that if four amendments which were set out were not adopted by the College, the committee would not continue negotiations, but proceed with its own bill. This was without prejudice to the further consideration of minor amendments.

"The four amendments to which the Central Committee attached so much importance were those relating to the constitution of the provisional and permanent nursing councils, to the registration of nurses in practice at the time of the passing of the Act, and to the qualifications of nurses after the passing of the Act. The committee was of opinion that there was no guarantee that either of the nursing councils formed in the manner proposed by the council of the College of Nursing would be representative of the interests concerned, and therefore desired to have it plainly stated in the bill what bodies should appoint or elect the members of the provisional and permanent councils.

"In respect of the other two points, the Central Committee was of opinion that the clause in the bill of the College of Nursing relating to the nurses in practice at the passing of the Act was not satisfactory, in that the conditions for admission to the *Register* are not explicitly stated, and that the clause which specified the conditions of registration of nurses after the passing of the Act was too vague, as it did not enforce any hospital training or examination before registration.

"There is, moreover, the fundamental objection in the bill of the College that a voluntary college is to be associated with a statutory council. It is one thing for the College of Nursing to be represented on a statutory general nursing council; it is quite another for the Council of the College to be the General Nursing Council.

"As in the communication received from the College it did not signify its agreement to the amendments considered essential, the Central Committee, at its meeting on October 21st, reaffirmed its intention, by a majority of 20 to 2, to proceed with its own bill, in connexion with which it considered, and agreed to, certain amendments in order to bring it up to date, and reaffirmed the fundamental principles as follows:

"1. That provision should be made for a statutory general nursing council to regulate the qualifications of trained nurses and provide for their registration.

"2. For direct representation of the nursing profession on the General Nursing Council, and the insertion in the bill of the authorities empowered to nominate the Council.

"3. For a three years' term of grace, after the passing of the Act, for the registration of nurses in practice—who hold a certificate of training, or produce evidence of training satisfactory to the council—without further examination.

"4. For the provision at the expiration of the said term of grace that a nurse must have had not less than three years' training under a definite curriculum prescribed by the council in the wards of a hospital, or of hospitals, approved by the council, and that such person must have passed such examination as the council may prescribe."

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

THE PROBLEM OF CAR REPAIRS.

It was at the least unfortunate that the latest order issued by the Ministry of Munitions concerning car construction and repair for other than munitions work could not have given a greater margin of time, that medical men in particular might have had the opportunity to get their cars put thoroughly in order before the coming into force of the prohibition on November 22nd last. As it was, there was not sufficient grace for attention to be drawn to the matter in the press, and for arrangements to be made to put repair work in hand before the prohibition order came into operation.

In its effect on the construction and erection of new cars it is of practically no importance to the medical man, because he either owns a car, or, at a pinch, can buy one example or other of the imported varieties, stocks of which are still in the country; or, again, he can pick up a second-hand car.

But in the matter of repairs and the obtaining of spare parts the situation affects him very seriously, for he has the hardest season of the year to face.

WHAT THE SITUATION HAS BEEN.

When the problem of getting repair work and spare parts was placed on behalf of the British Medical Association before the Ministry of Munitions, the reply (September 15th, 1916) was to the effect that a certain doctor about whom inquiry was made had been

authorized to place his order for spare parts required for his car under Class "B" for the purposes of Circular L. 33, that is, he has been authorized to inform the . . . company that the execution of his order is necessary for the efficient conduct of the war. . . . When doctors apply to this department, assistance, so far as possible, is always given them to obtain prompt execution of the necessary repairs to their cars, and that therefore medical practitioners already receive special consideration in respect of repairs, just as they do in respect of the supply of petrol.

But by October 17th the same department wrote:

I regret that it is impossible to class your repairs to Dr. —'s car as war work. I enclose, however, a Priority Instruction Class 5, which gives the order preference inside Class "B." Beyond that I regret that it is impossible to go.

How this works out in practice in the average case in face of the actual situation in which the manufacturer finds himself I shall discuss in a moment. In the meanwhile, apropos of the latest order which is the subject under discussion, on November 16th, 1916, before it came into operation, the following notice was issued to clerks of Insurance Committees in Scotland by the secretary of the Insurance Committee in that country:

I am directed by the Scottish Insurance Commissioners to inform you that, their attention having been directed to difficulty experienced by medical practitioners in obtaining spare parts for "Ford" motor cars, they communicated with the Munitions Department, by whom the supply of these spares is controlled, with a view to securing preferential treatment for doctors. The Munitions Department, in cases where a doctor makes application to them, will give him the grade of priority entitling him to preference over orders placed for spare parts for commercial vehicles other than those directly and continuously employed on munitions work.

At the time these notes leave me I am not informed whether that notification is to be taken as applying to Ford cars only. The present situation is open, and leaves the matter in doubt inasmuch as that make of vehicle is said to be so largely used by doctors in Scotland that, perchance, the Insurance Commission may not have thought it worth while to say anything about other cars. Against this, however, is the fact that, as to the manufacturing parts proposition, the Ford enterprise is not at all on all-fours with other motor firms in these islands.

In England nothing seems to have been done in the general way; albeit, a certain number of applications from individual doctors have been forwarded, through the Medical Secretary of the British Medical Association, to the Director-General of Munitions. In most cases, if not in all, a permit was eventually issued. But all this is prior to the coming into operation on November 22nd of the latest series of regulations, and refers only to such cases as I have cited under dates September 15th and October 17th last.

The memorandum of the Ministry of Munitions on "New procedure affecting supplies of materials," which is addressed to firms, states that,

as a general rule, the customer should make the application for permission, classification, or priority, and not the stockholder or manufacturer of the materials. Such applications, giving full and precise particulars of requirements, together with a brief statement of the purpose for which the goods are required, and reasons in support, should be made to the Director-General of Munitions Supply, Priority Branch, Whitehall Place, London, S.W.

HOW THE PROHIBITION OPERATES.

In the meantime let us consider the new situation created by the latest regulation, bearing in mind that, in any case, the issue of a permit is one thing, and the actual getting of the job done is another. The granting of a permit to every applicant would be no guarantee whatever that the holder of the permit could thereupon get the given work executed.

Therefore, to trace the operation of the latest rules to their source, we must perforce begin with the position of the manufacturer. In this country his establishment is of course a controlled one. That means that representatives of the Ministry of Munitions or, more probably, officers of the services, are resident in charge. Their instructions

are to prohibit all manufacturing and erection work other than that for munitions, and to permit no repairs of any sort on the establishment. Were this all it might be possible to make shift, because, at the risk of car butchery, the work could be done at some local garage, to which the necessary spare parts were supplied by the manufacturer. But here is another problem: the controlled motor manufacturers, otherwise the entire British industry, may neither machine, cast, or otherwise make spare parts for other than the services. Nor is this all. If their standard product has been supplied to the Government during the war, they may not take spare parts out of stock for repairing examples of such standard types as are in the hands of the public.

A ray of hope appears to be extended to those whose cars are 1914 or earlier. In the original instance I find many manufacturers were forbidden to supply parts for anything later than 1913 vehicles. But by pointing out that the 1914 manufacturing year was practically completed by the time war broke out, in most cases, if there is any stock of 1914 parts, items may be issued from it to owners of 1914 cars requiring them for replacement.

THE CASE OF SPARE PARTS.

One presumes that the vast majority of medical men have cars of 1914 or earlier date of production, and have therefore some sort of chance of getting spare parts for them. But it must be remembered that practically no manufacturing of such spare parts has been undertaken during the war and none may be done now. Therefore, as the demand for them has continued during the campaign at the ordinary rate, it follows that in most cases stocks are very much on the low side at the moment.

For the rest, the regulations issued by the Ministry of Munitions touching repair and displacement work do not mention that such work must be done for those obtaining special permits. Nor do they specify who is entitled to secure a special permit. Hence it seems that it would be well that the case of the medical profession in general should be presented to the authorities in order to obtain a ruling for the special reasons, among others, which I have striven to summarize. I have not come across any officer in charge of a motor works who has yet authorized any such work to be undertaken for a holder of a permit, nor who has seen such a permit issued on or since November 22nd last.

Consequently, the first thing for the medical man to do, even if his car is running well to-day, is to ascertain whether or not any part of it looks like giving out or being in need of replacement for other reasons within, say, twelve or eighteen months. As soon as he discovers what items are likely to be concerned, he should write to the manufacturer or the concessioner concerned to ascertain whether or not he can have such a part. If he can, he ought to buy it forthwith and hold it in reserve, for, if the prospects of obtaining necessary spares are slender at the moment, assuredly they will be utterly remote in a few months' time when the motor vehicle, using public in general will have come to a full realization of the new situation created by the recent order.

RISKINESS OF PRESENT-DAY REPAIR WORK.

As to how the work of repair is to be undertaken, the answer is that, in general, this must be a pure gamble. Firstly, because it cannot be done at any of the car factories; and, secondly, because all the skilled men have been taken away from practically every garage in the country. Here and there by a piece of good fortune a medical man may be able to get a trustworthy mechanic to undertake any overhauling or replacement work in his vicinity, but in the vast majority of cases I am afraid that will prove impossible. Of course it is only jumping out of the frying-pan into the fire to let amateurs and know-nothings start operations on a car.

It follows that there is urgent need to give some hints to medical men as to how they can best protect themselves pending what I would suggest should be undertaken on their behalf collectively—namely, the making of official representations to the Government with a view to ensuring that members of the medical profession, as constituting that which is vital for the needs of the community, should be given special permit to allow them to secure spare parts and to have repair work undertaken on their cars, which

were never more essential than to-day, when one practitioner has to suffice where three were available before the war.

THE CASE FOR THE MEDICAL PROFESSION.

None can show better cause than doctors. Deprive the doctor of his car and the health of the community is endangered. That is the case for the profession in a sentence. It may be elaborated, as, for example, by drawing attention to the number of medical men who are no longer able to employ the services of motormen to maintain their cars.

Consequently cars are perforce receiving less attention than ordinary, and that at the precise time when they are being worked more than usually hard and have to run in some instances on indifferent fuel.

The medical man may do much to alleviate the situation by giving very careful attention to the manner in which he either drives the car himself or allows it to be driven for him. Never drive on the brakes, for that is not merely extravagant of tyres, it besides strains the whole transmission mechanism, and it is desirable to relieve that of stress to the utmost possible extent at a period when repair work cannot be undertaken.

It will prove economical at this juncture to buy the best motor spirit available, and have next to nothing to do with alternative fuels, because investigation of them has not yet been carried to an exhaustive extent by the industry. The main thing to have in mind is the vital necessity for the gas in the cylinders to be of such a quality that it will be perfectly combusted, and will therefore not cause any trouble through unburnt particles of fuel percolating past the piston rings and doing damage to the lubricating system. Besides, imperfect combustion means a dirty engine; a dirty engine of the poppet valve type is an inefficient one; an inefficient one is a trouble to drive and maintain, and has sooner or later to be taken to pieces and cleaned out, it being nevertheless desirable that the necessity of these operations should be reduced to the minimum while all the skilled mechanics are either making munitions of war or taking more active part in the campaign.

HINTS FOR THE WINTER SEASON.

Now that the colder weather has come, take no risks about cracking cylinder castings or bursting radiators through the water freezing in the system when the car is not in use. In this connexion it may be recalled that in the first winter of the campaign the three and a half ton transports used by the Expeditionary Force were remarkably immune from troubles of this character, though often parked in the open, because tarpaulin "tea cosies" and such devices were improvised for slipping over the bonnets of them. An adaptation of this scheme that is not expensive and which is most effective has been evolved by the Rover Company in the form of a neat little cover of a leather of sorts, with cloth or quilted lining, the whole being designed to be a little deeper than the radiator, and having a hole just sufficiently large to slip over the radiator cap, whereby it is held in position, and will keep the cooler warm for hours.

This is precisely what the doctor needs when on his rounds—something designed for the purpose, always immediately available for dropping over the cooler without fitting of any sort, while visiting his patient. In petrol economy alone it will save its cost easily in a season, apart from minimizing the risk of freezing the water and ensuring that it will be very much easier to start the engine again, whether by electrical means or by hand cranking, whenever it is desired to resume the journey.

Lubrication is another matter in regard to which it will well repay the medical man to be more than common cautious these days. This does not mean always having too much oil in the engine system. On the contrary, it means that the supply must be checked at more frequent intervals to ensure, on the one hand, that there is never an excess even for only fifty miles of going, and on the other, that there is never any dropping below the minimum supply for a single mile of service. Nor is this all.

LUBRICATION POINTS.

While a goodly proportion of the lubricating oil employed on a car engine, as distinct from an aviation one, is burnt, nevertheless a certain amount is retained in the system

and re-used, but there is a limit to its ability to perform its function properly when being re-used. Therefore it is better to err on the extravagant side by emptying the used oil out of the system at comparatively frequent intervals and replacing it with fresh oil than, in the endeavour to economize lubricant, to employ it for an unduly long period in the motor. Most manufacturers supply with their cars instructions as to the intervals at which this should be done. In peace time most owners paid little heed to these instructions, being for the most part content to replace supplies a little at a time. But at this juncture it will pay handsomely to put in an entirely fresh stock of lubricant at the minimum intervals specified by the manufacturers. Particular care should also be given to the brand of lubricant used. Broadly, vegetable oil, otherwise castor oil, makes carbon of a dusty character, whereas mineral oils carbonize in a gummy state, and therefore foul the engine details.

In point of fact, the lubrication system of car engines has nothing like reached its full development. It is generally overlooked that two quite distinct functions have to be performed. On the one hand, a film of oil has to be interposed between the two metal surfaces to be lubricated, whereby that one of them which is the moving member is floated on this film. In performing its work, however, it generates heat, which is communicated to, and absorbed by, the film of oil. Means has, therefore, to be provided for replacing as frequently as possible the oil film, so that the heat may be taken away by the particular oil that constituted the given film a moment ago.

In connexion with aircraft engines of high output and light weight for their volume, this problem is solved by running them with a dry base-chamber and keeping the oil in a separate tank, usually placed in the slip stream of the propeller and designed with fins, or what not, to ensure its being cooled to the maximum. Pumps suck the oil from this tank to the engine and draw it away from the engine, returning it to the tank by separate piping.

As the future of the motor-car engine is all in the direction of increasing power output for volume and weight, it may well be that in a few years car engines will also be designed with the dry base-chamber system. Meantime, however, they carry their lubricating oil in the base-chamber, hence the importance of giving heed to the points I have raised.

THE MEDICAL RESEARCH COMMITTEE.

SECOND ANNUAL REPORT.

THE second annual report of the Medical Research Committee has been issued; it deals with the year ending September 30th, 1916. Of the original schemes of work sanctioned and begun in 1914 before the war, some have been continued, but during the year under review nearly the whole of the available funds and scientific resources have been devoted to the solution of medical questions of immediate national urgency in war time. The Medical Research Fund exists for the advancement of the medical sciences, and it was considered that it would be a negation of that purpose to use the fund in any large measure for work aimed at a distant future during a time when so large a part of the whole population is exposed to the special risks arising from war, whether during active service abroad or in the performance of other work at home. Moreover, few, if any, of the workers available would have been free or willing to undertake or continue work remote from present national necessities when the alternative presented itself to them. Further, the conditions of war, with the special opportunities given for disciplined study and repeated observation, have already allowed in some directions a more rapid progress of medical knowledge in a few months than had been seen in many previous years.

Pathologists are now almost without exception engaged upon work of naval or military value, and the performance of purely routine work in the services by trained observers has suggested and allowed valuable new observations to be made. Their services, therefore, though changed in place, have still been in the sphere of pathology. The loss of trained laboratory attendants by enlistment has been a serious handicap, and the Ministry of Munitions has allowed the Committee to grant war badges and certificates to a certain number of skilled laboratory attendants. The

Committee has encouraged the rapid training of women as pathological assistants, and many with a previous scientific education in other branches of biology have been able to fit themselves in a short time to give most efficient service. The Committee has also made grants for the whole or part time scientific employment on its behalf of some twenty women; some are giving only skilled routine assistance, but others are engaged in definite research work.

The difficulty experienced through the scarcity of apparatus, and especially of suitable glass apparatus, felt acutely in the earlier part of the war, owing partly to the fact that the usual supplies were unobtainable from enemy countries, and partly to the enormous increase in the demand for bacteriological apparatus for the routine work in numerous military hospitals, has been in a great degree met, for British firms have applied themselves with great energy and increasing success to the manufacture of glass apparatus.

The Committee now has in working order five departments—bacteriology, biochemistry and pharmacology, applied physiology, statistics, and clinical research.

THE DEPARTMENT OF BACTERIOLOGY.

The work of this department, which is under the direction of Colonel Sir Almroth Wright, has been conducted at No. 13 General Hospital, Boulogne, and at St. Mary's Hospital Inoculation Department, where twenty-five beds in special wards have been maintained.

Sir Almroth Wright has devoted his chief attention to the study of wound infections, and the principal results he has reached have been published in our columns at various times during the last fourteen months. "Surgical testimony," the report states, "is still divided upon the respective value of Sir A. Wright's treatment by salt solutions alone without antiseptics on the one hand, and, on the other, treatment by irrigation with the eusol or Dakin's hypochlorite solutions, though both methods now have very wide application in practice." The researches which resulted in the preparation of eusol by Professors Lorrain Smith and Ritchie at Edinburgh, and of the solution which bears his name by Dr. Dakin at Compiègne, and in the Committee's biochemical department in London, were both subsidized by the Committee, and the results have been fully reported in our columns at various dates during the last eighteen months. Upon the general subject of the treatment of wounds the report contains the following observations:

It may be remarked that the use of the hypochlorite solutions in irrigation does not stand in the same position of opposition to Wright's methods as did the older classical method of repeated isolated applications of antiseptics like carbolic acid. The hypochlorite solutions, when properly applied, appear to encourage the free flow of lymph outwards from the wound as do the hypertonic salt solutions, and in whatever terms this action of these latter is properly to be described, there is evidence that the hypochlorites, unlike antiseptics of many other classes, have an adjuvant effect upon some of the newly recognized bodily processes of natural defence against invading organisms. Further inquiries into this question are still in progress.

It has become more and more clearly apparent that the successful treatment of infected wounds by either method depends not so much upon the particular solution employed—whether the hypertonic salt solution or the hypochlorite solution—as upon the actual technique of its application to the wound. Both Sir Almroth Wright and Dr. Carrel have, as already mentioned, developed systems of irrigation and treatment in which small details have high importance. Clinical "trials" of the salt or the hypochlorite solutions have been found to be valueless where the surgeon, regarding the solution as an independent curative agent, has left the technique of application in its details to the nurse or orderly, or has failed himself to study at first hand the necessary practical methods. The aim of both systems is to obtain such surgical cleanliness of the wound as to allow early suture and healing without prolonged suppuration and later scar formation, and highly successful results of this kind have been reported by the advocates of each.

It may be noted here that the use of salt or of hypochlorite solutions, both of which are very cheap, has led to a great saving in hospital expenditure. The Committee have been informed of instances in which a single patient for whom the use of other antiseptics in common employment earlier would have cost several shillings, has been treated with greater efficiency by hypochlorites at the cost of a penny or two.

Although hypochlorite solutions when introduced into the blood by intravenous injection are too rapidly absorbed by the blood proteins to remain available for any but a