III.—Australian Opportunity and Influence.

AFTER leaving the Longlands Foundry Herbert Austin managed to secure a post as manager of a small engineering firm. Some of the work which came his way in this capacity was in connection with Wolseley Sheep-shearing Machinery, for which his firm had obtained an order. In the course of his work in this connection he was able to seize upon several weaknesses in the machinery, which he pointed out to the manufacturer. Several of his suggestions for improvement of the machinery were adopted by the Wolseley Company. Finally, he was offered the post of manager to that company. Mr. Frederick York Wolseley, who founded it, was a brother of the then famous General Wolseley.

Herbert Austin's association with the Wolseley Company has continued to this day.

As to Australia's part in the life of Herbert Austin, as everybody knows, Australia is a country mainly dependent upon its primary industries, and a very great percentage of its wealth grows upon the backs of its sheep. The general method of shearing at the end of the nineteenth century was by means of the old hand shears. This was a slow and tiring business. The fact that it imposed a limit upon the number of sheep that could be shorn each season served very effectively to restrict the size of the country's flocks. It was of no advantage that Australia could carry a very much greater woolly population if there were no facilities for removing the fleeces.

This problem proved of the greatest possible interest to Herbert Austin. It gives an interesting insight to his character, for it seems that he can only apply himself to those things which he considers are of outstanding importance. There was no doubt about the fact that the improvement and possible perfecting of sheep-shearing machinery was a matter of very vital importance, not only to the pastoralist, but to Australia as a whole. Young Austin brought the whole force of his genius to bear upon the task of perfecting this class of machinery, and it is interesting to note that the world's sheep are shorn to-day with machines manufactured on the basic principles covered by his patents, although, of course, they have long since run out.

The problem of sheep shearing was Sir Herbert Austin's first big opportunity to show his genius for invention. Most of the world's sheep shearing machinery is manufactured on the basic principles covered by his patents.

This important task gave him the opportunity of getting to know Australia even better. He learned how the people in the "out back" lived. He learned, too, that machinery must be essentially reliable in order to give good service under "out back" conditions. He learned at first hand that a machine likely to give trouble on a station distant many miles from any township was of little interest and less use to the isolated squatter. He strove for an improvement of shearing devices, and so mastered his subject that he was invited to proceed to England and supervise the making of the machines in that country. He had spent ten years in the Commonwealth when this call came to return to the homeland—ten years which he regards as the most important of his life. One is able to sense the enthusiasm and sincerity which underlie his remarks:

"It was during my work in the Australian bush that my life's greatest ambition found birth. It was then that I discovered the urgency of the transport need, for I was able to observe the difficulties and dangers under which the 'outback' settler was compelled to live and labour. Embedded in my memory, and never likely to be effaced, are journeys through the bush in every kind of conveyance. Even to-day I find it hard to realise just how the folk of the 'Never-never' managed so wonderfully to perform their allotted task amid such dreadful isolation. Families were born and reared hundreds of miles from a railhead, hundreds of miles from the nearest medical aid, and sometimes hundreds of miles from the nearest feminine neighbour. It would be hard to make the people of the homeland understand the really terrible loneliness of those whose lives are lived in the distant open spaces. These pioneers are removed from everything that makes life pleasant, easy and safe. Yet, think how much Australia—the whole world—owes to those brave-hearted people who went out into such places and 'did their bit' in the cause of production. They have done more than their 'bit.' It was in these same isolated places, and greatly affected by such circumstances, that I made a kind of compact with myself that I would one day, by some means or other, build motor cars that could be used by these lonely but lovable people of the bush, and that by such means as I could provide the 'Never-never' would be robbed of much of its inhumanity, cruelty and terror."

Sir Herbert Austin as he is to-day, and as he was in 1895.

In Australia Herbert Austin presently took unto himself a wife, so that he had yet another incentive to carve out for himself a place in the world. He married Miss Helen Dron, daughter of Mr. James Dron, of Melbourne.

It will be gratifying to the Australian people to learn that Sir Herbert has such pleasant and vital memories of their country and problems. On his part he finds a good deal of pleasure in the knowledge that Australia not only remembers but honours him. Australians must have realised that, in setting out to build a motor vehicle of maximum efficiency, Sir Herbert was inspired by their needs in this direction, because to-day there are many Austin cars to be found in the "out back"; and Australia has many times expressed herself as particularly keen for Sir Herbert to pay another visit. There is a very warm welcome awaiting him should he decide to do this, and there can be no doubt that Australia would delight to do honour to the man who, despite the years that have intervened, has not forgotten his association with the country nor ceased to profit by the lessons which he learned as a young man when living among its people who have so endeared themselves to him.

PHASE III.—THE RETURN OF THE NATIVE.

I.—Ups and Downs with Wolseley.

"IT was mid-winter in the year 1893 when I arrived in England. It was not an auspicious home-coming for my wife was sick, our child was sick, and financially we were sailing very close to the wind. It had been necessary for me to leave Sydney at very short notice, and my home in that city was sold at great sacrifice.

"So far as the Wolseley Company was concerned, I found conditions extremely mixed. It was, of course, partly owing to manufacturing difficulties that I had been

called to England to render assistance. The difficulties were there all right, and it turned out that many thousands of defective machines had been put out on to the overseas market and had proved useless. This was not very helpful to the company's reputation, and it is hard to say exactly where the fault lay. It is certain that inspection was very lax, or rather that there was no proper system of inspection. Most serious of all, those responsible for the work had no more than a rudimentary knowledge of the requirements. We made a very bold bid to retrieve the fault by repurchasing the whole of the faulty machines. A great number were scrapped and a few were rectified. This procedure cost the company a great deal of money."

The first decade after Sir Herbert Austin's return to England was one of extreme difficulty. The Wolseley Company decided to start a workshop in Birmingham in view of the fact that most of the machine parts were produced in that district. The first premises were in Broad Street, and chosen because of their cheapness rather than with an eye to convenience. Operations had to be conducted with remarkable economy, because the company's capital had been largely consumed in connection with the shipment of faulty products. Herbert Austin had learned his lesson during his years in Australia, and was now able to impress upon his directors and his men that, in order to be good enough for overseas conditions, machinery had to be of the very finest quality. Second-rate apparatus could not function without failure under conditions which were so very severe.

Even though he succeeded in impressing upon his own men the urgent necessity for exactitude and care, still he was faced with shortcomings in the parts supplied from outside quarters. The troubles from this source developed to such an extent that the Wolseley Company found it essential to manufacture its own requirements. In order to do this it removed to a larger works at Alma Street, Aston, Birmingham. When this factory got into really serious production yet another problem arose, that of distribution.

"It must be remembered that at that time the Colonial pastoralist was not educated concerning the value of machine shearing. Of all people surely the farmer or grazier is the most conservative. He asserts that what was good enough for his grandfather is good enough for him. When the matter of mechanical shearing devices was urged upon him he would possibly argue that there was not any machine that could beat Bill Walton's tally of, say, one hundred and thirty a day. But when the pastoralist had actually had an opportunity of witnessing the shearing machinery in operation he would be convinced of its efficacy, for although conservative, and perhaps pig-headed—bless his heart—he is no fool. This educational procedure, however, all took valuable time, and the English factory suffered because the fluctuations of demand made things difficult.

II.—Touching the First Motor Car.

MEANTIME the Wolseley Shearing Machine Company turned its attention to other things in order to keep the wolf from nosing around the benches. A department was opened to manufacture machine tools, principally for cotton machine makers. Bicycle parts were also turned out at Alma Street, where the company actually commenced its operations in the automobile field. In 1895 the works were moved to Alma Street, and in 1896 the first motor car was completed and exhibited at the Crystal Palace.

Though he never took up cycle racing, nevertheless Sir Herbert toured many hundreds of miles on pedal cycles. His interest in that form of locomotion even led to his building a few bicycles at the Alma Street works.

Considering workshop methods at this period, it seems strange that so much efficient machinery was made. No definite system was in operation. Any form of specialisation was practically unknown. The shops would turn their attention to whatever was called for next, and jump from one class of job to another in most erratic fashion. A great deal of time was lost and effort wasted. Anything from a small screw slotting machine to a ten-foot slab miller weighing ten tons was tackled, as circumstances demanded. At Alma Street there was produced the first vertical semi-automatic chucking lathe, which was considered to be a remarkable piece of workmanship when exhibited at the Paris Salon.

In June, 1898, Herbert Austin "ran" a Wolseley car to Rhyl and back—about 255 miles—averaging eight miles an hour and carrying two passengers, nor did he experience any kind of breakdown. Present-day motorists may long for the "good old days" when they learn that the fuel cost of this journey worked out at about one shilling per forty miles. The years from 1895 to 1900 were very busy ones for Mr. Austin. He burned many gallons of midnight oil. Those familiar with the inventor at this stage of his career still wonder how he endured such ceaseless activity. The year 1900 saw the successful emergence of the Wolseley car from the 1,000 miles trial, and in 1901 he was elected a director of his company. His chief concern was that there did not seem to be any great possibility of his plans for car evolution maturing quickly unless some very much more wealthy concern could be induced to interest itself in the project.

It so happened that at this time Herbert Austin was in touch with Sir Hiram Maxim on matters of aviation, and had actually put forward to Sir Hiram one or two suggestions for his proposed steam flying machine. One of these suggestions, he recalls, concerned a slatted or slotted wing. Although the possibility of such a device was advanced nearly thirty years ago, it is the same scheme as that which is receiving the serious attention of designers to-day.

Sir Hiram's interest in the man Austin must have been of some assistance when the latter finally

approached the company—Vickers Sons and Maxim—with the suggestion that it should take over the machine tool and motor side of the Wolseley concern. At this time the great shipbuilding firm was in the heyday of its success, and was prepared to consider any additional enterprise that looked promising.

A deal was eventually put through on condition that Herbert Austin should manage the transferred enterprise. The new company was launched in 1901 under the style of The Wolseley Tool and Motor Car Company, Limited, and Herbert Austin was installed as the General Manager. The old company thereupon commenced the production of cream separators to take the place of the business that had been sold. The firm continued to prosper, and the turnover became quite extensive both at home and abroad. A modern factory was erected at Witton to replace the works at Alma Street, and Herbert Austin was requested to retain his seat on the board of directors. He is still on the board of that thriving company, and has been its chairman since 1911.

III.—An Echo.

WHILE on the question of agricultural machinery, Sir Herbert's views regarding the attitude of British industry toward its overseas markets at the end of the nineteenth century may be quoted:

"The British agricultural manufacturer was far too insular in his outlook. He had an idea that if he built a machine suited to British conditions then it would function efficiently elsewhere. Such an attitude has lost for Britain the cream of very many markets, for there is nothing less true than that assumption. This short-sighted policy gave the American manufacturer his opportunity, and he was not slow to seize it, ousting the British manufacturer from many foreign markets. The American realised that the buyers of each country demanded something special, and designed properly to fulfil their particular need, and America said: 'Well, if that is what you want, here it is.' England said: 'Here's what I have got—take it or leave it.' There is still a lesson to be gleaned from this experience. Our manufacturers must learn that if they are to enjoy the patronage of other countries they must adapt their products to the requirements of the market."

There seemed a tinge of regret when Sir Herbert said: "In a sense it is possible that I made a mistake when I took over the management of the Wolseley Company for Messrs. Vickers, in that I did not commence to build cars on my own account. It would, of course, have had to be in a very small way, but it might have been better from the personal standpoint than managing somebody else's business. It would have been a slow process, however, and somewhat unsafe."

PHASE IV.—THE EXPERIMENTAL MOTORING ERA.

I.—The Influence of Jules Verne.

"AS a youngster I was a prolific reader of Jules Verne and his imitators. Though I had only a vague view of the possibilities of mechanical road traction, nevertheless some two or three years before I built my first experimental car in 1895 I visited Paris and examined the very crude internal combustion engine vehicles that were in existence at that time," Sir Herbert recalls. Not in the least discouraged by their primitiveness, he believed that a very big industry would be created.

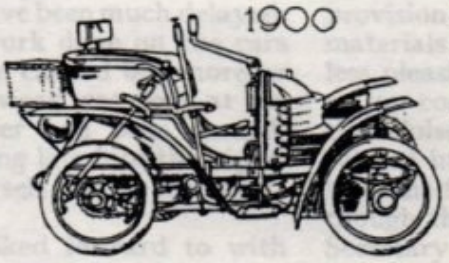
The red flag was in force. All trials were supposed to be made with a man carrying one walking in front of the machine. None proceeded very far before it stopped involuntarily on some account. This, however, was not the handicap that it might be imagined to-day.

"I can well remember an occasion when, swerving rather quickly to avoid a hansom cab which came round the corner on its wrong side, I had to pick myself up from underneath the car and was very pleased to find that no bones were broken," said Sir Herbert, sitting back in his office chair, throwing one knee over the other, and thrusting the back of his head into his linked hands—a very characteristic attitude

"Much pedal cycling, a deal of reading technical works on road transport, and the manufacture of a line of small internal combustion engines driven by gas and gasoline over a period of years previous to 1895 combined to turn my thoughts to the possibilities of motoring. I had been revolving ideas on the subject for many years previous to this date.

"In my case, the experimental period continued up to 1900. Apart from the ignition troubles, which were the first and quite the most serious difficulty experienced, probably the engines proved the most satisfactory part of the primitive cars. Only the hot tube type of ignition was available. Tyres constituted the second most serious trouble. No present-day motorists would take the road if they had to put up with the pneumatic situation as it existed thirty to thirty-five years ago. Third ranked the problem of transmitting the power from the engine to the rear wheels. Why the pioneers should have fixed on the

clash type gear, the one and only survivor of all the many others that have been tried and resurrected *ad nauseam*, is a mystery to me to this day. Possibly the comparative feebleness of the engines of the period compelled attention to an efficient transmission, no matter how noisy and difficult it was to operate at first."



Sir Herbert, who applied the gate change principle to a car built by him in 1895, claims to be the originator of that now universal system. The gate may be seen in any photograph of this early model.

"Because the Wolseley car reputation was built up by the performance of horizontal engined machines I have often been asked why I used that type at the outset. The reason is obvious to anybody who knew my experience and the state of affairs at that period. It was the popular type in industrial gas and oil engine practice, and it enabled an extraordinarily low centre of gravity to be achieved, as anybody may appreciate who remembers perhaps the last examples, and certainly the most powerful, I ever built, namely, the Wolseley 'Beetles' that took part in the Gordon Bennett races at the beginning of this century. Nevertheless, apart altogether from the trend of fashion, when the four-cylinder-engine car became practicable I found that I could not obtain the same advantages with the horizontal as with the vertical cylinder position. So I changed over."

Those who have occasion to take the fine modernised roads between Birmingham and Coventry to-day may like to know that that route was one of the principal trial grounds used in the initial stages of the British motor industry. Then the highway had gradients that were more irregular than those it exhibits to-day. They were very severe alike for primitive engines and brakes. But they were not the cause of the road being so frequented. Sir Herbert had to evolve and build the first Wolseley cars in his spare time. As he was not his own master it followed that the only time available for that work was Sunday morning.

A story is told by a motorist of long standing still interested in the industry that the subject of these notes, like many other early motorists, upon many occasions found the hairpin, then in use by the female of the species, a very useful gadget for executing temporary repairs. On one occasion, when near the famous Stonebridge Hotel, the car had ceased to function. Sir Herbert Austin, tinkering with it, found that nothing could be done without recourse to a hairpin. He had exhausted his personal supply, and called upon the crowd of onlookers to assist him by providing one. The inventor waxed greatly eloquent and angry because not one of the *male* crowd could produce the required article.

His position to-day would be equally difficult if the crowd were a mixed one. Can those who at the same time took this road on their pedal cycles for a spin to enjoy the sport of watching the troubles of these early spitfire, bang-start-and-stop experimental cars—some of which had three wheels only, though they were distinctly cars as contrasted with motor cycles—have had any guess either of the outstanding part that the most striking figure in that group was destined to play in British industry, or of the wide and rapid development of car use, which is ever a subject of amazement to us?

If the droll truth were to be told, and as a matter of prosaic fact, usually they used Herbert Austin more or less as a pace-maker, getting well away while he was having difficulty in starting, being overhauled once the car got going, and, generally, riding so close after it that when the inevitable stop came through ignition or tyre trouble they had to swerve rapidly to avoid running into it. A member of the staff of *The Autocar*, who so used Sir Herbert's pioneer efforts, recalls that in appearance even then he was practically the man with whom we are familiar to-day.

His character was proved early in life and is uninfluenced alike by the passing of the years and by continual contact with his fellow creatures.

II.—Production Succeeds Experiment.

THE experimental period may be said to have culminated in the production of the car type that won the Silver Medal and the first prize in the small car class in the 1900 One Thousand Miles Trial promoted by the A.C.G.B. & I. (now the R.A.C.). Not many vehicles competing were driven by the men who designed and built them, as was this Wolseley. Such a success greatly helped to secure the sale of the business to Vickers. Another factor was that orders came from personal acquaintance, and, generally, without searching for them. Instance the case of Mr. C. L. Levetus, who placed an order for no fewer than one hundred hundred-guinea cars for exportation to India. There was so much delay, however, over the experimental stage that in this case the cars were never handed over and exported. But when they were put into production every one of them was sold full easily in this country. Curiously, at first no serious difficulties were encountered in manufacturing, the general problem of the foundry, forge shop, press and machine shop having been already eliminated in the manufacture of other goods. Nevertheless, all credit is due to those who bought these early vehicles, risking their money and their limbs on them, the more so in that they had to bear personally all the popular dislike of the new mode of road locomotion.

But for their enthusiasm and example the evolution of mechanical road transport would have been much delayed.

"As I have told you, all the work done on the cars built in the last century had to be carried out more or less in spare time, after our day's work was done at the factory and the bread and butter had been earned. This, of course, often meant working late into the night. The road testing was done by myself during the week-ends, which were my holidays."

Monday morning is seldom looked forward to with any great amount of pleasure, but the Monday-morningitis of the employees of the Wolseley Sheep Shearing Machine Company was relieved by the possibility that some one or two of them would be called upon to rescue their manager's chariot from some lonely spot at which it had given up the ghost.

"At first I favoured a three-wheel construction because it was a simpler proposition. But even then I knew that it was only a passing phase because, though there was a limitation as to the size you could build such a vehicle, there was instability at corners, and there were difficulties in regard to suspension, and so on, all of which very soon put such construction out of the car picture.

"The excitement wherever we went, and the exhilaration of those who were given experience of such experimental motoring, were sufficient to show that the scale of demand would only be a question of supply and price," said Sir Herbert, speaking rapidly and waxing reminiscent. "As soon as a few runs on the road had been accomplished, visions of everybody driving his own car were a natural sequence.

Sir Herbert Austin, K.B.E., and Mr. Herbert Austin, 1900.

"Even at this period my designs embodied definite principles, including the channel section steel frame supported on half-elliptic springs front and rear, as well as steering on the Ackerman principle through worm and worm-wheel fixed to the front axle and operating through a flexible jointed shaft from the foot of the steering column.

"If the horizontal engine be changed to a vertical type, the rear entrance of the coachwork to access on either side, and the live axle substituted for the chain drive, you can distinguish the prototype of the car with which we are familiar to-day."

Sir Herbert is always anxious to stress the invaluable part played in tyre evolution by the enterprise of that accessory industry, holding that the value of that excellent work is not sufficiently recognised by those whom it now benefits.

The fact of being allied to Vickers simplified the provision of special steel and the making of tests of materials of all kinds. Yet the arrangement had its less pleasing aspects. Thus the sheer magnitude of the major concern, and the comparative insignificance of the Wolseley business, was the subject of energetically rubbed in comment, particularly from headquarters, at the time for presenting the result of each year's working, though the profit was quite creditable. Once, the then Secretary of Vickers', who was considered a mighty important person, remarked that the car business "hadn't pulled up many trees."

It was not a case of "roses, roses all the way." Ignition problems alone were many and abstruse, the coils, the contact-breakers, and the sparking plugs each in turn serving to drive the designer nearly crazy. Again, carburation was a serious trouble owing to the claim by the Daimler Company to a master patent on the float feed—a claim that was afterwards upset by an association of the other manufacturers.

Such were the circumstances, however, in which there was achieved a turnover that would not be despised to-day. Instance the following figures:—From February 18th to December 31st, 1901, the Wolseley Tool and Motor Car Company turned over £22,368 10s. 8d; from January to December, 1902, £99,440; and from January to December, 1903, £171,136.

The rapid growth of the car business soon put the machine tool section in the background. It died a lingering death after Sir Herbert left the company in 1905. Two years previously the first big change from the horizontal to the vertical engine had been introduced, the latter type being marketed as a two-cylinder proposition built to the order of Mr. J. D. Siddeley and sold under his own name, having a live axle and a torque tube, as distinct from the chain transmission employed for the horizontal-engined series. Wolseley-built Siddeley cars were also marketed at £175 complete as two-seaters with single-cylinder engines and live axles. These, and the horizontal single-cylinder engined, chain-driven Wolseleys marketed at the same price, established a reputation for reliability for the British motor car industry which was invaluable in after years. Those who took part in the reliability trials in hilly country on these vehicles recall that they used to expect to arrive as regularly at each stage as when motoring to-day with a modern car—a feeling never experienced with cars in general in those times.