x-ray evidence, while the gynaecological and dental consequences of intestinal stasis are set forth by Mr. Chapple and Mr. Forsyth. The whole book, well printed and illustrated, deserves careful study. It is the outcome of much thought, observation, and experience on the part of experts. Some of the results of the operative treatment which it advocates have been remarkable, but the actual proportion of success and failure is not recorded.

OCCUPATIONAL DISEASES.

So many acute and chronic diseases are connected with various industrial occupations, and so many increasing disabilities of every sort arise therefrom, that the massive textbook on *Diseases of Occupation and Vocational Hygiene*,² edited by KOBER and HANSON, may be accepted with gratitude as a work of reference on the problems of industrial organization. The editors contribute a most interesting historical review of the subject as preface to the volume. As all writers must, they begin with Professor Ramazzini of Padua, who wrote the first systematic treatise on diseases of occupation in 1700. It was translated into English and into French a few years later, and was the forerunner of many books in both languages, but particularly in our own.

The volume now before us is so full of facts and figures of importance as to preclude anything like a systematic review in the space at our disposal. It is divided into three sections. The first is mainly medical, and deals with the specific and systemic diseases of occupation, fatigue, and the neuroses; the second section is devoted to the causation and prevention of occupational diseases and accidents, and will repay study by employers and controllers of labour. The third and shortest section gives an account of Professor Devoto's clinic for occupational diseases at Milan, opened ten years ago; it contains statistical and legislative studies in the prevention of these diseases. We commend the book very warmly to all medical practitioners who are concerned with the subject of occupational diseases and their prevention.

NOTES ON BOOKS.

DR. RODDY'S *Medical Bacteriology*³ is designed to meet the needs of medical students, practitioners, and pharmacists. It is a painstaking piece of work, well illustrated, a little superficial in its treatment, and disfigured with numerous misprints.

*Destroyers, and Other Verses*⁴ is a small collection of short poems by Dr. HENRY HEAD. A few are definitely war poems, and express with much pathos the chagrin experienced by so many at finding themselves too old to serve. But the majority are composed of the imaginative outpourings of Camille Selden, better known in literature as "La Mouche," who was beloved by two poets, and whose friendship solaced the great Heine during the last days of his terrible suffering. In these verses, with their easy musical rhythm, doubtless inspired by the *Buch der Lieder*, Dr. Head displays an intimate knowledge of the human heart, and an insight into the strange fascination which Heine has always possessed for those who are sensitive to "the tears in things." In Seedtime and Harvest the supreme joys of motherhood and charm of infancy are described with delicacy and true feeling. Throughout, the structure of the verses has a pleasing simplicity, and the diction is pure.

² *Diseases of Occupation and Vocational Hygiene*. Edited by George M. Kober, M.D., LL.D., Washington, D.C., and William C. Hanson, M.D., Belmont, Mass. London: W. Heinemann (Medical Books), Ltd. 1918. (Med. 8vo, pp. xxi + 918; 46 figures. 32s. net.)

³ *Medical Bacteriology*. By John A. Roddy, M.D. Philadelphia: P. Blakiston's Son and Co. 1918. (Med. 8vo, pp. xi + 2.5; 46 figures, 8 in colour.)

⁴ *Destroyers, and Other Verses*. By Henry Head, M.D., F.R.S. London: Humphrey Milford. 1919. (Fcap. 8vo, pp. 87. 4s. 6d. net.)

EMERGENCY POST-GRADUATE FACILITIES IN LONDON.

THE Fellowship of Medicine has arranged with the medical schools in London and other hospitals for an emergency post-graduate course of three months for qualified medical officers from the R.N., R.A.M.C., and R.A.F., from the Dominions and the United States and Allies, admitting to their general practice, including clinical instruction in the wards and out-patient departments, clinical lectures and demonstrations, *post-mortem* demonstrations, and laboratory work.

The following is a list of the schools and hospitals available and of the special courses already in progress:

Medical School Hospitals.

St. Bartholomew's Hospital.
St. George's Hospital.
Guy's Hospital.
King's College Hospital Medical School.
London Hospital.
London (Royal Free Hospital) School of Medicine for Women.
Middlesex Hospital.
St. Thomas's Hospital.
University College Hospital Medical School.
Westminster Hospital.

Other General Hospitals.

Prince of Wales's General Hospital, Tottenham.
West London Hospital, Hammersmith.

Special Hospitals.

Cancer Hospital.
Chelsea Hospital for Women.
Hospital for Children.
National Hospital for Diseases of the Heart.
National Hospital for the Paralyzed and Epileptic.
Queen's Hospital for Children, Hackney Road.
St. Mark's Hospital for Diseases of the Rectum.
St. Peter's Hospital for Urinary Diseases.

Special Courses already in Progress.

King's College Hospital Medical School. January 24th to March 29th.
National Hospital for the Paralyzed and Epileptic. February 10th to April 10th.
London (Royal Free Hospital) School of Medicine for Women. Special 14 days' Course. March 15th to 31st: "Medicine and Surgery of Liver and Gall Bladder." May 5th to 16th: "Diseases of the Thyroids and Parathyroids."
West London Post-Graduate College (West London Hospital). February 17th to April 17th.

Special lectures are being arranged also at:

North-East London Post-Graduate College (Prince of Wales's Hospital, Tottenham).
National Hospital for Diseases of the Heart.
Cancer Hospital.

Tickets for the whole course, or for one or two months, at the rate of £3 10s. for each month, can now be obtained from Miss Willis, the Secretary to the Fellowship, who is in attendance daily from 10 a.m. to 5 p.m., and to whom all inquiries can be addressed. The card of membership for any period of the course admits the holder to any, or all, of the hospitals available, including their special courses. Time tables and syllabuses of the various courses and daily programmes are posted in the entrance hall at 1, Wimpole Street.

Arrangements are being made for a definite course of daily lectures and demonstrations in general and special subjects, at the house of the Royal Society of Medicine, 1, Wimpole Street. The honorary secretaries of the Fellowship are Mr. Philip Franklin, F.R.C.S., Mr. J. Y. W. MacAlister, and Mr. Herbert J. Paterson, F.R.C.S.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

(Continued from p. 252.)

RETAILING BENZOL.

A SOMEWHAT odd situation has arisen in connexion with the provision of benzol as an alternative motor fuel. Some of the benzol producers are arguing that the next step rests with the individual consumer. Large quantities are being exported instead of being used in this country. It appears that the difficulty is an old one as far as readers of these columns are concerned—namely, that the distribution problems are acute, drums and tins being particularly scarce, while co-ordination of supply is wanted. Therefore, the Automobile Association has stepped into the breach by arranging that local agents and repairers appointed by it, and who are recognizable by the "A.A." sign outside their establishments, will supply benzol with the aid of that association. It can be bought in fifty-gallon drums and kept in a private garden or outhouse provided it is 20 ft. away from a dwelling place. The Automobile Association will give any inquirer the fullest advice and help. It even goes to the length of arranging that the local A.A. agent will store benzol for the individual user. Further, it has made arrangements for overcoming the difficulty in regard to drums by securing a large number of the fifty-gallon steel variety. The individual member of the association can hire one for a purely nominal fee of 10s. a year. The Automobile Association will explain to individual motorists how to store benzol, how to draw it, and how to use it. It will help the individual motorist's agent to get it for him, and thereby encourage him to extricate himself and the motoring community from the fuel problem. Such work

of the Automobile Association deserves to be widely known in that it comes to the most timely relief of the motorist.

MASS PRODUCTION STARTED IN ENGLAND.

In the mean season the work of changing over from war to peace activities proceeds apace. Among the forms of enterprise not formerly exploited in this country is that of mass assembly, the outstanding example of which was provided by the Hudson car made in Detroit. The engines were made by Continental Motors, the gearboxes by specialists in gear cutting, and so on throughout every detail of the chassis.

Meantime, what are we doing in this country? The ranks of the motor car producers have just been augmented by the old coachmaking firm of Sir William Angus, Sanderson, and Co., of Newcastle-on-Tyne, which is taking the initiative in a scheme for the large production of a car built of components by specialists, and to be known as the Angus-Sanderson car; it will be assembled at Newcastle on a programme aiming at six thousand output in the first year, with very rapid acceleration from that period onwards. The components are manufactured in London, the Midlands, and as far north as Glasgow. For example, the nominal 12 h.p. engine is made by Tylor's, while the change speed and axle gearing, front and rear axles and steering gear, together with the brakes and control, are made by Wrigley's of Birmingham; the dynamo, starting motor and five lamps by Lucas of Birmingham; the magneto by Thomson-Bennett of Birmingham; the detachable corrugated disc wheels by Goodyear's of Dudley; the large and extra thick tread non-skid tyres by Wood Milne, Ltd., of Leyland, Preston; the car frames by Mechem and Sons of Glasgow; and the coachwork and entire assembly by Sir William Angus, Sanderson, and Co., Ltd., at Newcastle. The output will be about 130 cars a week, and the market price of the vehicle will be £450, the expectation being that batch production will be in full operation at the beginning of May.

The body is of the kind which, at pre-war costs, as coachmaking was then done, would be worth £150; but it can be produced at considerably less cost to day by pressing out the panels, and so forth. Hydraulic plant for this purpose has been installed, and use is to be made of electric and other effective methods of local welding. The car complete is of light weight, scaling 17 cwt., with full equipment, including five relatively large tyres. It is possible to say, at the moment, that the idea will be that such a vehicle will give an average of thirty miles to the gallon of petrol, and will run with the at present low grade spirit, the intake pipe having a "hot spot" or isolated piece of metal heated by the exhaust, against which the fuel charge impinges. The car features include the combination of the cylinders *en bloc* with the upper part of the crank chamber; specially light pistons of cross head form on the Ricardo system, with hollow gudgeon pin in a floating bearing, the combination weighing 12 oz. as compared with 2 lb. for the average cast-iron piston. An unusual practice is the balancing of the crankshaft by means of counterweights. The future of this four-cylinder car, with a bore measurement of 3 in., a piston travel of 5 in., giving the R.A.C. rating of 13.9 h.p., will be followed with interest by the medical profession.

The Goodyear corrugated disc wheels used are certainly a very clever invention both for simplicity, lightness, strength, and ease of cleaning. I should imagine they would be the lightest type of wheel yet devised of any variety, much stronger than wooden ones, and I look on their evolution as an earnest of what can be done to offset post-war costs by entirely and radically redesigning every car detail on lines as novel as is this in regard to the wheels. This is designing along sound engineering lines and manufacturing methods involving the minimum labour and the maximum use of stampings, which are in every way an improvement on what we have known before, yet enormously cheaper despite the increased costs of labour and therefore of materials. In quantity production it is possible to produce five wheels—that is, four for use and one spare—for a wholesale cost of less than £2 a vehicle. There is no reason why in the course of a few years inventions should not be applied to other portions of the complete chassis equally with this wheel development. Certainly cars will have to be cheaper than they have ever been. It is merely that in the interval we have a very awkward period to

negotiate. The average car manufacturer, of course, takes the line of least resistance since his business is to make profits from year to year, also to give as much employment as possible in conjunction with what the public are prepared to pay.

SUNDRY "LIGHT" CAR PROPOSITIONS.

There are quite a number of post-war "light" cars, but in the main they do not call for detailed consideration. A new comer in this field is the long-established Birmingham concern of Components, Limited, which is to produce a 10 h.p. four-cylinder car with electric starter and lighting set under the direction of the general manager, Mr. J. W. Stocks, who up to the time war broke out was the managing director of the De Dion Bouton business in this country.

Another new make of car is introduced by the firm of Douglas of Kingswood, Bristol, well known in connexion with the motor bicycle business. It had begun experimenting with the light car about the time war broke out, and has spent something like £20,000 testing out its ideas. A number of vehicles have been made and supplied so that they can be run under conditions of private service yet more or less under the direct observations of the proprietors of the business. There are considerable evidences of cycle practice in the vehicle. It has a twin cylinder horizontally opposed engine, which, however, is of the water cooled variety, both bore and stroke measurements being 92 mm., so that it is just short of one and a quarter litre capacity. The engine, clutch, gearbox, and C.A.V. electric starter are combined in a unit, yet it is possible to dismantle any one item separately. Three speeds and a reverse are provided; the gear-shaft is mounted on ball bearings; the live axle is bevel driven; the rear springing is novel, being on the A.F.S. helical suspension scheme, and it is expected that deliveries will begin some time next month in fulfilment of orders that have already been booked. Information about the price is not available yet.

From Bristol also comes an entirely new light car idea in a three-cylinder, radial air-cooled engine, with bore and stroke measurements each of 75 mm., fitted to a vehicle which it is expected will scale 6 cwt. only, though at 2,000 crank-shaft revolutions a minute the engine is calculated to develop 16 brake h.p., which will be transmitted through a three-speed gearbox with shaft drive and spiral bevel back axle which will be without a differential. The manufacturers are the Cosmos Engineering Co., Ltd., which was formerly known as Brazil, Straker and Co., the manufacturers of the Straker-Squire car, of Lodge Causeway, Fishponds, Bristol. The producers regard this as a "stepping stone" type of car for those who want more than a motor cycle and side car, but who cannot afford the post-war costs of a car proper. Fuller information, however, will be needed by medical men, concerning the performance of this and sundry other new types of cars in the hands of the public before they will be justified in buying for absolute reliability in daily service such relatively recent propositions.

DISPENSING WITH THE DIFFERENTIAL.

A.B.C. Motors also contemplate the production of a light car. It will be a friction-driven vehicle, with a four-speed and reverse gearbox and bevel-driven back axle. The gearbox details follow closely those of the A.B.C. motor cycle, but it will not be combined with the engine unit, the crank case being, instead, placed midway in the chassis. The conventional differential gear is dispensed with in the case of the back axle, which is undivided, the shaft passing from end to end of it and not being halved in the middle. There is one ball-bearing at either end of the shaft and one in the centre close to the bevel pinion, an arrangement which relieves the axle casing of so much load as to enable it to be die-cast out of aluminium. A frictionless damping device is incorporated, preventing the wheel from spinning unless there is very considerable difference between the torques of the two wheels. This light car proposition, dispensing with differential gear, is of theoretical interest in that in the case of an ordinary differential as soon as one wheel is free to spin there is no drive on the other, which explains why in those circumstances most cars are unable to start off soft ground. Indeed, a car without, is less liable to slip than one with a differential—a point that has been demonstrated several times in car racing; how these details will apply to standard practice in the hands of the public is, of course, among the new experiences

that will be gained after the war. Quarter elliptic springs are used fore and aft on the A.B.C. car, the back pair being fitted with subsidiary torque leaves. No shackles or other moving parts that need lubrication are furnished in connexion with the springs. A novelty in connexion with the steering gear is that there is no worm. It consists only of two spur wheels mounted on ball bearings, the smaller one being at the end of the steering column and meshing with the larger one, which is mounted on the arm that actuates the timing rod. Both wheels can be removed and reset so as to present new sections for engagement.

SOME OTHER CARS.

The 11.9 h.p. H.E. light car, planned to have a four-cylinder engine of 69 mm. bore by 120 mm. piston travel, dry plate clutch, four-speed gearbox and overhead worm-drive, does not fall to be discussed at the moment, in that it is still rather in the paper stage. Moreover, its sponsors, the Herbert Engineering Company, of Caversham, Reading, are not aiming at any notable mechanical novelty, or at cutting price.

The G.W.K. is a distinctive type of light car which was familiar for years before the war, and which will make its reappearance in a greatly developed form, though it presents the outward characteristics of more or less ordinary car practice. Nevertheless, the drive by friction discs will be retained. In order to obtain the reduction between the steering wheel and steering arm motion, a type of planetary gearing is placed at the base of the steering column. The pedals are now adjustable. The four-seater model has the engine placed under the bonnet in the orthodox way. The wheels are built on the disc principle, totally enclosing the drive of the rear pair both inside and out, thus facilitating washing. The wheels themselves are not detachable, but the rims can be taken off.

Another type of car that is driven by discs instead of through the ordinary gearbox is the Palladium, the post-war model of which is equipped with a two-cylinder, flat engine of 89 mm. bore by 107 mm. piston travel. The vehicle is made as a two and a four seater, and the aim is to sell it at under £200. It is expected that the first examples will be ready some time in June.

A new light car is to be made in Coventry by a concern called the Dawson Car Co., which has the benefit of the services of Mr. A. J. Dawson, who has been identified with the Daimler, Hotchkiss, and Hillman companies for the past fourteen years. The vehicle will be of 11.9 h.p. Treasury rating, having a bore measurement of 69 mm. and a piston travel of 120 mm., the comparative novelty, for this form of machine, being that tungsten alloy overhead valves will be employed. The equipment will include electric starter and dynamo, and the chassis will be more or less on orthodox lines. The notion of supplying the vehicle complete for a fixed sum, however, is adequate, in that a clock and speedometer are to be included. So far, six vehicles only have been produced.

(To be continued.)

SCHOOLS OF INSTRUCTION FOR THE SERVICES.

BY CUTHBERT WALLACE, C.B., C.M.G., F.R.C.S.

PRACTICE makes perfect; indeed, practice is needed to maintain even a mediocre standard in any profession. It does not matter how good an individual may be in any particular line when you first take him. Unless you provide him the opportunity of practising fully his profession, in a few years he will not only have failed to maintain the position whence he started, but it is possible that he will be at a lower level than that at which he commenced. While it can be admitted that the level at which a man starts makes a great difference in the service to which he is attached, it is not only the obtaining of the man of high average that is required, but there is the need to keep him up in his work. The necessity for obtaining good men has been recognized by all the public medical services of late. Unfortunately, to get them they have entered into a rather unseemly competition one with another, offering a few more shillings here and there to obtain what they want. On the other hand, one can only commend the efforts that have been made to get good men, as, for instance, by seconding a man while he is holding a house appointment and giving specialist pay. More,

however, is wanted. In the Services men have to be dispersed and go over the world. One man will be in a good station where he will have plenty of work and will use his opportunities; the second will be in a place where, for no fault of his own, he cannot keep himself up to a proper level by practice; and there is a third man, more important possibly than the others, who does not care so much about his profession as about the opportunities the Services offer of seeing the world. Now all these men at some time or another will come home and require periods of study. The keen man must be given ample opportunities of bringing himself up to date, and the less keen man must be compelled to make himself efficient. This is already provided for to a certain degree in the hospitals of the Services, and by the classes that are held at the various metropolitan hospitals. The training and instruction in such things as public health and tropical diseases, and laboratory work, are sufficient and reach a high standard. The opportunities for clinical study in the hospitals of the Services are largely limited to that afforded by young males. There may be some difference of opinion as to whether the courses which are given in the metropolitan hospitals are satisfactory. It very much depends upon whether certain hospitals can make the necessary arrangements for ward teaching and special classes; the opportunities must vary from year to year. This teaching is more or less of a post-graduate nature, but it is most probable, even if it be granted that the post-graduate training is good, that many of the officers would gain much more if they first went through a course of training such as senior students follow as clerks and dressers. The opportunities for this are not available in London, and most probably will not be available in any teaching school.

Could not some improvement be made in the courses so as to enable men in the Services to get a more intimate knowledge of disease? Now if a man is to learn medicine properly he must go back to a school where all branches of medicine are taught. Therefore it is necessary that the Services should possess general hospitals of their own, where every kind of disease is encountered and treated. The present seems a grand opportunity for the Services acquiring in different parts of the country these general hospitals. It is obvious that hospital accommodation must be extended. It is most probable that the Poor Law hospitals and infirmaries will become active working hospitals. Why should not the different Services take over some of these, staff them with their own men, run them as a hospital and as their medical school? It might be said that the Services so far have produced no conspicuous teachers in the ordinary subjects of medicine and surgery, but the reply to this is that they have never tried to, and they have never given their men an opportunity of fitting themselves for such a post. That the men exist or could be got is proved by the fact that in preventive medicine, pathology, and tropical medicine the Services have produced men of world-wide renown, and there is no reason to doubt that if opportunities for the practice of medicine and surgery were afforded, as great men in medicine and surgery would arise.

Now, how would this scheme work? There would be a general hospital, staffed by professors, officers of the Services, heads of their own departments; the hospital would be complete. When officers come back from foreign service and require refresher courses there would be splendid opportunities of acquiring knowledge open to them. The younger men or the men who have been longest away could enter the wards as the professors' dressers and clerks, while the older and more senior men, men who have been practising medicine or surgery in foreign parts, could as assistants to the professors gain the knowledge they require. The opportunities which would thus be offered would be infinitely greater than those existing at present, and it is only by a man getting down to his work that he will ever really learn. To raise the professor it will have to be recognized in the Services that a man who wishes to stick to his last and practise his profession should have as great advantages as those which follow the course of administration. If this is granted and such a hospital comes into existence, it will mean that the Services will have professors of whom the country and they can be proud, and they will have schools where their men can be properly and adequately taught. After passing the college the post-graduate instruction in the teaching school will still be available for the specialist.