle car at a period when the price of petrol has reached the abnormal figure of 1s. 8d. a gallon, the first thing the medical man of moderate means would assume is that not only his tyre but also his fuel costs in the case of a vehicle weighing a quarter or at most a third of that of the ordinary motor car would be proportionately less. These are the times when we can get cars weighing 27 hundredweight unladen, to travel with two passengers twenty miles to the gallon as a matter of course, save in hilly districts. Judge, then, one's natural surprise at discovering by process of tedious and exhaustive cross-examination that there are mighty few of these cycle cars which will do more than thirty miles to the gallon. That reveals incidentally how little time there has yet been to study the scientific problems of the cycle car, for obviously machines of this weight must, within a year or two, be doing easily forty to fifty miles on a gallon, and there is no reason whatever why they should not be doing eighty miles to the gallon as a matter of course in the hands of the average user four years from now.

Apparently some of the best results in the matter of petrol consumption are to be got with the types of cycle cars that are such in name alone, as, for example, the Singer machine, which can be described only as a car in miniature. This is what might be called a *de luxe* pattern in cycle cars, for it is sold complete with hood, screen, spare wheel and tyre, lamp sets, horn, tools and so forth for £185, the motor being a four-cylinder block casting water-cooled, with 63 mm. bore by 88 mm. piston travel, while the drive is from the clutch by propeller shaft to a three-speed gearbox, which is combined with the bevel and differential mechanism in the back axle. Here is a type, therefore, which has certainly an appeal to the medical man, but which, equally certainly, is no mechanical novelty. It is, instead, a motor car produced on the most up-to-date lines but on a scale so light as to come within the cycle car chassis weight definition, and therefore, with a small engine of a refined and balanced character and relatively wide range of revolutions, to give rates of travel at more than double the legal limit. As shown with covered two seats, coupé style coachwork, it looks quite a dainty car for doctors' use.

Humbers, on the other hand, incorporate much of cycle practice in their cycle car. It is marketed complete with hood, screen, horn, head and tail lamps at £125, which would appear to be about the average price of these vehicles. Nor does one see any immediate necessity for their being brought down to the sum of £100, which in the lay mind appears to constitute the main definition of a cycle car. In face of the fact that we are striving to evolve a wholly fresh type of machine, it were surely better that we should seek first to overcome all the mechanical difficulties, for then the market will be so large that, on the mere principle of reproduction work, costs can be brought down to an extraordinary extent. The Humber car follows the Singer in that the gearbox is combined with the back axle, but for all its outward

appearance suggesting the lines of a motor car, the Humber is distinctly the embodiment of cycle practice, including the tubular frame, the wire wheels, and the employment of an air-cooled, V-set, two-cylinder motor of 84 mm. bore measured by 90 mm. piston travel. A half elliptical transverse spring is used for the front suspension, while two quarter-elliptical springs are employed behind. The bonnet is of the sloping sort merging into the scuttle dash, and there are high side doors to the seats, which are well forward of the back axle, the whole machine having a neat appearance.

MACHINES MOSTLY UNDER-TYRED.

When one has in mind the fact that many of the forms of power transmission are somewhat on the crude side, and also that most of the vehicles are capable of a goodly turn of speed, there can be no gainsaying that the majority of them are under-tyred. The suspension is also obviously more suitable to a motor cyclist's habits of road travel than to those of persons accustomed to going about by car or carriage. Thus from the medical man's point of view a round dozen of machines may be dismissed from consideration by reason of their having friction drive, crude suspension, or what not.

But mention may be made of such types as the Chater-Lea machine, supplied complete with body and two-cylinder water-cooled motor at 135 guineas. This vehicle has channel section, pressed steel frame, inswept forward to afford wide steering lock, self-contained gearbox, and overhead worm drive in back axle. There is also the Acton-built Wilkinson 7-h.p. cycle car with 4-cylinder water-cooled motor, the gearbox giving three speeds forward with a direct drive on the top, also a reverse, and the live axle has a bevel drive and differential gear.

The makers of the Bowden brake are among those resolved to enter into this new industry, in consequence of which they bring forward the Tyseley car, named after the district in Warwickshire in which their factory is established. Though a two-cylinder V-set engine is employed for this, it is a water-cooled one. The machine has a distinct appearance by reason of the employment of a channel section pressed steel frame dipped pronouncedly between the two axles to afford low entrance, while the rear suspension is by three-quarter elliptical springs, and the back axle is equipped with bevel and differential gear, the whole car weighing under 8 cwt. It is not designed for speed work, but rather to be suitable for refined service at between twenty-five and thirty miles an hour, the price being 160 guineas, including spare wheel and tyre, hood, screen, lamps, horn, and tool kit, while for the medical man it is furnished complete at 185 guineas with coupé body.

The 8-h.p. Arden cycle car, marketed at 117 guineas with hood and screen, has a gearbox giving three speeds and a reverse, with the direct drive on the top, together with bevel-driven back axle and differential gear. It is, perhaps, out of the ordinary in having three-quarter elliptical front springs and a frame fashioned of oak, reinforced by steel fitch plates and suitably stiffened by cross members. A twin-cylinder 8-h.p. engine is employed.

The Alldays' "Midget" light car is sold complete for £130, the equipment including an 8-h.p. twin-cylinder water-cooled motor and power transmission through a leather-to-metal cone clutch to a three-speed and reverse gearbox, and so by cardan shaft to a worm-driven back axle.

THE late Dr. Edward Woakes left estate of the gross value of £31,157, of which £25,874 is net personalty.

MR. J. B. BRADY, of New York, has given £40,000 to the trustees of the Johns Hopkins Hospital, Baltimore, to be used in founding the James Buchanan Brady Urological Institute as a separate unit of the hospital. In addition (says the *Medical Record*) Mr. Brady will during his life pay £3,000 a year for the maintenance of the institute, and will make ample provision in his will for its continuance. The trustees intend to erect a six-story building with special laboratories for research and accommodation for both public and private patients. The benefaction is an expression of Mr. Brady's interest in the Johns Hopkins Hospital arising from his recent stay there as a patient.