best sense of the word never existed. He was the author of *Elements of Physics*, which within a few years was translated into every language of civilized Europe. He founded scholarships for experimental physics not only in his own Alma Mater, but in the other universities of Scotland, and in the University of London, to the Senate of which he was nominated on its foundation.

Francis Adams, M.R.C.S., who graduated M.A. at King's in 1813, practised at Banchory on Deeside. He made a great name among medical scholars by his translations of the works of Hippocrates and Paul of Aegina. He was called by Dr. John Brown, author of *Rab and his Friends*, "*doctissimus medicorum Britannorum*." Brown, on paying Adams a chance visit, says he found him at breakfast, ready for his round, and amusing himself with pencilling down a translation of an ode of Horace into Greek verse. With all his learning Adams was a thoroughly practical country doctor.

Alexander Kilgour, called by John Brown the "modern Sydenham," was professor of medicine in King's College from 1839 to 1849. He was senior physician to the Aberdeen Infirmary for many years, and had a large consulting practice in the north of Scotland. He did much to awaken the people of the Granite City to the importance of sanitation.

Sir Erasmus Wilson, the distinguished dermatologist and president of the Royal College of Surgeons of England, was partly educated at King's College. In 1882 he founded the chair of pathology in the University of Aberdeen. To his munificence London owes Cleopatra's Needle which was dug from the sands of Alexandria, where it had lain half buried for many centuries, and now stands on the Embankment.

Sir James Clark was educated at Aberdeen, where he graduated M.A. He afterwards obtained the M.D. at Edinburgh in 1817. He was in the navy for some years and afterwards practised in Rome. He wrote on phthisis, on which he was in his day accounted an authority. He visited the springs and baths of Germany, and at one of these health resorts met Prince Leopold, afterwards King of the Belgians, who made him his physician, and in 1834 got for him the appointment of physician to the Duchess of Kent. On Victoria's accession he was made physician-in-ordinary to the Queen who put the greatest trust in him, till his death in 1870. He served on several Royal Commissions, and was a member of the Senate of London University, and of the General Medical Council. He is described by Edmund Alexander Parkes as a "man of singular moral power, and of very balanced and even mind; in character most lovable; the incarnation of beneficence and affection."

Of William Pirrie, for many years professor of surgery and author of a once popular textbook; of Keith, whose skill in dealing with stone of the bladder used to be referred to by Sir Henry Thompson in his lectures; of Matthews Duncan, who rose to world-wide celebrity; and of Sir Andrew Clark, Gladstone's physician, and famous in London as the "starving doctor," much might be said, but they are so near our own day that a detailed notice would be superfluous.

Of living Aberdeen doctors may be mentioned Sir James Reid, Sir William MacGregor, Governor of Queensland, who long ago abandoned medicine for the work of colonial administration, in which he has been conspicuously successful; Sir Patrick Manson, who may be called the Father of Tropical Medicine; Professor Arthur Keith, Conservator of the Museum of the Royal College of Surgeons; Dr. William Bulloch, of the London Hospital, one of our foremost bacteriologists; and Sir Alexander Ogston, President-Elect of the British Medical Association, the leading surgeon in the North.

In this hurried sketch there must necessarily be many omissions, and possibly mistakes *quas aut incuria fudit aut humana cavit natura*. Enough, however, has been said to show that Aberdeen has sent forth a vast number of men who have done splendid work in many spheres of activity at home, and who have borne the white man's burden in every part of the empire.

We cannot conclude without a word of grateful acknowledgement to Dr. James Galloway, himself a distinguished graduate of Aberdeen, for his courtesy in lending pictures for reproduction and books which have been used as authorities in this series of articles.

MOTORING MATTERS FOR MEDICAL MEN.

SOME PHASES OF THE LIGHT CAR PROBLEM.

By H. MASSAC BUIST.

At a period when the development of manufacturing resources and the evolution of design is resulting, not in mere local assemblers, but in the most responsible and largely established motor-car constructors devoting their resources to the evolution of cars that are variously styled "small" and "light," the degree of accomplishment actually attained and the problems still to be solved become matters of direct personal interest to a vast number of members of the medical profession. While we may take it that the question of cost enters to comparatively a small extent into the problem as concerns the specialist, whose chief needs are for a luxurious town carriage, assuredly for the vast majority of members of the profession the question of cost is the first as reliability is the last phase of the problem.

THE FULL MEANING OF COST.

Therefore, let us have clearly in mind the fact that cost is not a simple proposition of the amount of cash to be disbursed to acquire a motor vehicle. That is part only of the proposition, but not the whole. No less important is the question of maintenance or running costs. We may reckon these headings as accounting each for 33.3 per cent. of the proportion of cost; the remaining 33.3 is cost as it figures under the heading of satisfactory wearing life, because the second-hand value of the car is little enough nowadays, and it will become vastly less as time passes. Therefore, by far the wisest way is to regard all expenditure on the acquisition and use of a motor vehicle as money sunk and non-recoverable. It follows that the net cost of the vehicle completely ready for the road should be divided over the number of years of wearing life of the machine, and the result should be added to maintenance costs. If the inquirer will do this he will know as exactly as is reasonably possible precisely what class of vehicle he can afford to maintain in connexion with his practice. Unfortunately, however, the average procedure is to argue that he has so much money in hand with which to purchase a machine, and, for the rest, he will not go very minutely into maintenance costs, and as for wearing life and what he is to do by the time the vehicle he may think of acquiring is past further service, that is a problem, or a combination of problems, with which he will not bother his mind in the present.

THE GENESIS OF THE LIGHT CAR.

In considering the case of the various efforts that are being made to produce a new class of motor vehicle, which for convenience may be styled the light car, it is as well to look at motor history to see what lessons it teaches us. In the first place, we have been told invariably at the introduction of each car which of its period has marked a distinct advance, that it stands out from the ruck admittedly at the moment of its introduction, but that we must expect such extra powers of performance to be achieved at the cost of wearing life. Happily that is a gloomy form of prophecy that has been given the lie by events in every important case without exception, from the inception of the motor industry to the present day. In the second place, practically for ten years past progress has been made in motor-car production proper in every direction save in the single one of reducing the weight of vehicles of the medium or large power class. Thirdly, the light or the small car is not, as some would have us believe, an entirely fresh proposition. On the contrary, the motor movement had its beginnings over a quarter of a century ago in voiturettes or light vehicles. Ten years ago the biggest outputs were for still another class of light machine called the small car, which in most cases—such as the Wolseley-Siddeley in England, the Cadillac in America, or the De Dion in France, to name a few outstanding examples—were light machines embodying not a little of cycle engineering constructional practice. They were chiefly of the single cylinder sort, and they were limited in the matter of actual power, so that from 6 to 10 actual horse-power was all that could be expected.

DIFFERENCES WROUGHT IN A DECADE.

Where is the difference to-day? In all the best directed efforts we see that whereas the single cylinder was in a big majority ten years ago—at the time, for example, of the Royal Automobile Club's small car trials at Hereford in August, 1904—to-day the four-cylinder, water-cooled motor is the type most in evidence, though not a few light cars are currently marketed with two-cylinder motors. Nevertheless, cumulative experience as well as the public demands undoubtedly points to the four-cylinder engine. Nominally, in light cars to-day, it is rated at about 9½ h.p., the vehicle weighing at most 12½ to 13 cwt. Actually, in the best examples, these engines can give anything from 18 to 26 h.p., so that we have, after an interval of ten years, not only approximately from three to four times the horse-power being put in a vehicle of a given weight, with the result of an enormous increase in the range of its performance, but we have besides small cars which are proportionately more powerful for their weight than even the average medium and large car. Yet we have had, in this country at any rate, no officially conducted trial to which the inquirer may refer for first-hand, absolutely reliable, and utterly independent evidence as to what the light cars of 1913-14 can do in a test of any appreciable length or severity. This is all the more regrettable, first, because manufacturers as well as potential purchasers need evidence of this character; and, secondly, because it will be appreciated from the points I have brought out that the results obtained with one and two cylinder, small, light cars in official trials ten years ago cannot in any sense be applied to the four-cylinder, water-cooled types of 1914.

REGRETTABLE ABSENCE OF OFFICIAL DATA.

The medical man's first and last need in the case of any vehicle is reliability. It is therefore imperative to point out in his interests this absence of any current official data to which he can refer for inquiries under this head. It is further matter for keen regret that the only light car trial of any duration on the programme for this season is the Royal Automobile Club's test from May 4th to 9th under practically the same scheme as its historic small car trial of 1904. The test will be an interesting one under two heads, first, because approximately sixty vehicles will figure in the entry list; and, secondly, because it will show how the light two and four cylinder car of 1914 differs from the one and two cylinder cars of ten years ago of approximately the same cost. The rules stipulate that no machine may weigh more than 1,500 lb. completely ready for the road, the engine limit being fixed at 1,400 c.cm. Makers may build vehicles as light as they like, and make the engines as small as they choose. From an exhaustive point of view, however, the trial will not be anything like sufficient. Unfortunately we shall have to wait until the summer of 1915 for something reasonably severe under this heading, for it has been agreed between the bodies concerned that the Royal Automobile Club will not promote any light car trial next year, but will instead leave the Scottish Automobile Club to organize a light car trial in the Highlands in 1915.

LIGHTNESS NO LESS IMPORTANT THAN CHEAPNESS.

Meantime the needs of a section of the medical profession have to be met. Doubtless under the head of initial cost America can provide various articles as cheap, and some of them cheaper, than our dependable light cars. But the cheap American motor car is still a vehicle heavier, therefore more costly to maintain, than the light car ought to be and is. Therefore, while pointing out, on the one hand, the need for exceeding caution in face of the untried nature of light cars as a general proposition, the next stage is to inquire whether or not there are being produced to-day any types of vehicles by firms whose record and experience furnish a guarantee of a sufficient sort.

One of the first things the inquirer observes is that Vickers's concern—the Electric and Ordnance Accessories Company of Aston, Birmingham—is beginning to give delivery this month of a vehicle styled the Stellite light car, which has been designed and carried through exhaustive experimental stages by Vickers's other concern—the Wolseley Tool and Motor Car Company, which is making the four-cylinder engines for the Stellite light cars, that are sold under guarantee. Though sundry examples of these machines have been made and tried for a lengthy

period, no example of the vehicle was shown either at the Pleasure Car Exhibition or at the Motor Cycle Show at Olympia, but specimens have been introduced to the public at the Scottish and sundry other exhibitions. The first thing that will strike anybody about a proposition of this sort is that it comes from a firm that did more in its time than any other British concern to introduce the cheap light car a decade ago. At the beginning of this century the single cylinder 6 h.p. Wolseley-Siddeley light cars, costing £175 complete, were the vehicles with which the firm's reputation was first made, and which did enormous service in developing motoring in these islands. The Wolseley engineering and manufacturing staff has evolved the modern product styled the Stellite light car. The method of production may also be described as Wolseley, in that the heads of all the departments and the foreman in charge of the Electric and Ordnance Accessory Company's shops concerned with the production of this new vehicle are Wolseley men, so that to all intents and purposes this is a Wolseley car factory under another roof.

A POLICY AND ITS PRODUCT.

So much for credentials. What lends even greater prominence to this latest enterprise of Vickers's is the brains that are embodied in the construction of the vehicle. Here has been no attempt to reproduce a big car in little, because, as steelmakers as well as motor manufacturers, the Vickers-Wolseley combine knows full well, what the public is so apt to miss, that if you are endeavouring to supply a big car in miniature at a low price you must either cut the workmanship, or the material, or you must skimp the design. These are points which the inquirer will do well to bear in mind when studying the constructional details of any vehicle brought forward under the guise of a light car. In the particular case in question the construction of the vehicle has been determined entirely by the policy on which the enterprise rests. That policy is this, that the vehicle must embody as fine materials and workmanship as the most expensive Wolseley cars. Having studied these Stellite cars in process of manufacture, I can state that it is a policy that is being carried out in practice. Apart from quality of material and workmanship, the other factors to be embodied in the vehicle were laid down as refinement of running, lightness to ensure cheap running costs, simplicity, and durability. After very lengthy trials there has been evolved a vehicle which has approximately 50 per cent. fewer parts than the present standardized middle or large size motor car, yet which has all the parts necessary to the new vehicle. The weight is therefore kept down without skimping of material, and the amount of labour necessary to the production of the machine is also reduced to the minimum, so that the best workmanship can be used throughout.

PROPORTIONATELY HIGH ENGINE POWER.

The features of construction include what may be called the essentials demanded by the user in quest of refinement as well as efficiency. Thus the springing, by a patented form of quarter elliptic fore as well as aft, results in the vehicle holding the road well; yet I found it impossible, when taking it at full speed over pot-hole surfaces, to get a jar or crash of any sort; the machine floats. Again, you have evenly balanced power production from a four-cylinder water-cooled engine of 62 mm. bore by 89 mm. piston travel, otherwise of 1,076 c.cm. capacity. The efficiency, though coming within the cycle-car engine volume, may be judged from the fact that one of these motors has given 26 h.p. on the bench, though, of course, that full power is not got on the road. Nevertheless, as the machine weighs about 12 to 12½ cwt. completely ready for the road, it will be appreciated that it is proportionately more powerfully engined than ordinary pleasure vehicles of almost any size. For example, who could name the standard and non-racing or sporting type of car weighing 25 cwt. complete with all accessories which has a motor that could give 52 h.p. on the bench? or who could name the machine weighing 37½ cwt. in complete running order which has a motor that can develop 78 h.p. on the bench?

RANGE AND REFINEMENT OF SERVICE.

It will be realized, therefore, that the Stellite light car has proportionately a very powerful engine, though the

power is provided in what may be called a very small packet. The small volume of the motor enables practically all the chassis space to be used for the body accommodation. In the case of the two-seater vehicle, the passengers are seated in an ideal position, midway between the two axles.

Silence and smoothness of working are ensured by the under worm-driven back axle in combination with a compact gearbox, giving two forward speeds and a reverse, so that the machine is intended to do practically all its work, save starting and ascending steep hills, on the through, therefore silent, drive. The indirect, or low, speed, moreover, works so quietly as not to be noticeable to those on the car. Its power of speed is by no means negligible. I found in traffic that it can pick up on top speed and take advantage of an opening of the way in the most extraordinary fashion, being second to no big car in this connexion. All ordinary hills can also be negotiated on the through drive, so that in the course of an average day's tour of anything from 100 to 200 miles the car will not be on the low speed for more than 5 per cent. to 7 per cent. of the way.

THREE MAIN UNITS.

The scheme of construction is to build the vehicle in three main units, the first of which consists in the front axle assembled as a unit with quarter elliptic springs and plates for attaching those springs to the wooden side members of the frame. The second unit consists of the four-cylinder motor with its control gear (including clutch and brake pedals), which are bolted direct to the armoured wood frame. The third main unit consists of the enclosed propeller shaft, the back axle, with its combination worm-driven gearbox, and the rear quarter elliptic springs. Therefore we have in brief the outstanding features which make for refinement, yet a great number of parts embraced in the construction of an ordinary car have been eliminated. The net result is that the machine can be marketed to retail complete for 150 guineas, including lamps, horn, hood, screen, and, in fact, all accessories ready for the road, the vehicle being marketed in two alternative colour schemes, dark green or fawn.

ABANDONING COMPLICATION FOR SIMPLICITY.

Owing to the manner in which the public is misinformed from time to time concerning motoring, I can imagine some folk saying, "Yes, very wonderful; but what a pity they do not improve the vehicle by adding a third speed and charging a few pounds more." In the first place, it is gravely questionable if a third speed would improve a machine of this character; in the second, the provision of such an extra would entirely alter the constructional character of the vehicle. For example, it would be necessary to add an extra striking rod for operating the additional speed, and that, again, would entail a complete redesigning of the gear for carrying the speed-operating rods, so that they should be stronger in proportion; there would thus gradually be taken away the whole character and aim of a car which was described to me by a very brilliant American automobile engineer as the biggest brain wave he had discovered in the course of his recent inquiries as to what we were doing in the British industry. The policy behind this proposition is not to imitate conventional car practice as we know it to-day, but to evolve something entirely fresh. Therefore, as this vehicle develops in the process of time in common with all motor machinery, it will be found, not that parts are added to it, but that parts will gradually be subtracted from the scheme. Thus, if it could be proved to the manufacturers that for the same money they could supply a third speed, their policy would not be to supply it, but to continue to supply the machine in its present condition, subtracting from the retail price of it the cost of the imaginary third speed. I put the matter in these various aspects so that the real point behind the construction of the machine may be appreciated, for at this period it is extremely difficult to discover sound brains in the many propositions brought forward under the guise of light cars.

A FRESH START AND WHAT IT PROVES.

The Stellite light car is a machine that needs no excuse for being manufactured. It marks a fresh starting-off point, and it reveals more forcibly than anything I have yet come across the extraordinary advance that has really

been made in modern engineering in ten years. Here, for £17 10s. less than we had in the extraordinarily cheap Wolseley single-cylinder cars of 1904, we have not a one but a four-cylinder machine of practically more than three times the power previously available, with a consequent extraordinary gain of flexibility as well as a vast increase of speed powers in the standardized article; we have great economy of petrol and tyres—a detachable wheel, tyre, and tube complete cost only £3—and we have a refinement of working, alike in absence of vibration and in quietude, by reason of the worm-driven back axle system, which can scarcely be exceeded in the most costly cars of the day. It is to be remembered, of course, that by increasing the powers of performance so extraordinarily the machine has to be proportionately many times stronger than the small car of ten years ago, because of the shocks to which it is subjected. Here, too, you come on the invisible but none the less evident thing—the vast improvement that has been made in metallurgy in the interval.

During this first year 1,500 Stellite light cars are to be produced. I have dwelt on the original ideas behind the construction of this vehicle at the moment because none of them are freakish, all of them are practical, and they result in an extraordinarily cheap production; it is supplied with a three-seater body for £170. The story of the development of this enterprise—which, in my view, marks the first notable effort made by a British manufacturing firm of a responsible and established sort to start afresh and utilize all the resources of the motor industry to attack the problem of the cheap light car that shall be found to be durable and refined—will be followed with particular interest by members of the medical profession, for it is a type of car that will undoubtedly make motoring history. Its handiness is such, too, that it can be used by the country doctor with particular advantage because of the ease with which he can drive it about lanes and under conditions in which it is difficult to manoeuvre a motor car weighing a ton or more. The petrol consumption works out not much short of 40 miles to the gallon, and at the normal engine speed of 1,600 revolutions a minute the car travels at 24 miles an hour, the range of speed on the flat with the direct drive being officially returned as from 8 to 35 miles an hour. Actually, I have far exceeded the higher rate of travel on one of these standard cars.

A GERMAN LIGHT CAR.

One of the features of the Olympia Show was the introduction by the firm of Morgan, of Long Acre and Old Bond Street, the British concessionaries for the well-known German Adler cars, of a light car of the four-cylinder water-cooled sort, of 10½ h.p., according to the Royal Automobile Club rating, the bore measurement being 65 mm. and the piston travel 98 mm., giving an engine volume of 1,301 c.cm., so that this vehicle also comes under the three-guinea tax. This machine has three forward speeds, and is made in two lengths of wheelbase according to whether the individual user desires the coachwork to provide seating accommodation in the tandem fashion or side by side. The price with either of these types of body, hood, wind screen, two acetylene head lamps, with independent generators, two paraffin side lamps, a tail lamp, horn, jack, pump, tool-box and kit, is 200 guineas. Wire wheels are used, those manufactured under the Rudge-Whitworth detachable license being supplied for 10 guineas extra. One of the firm's aims in producing this vehicle is to meet the needs of the medical man who desires that his motoring costs should be light. Though probably the longer wheelbase, tandem-seated model holds the road best, for my part, the more conventional side-by-side seating is the type that makes the stronger appeal. The petrol consumption is calculated to average 35 miles to the gallon. The tyres, being of small size, are cheap; while the fact that the machine scales approximately 11 cwt. should ensure light maintenance costs under this head.

On the Road.

I found that with the shorter wheelbase of the two the suspension is quite good for so light a chassis and so moderate priced a vehicle. The gears are easy to change and reasonably quiet. They are furnished, not for ornament, but for use, for it is not intended that this should be a

machine that will do all its work on top speed. On the contrary, the gears are there to save the motor being over-strained and to enable it to be run at its most economical revolutions. The wheel-lock proved exceedingly handy. One can turn a complete circle in the average roadway, a point of particular importance to the medical man. Apart from the gain of having the seats side by side, of course, the shorter wheelbase used for the sociable body enables the vehicle to turn in shorter compass, which is particularly handy for service in the country in negotiating lanes and so forth. From a driver's point of view the control of the Adler light car is simple. The ignition is self-advancing and retarding, the control of the engine-speed being entirely by the throttle through a single lever on the face of the steering wheel, for this car differs from the average, particularly in that there is no accelerator pedal. Both the foot and the hand brakes proved efficient. Though light the car has much of the characteristics of the Adler firm's larger vehicles. A Morgan-Adler small car secured one of the eighteen gold medals awarded among the fifty-three light cars which were entered for the London to Exeter and back twenty-four hours' run, undertaken under stormy weather conditions.

THE PIONEER FRENCH SMALL CAR.

Among the firms which pioneered the small-car movement in a manner that has been of use to the country doctor, none has stood out more conspicuously than the De Dion-Bouton. Beginning with the production of steam vehicles, it came presently to petrol, and the little single-cylinder machines with tubular frames made motoring history in the last century. They cost more to buy than the four-cylinder light cars that are beginning to be put on the market to-day, and they had not as much power or refinement. This comparatively old-time enterprise, moreover, is particularly interesting to study at the moment because it enables us to judge concerning the possibilities of low-priced small cars wearing, for it must be an ill bargain to acquire a machine which will not serve for more than a year or two. On the occasion of the opening by the De Dion Company of its latest enterprise—coach-building and repair works at Edgware Road, Cricklewood, four miles and three-quarters from Marble Arch—I was at the pains to go into the details of the stores department, and observed the orders that come in daily for parts of models that were not made after 1899, so that the latest of such machines have all been on the road fully fifteen years. They are little single-cylinder vehicles, and the parts required are chiefly piston rings, pistons, and so forth; in other words, moving parts that it is essential to replace because they have been quite worn out in service.

FIFTEEN YEARS' SERVICE AND STILL USEFUL.

It will be allowed that if any small, light car of moderate cost can last ten years in daily service the owner will have found the investment profitable. Yet here we discover machines which have exceeded that limit by 50 per cent., and which are still running well after a replacement or two. In the interval the firm has, of course, done notable things in producing small size four-cylinder cars; in fact, all along the line it has served the medical profession well. The latest enterprise of the British branch represents the removal of the repairs works from Islington, the removal of the stores from Great Marlborough Street, and the start of a coach-building section for reproducing bodies of standard quality at moderate prices. For this new branch men have been engaged who have conducted successful coachbuilding businesses in the Midlands. The fact of having the repairs department under the same roof as the coachbuilding is, of course, handy. It is well known that after the average chassis has been sent to the coach-builder's for painting and to have the body mounted it needs testing again. Further, the new arrangement makes for economy in that it is not necessary to send here or there a lorry with tyres and kindred gear in the case of every vehicle, according to the individual coachmaker's whereabouts. Instead, all necessary parts are stored in the premises where the bodies are made. Though handy to London and readily accessible by three means—rail, tram, and motor bus—the works are situated in a field, and the natural lighting of them is good, while in plan

they represent the latest constructional methods to ensure that the staff shall labour under the most healthy conditions. I saw all sorts of bodies being made—some for the large eight-cylinder vehicles, the designs alike of the covered and of the open types being sensible and pleasing while the workmanship and general finish were certainly excellent. I gather that a minimum of ten coats of paint goes to the standard body, and a couple of dozen to some types.

THE MEDICAL INSURANCE AGENCY.

WHEN the Workmen's Compensation Act was passed it was generally felt that the extent of the liability of employers in respect of domestic servants, grooms, chauffeurs and gardeners, and of casual labour such as that of charwomen, was clearly a risk which every prudent man would wish to cover by insurance. Medical practitioners also had to have regard to the liability which might arise in respect of dispensers, nurses, and, possibly, assistants in their employment. The matter was discussed in the BRITISH MEDICAL JOURNAL and in the *Lancet*, and it was suggested that arrangements should be made to effect policies for medical men covering the whole liability with regard to the new Act, including any special professional risks that might arise. A committee was formed, consisting of representatives of the *Lancet*, and members of the British Medical Association, under the chairmanship of the late Dr. Radcliffe Crocker. The Council of the British Medical Association, though it did not see its way to take any official part, looked on the proposal with benevolent eyes, and Mr. Guy Elliston, the Financial Secretary of the Association, became the manager of the Agency which the Medical Insurance Committee at once set up.

From the first it was resolved that the agency should not be limited to workmen's compensation, but should include life, fire, personal accident and sickness, burglary, motor car, or any other form of insurance, and that the business should be placed with any insurance company or underwriter deemed to offer the best terms and security.

The heading of life assurance covers policies under which the premiums are payable either up to a certain age or throughout life, the sum assured being payable either at a given age or at death.

Sir John Collie refers in his address (page 639) to the difficulty experienced in making suitable investments, but does not mention the method of Endowment Assurances. Under this plan there are no markets to be watched, and moreover, income tax on the premiums paid is saved. In our issue of July 15th, 1911, this aspect of endowment assurances was dealt with at length, and the actual results under an endowment assurance were compared with an ordinary investment. It will be interesting now to give a further illustration of the operation of endowment assurance. By the same policy the insuring person may arrange to receive either a lump sum on attaining the age of, say, 65, or a pension at that age, and may exercise his option on attaining the age, while at the same time insuring a lump sum in the event of death at an earlier age. The following examples show the benefits which can be secured by a healthy male at the ages stated for an annual outlay of £10, and the cost of providing a pension of £100 per annum.

ENDOWMENT ASSURANCE.

Benefits Obtainable for an Annual Premium of £10.

Age.	Annual Premium.	Sum Payable at Death.	Option at Age 65.	
			Lump Sum Payable Including Bonuses	Or Pension.
30	£ 10	£ 342	£ 620	£ s. d. 64 16 10
35	10	279	478	49 19 8
40	10	223	360	37 12 10
45	10	171	261	27 5 10
50	10	123	178	18 12 2