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Address on Saurer History, Experiences and Latest Achievements given by Mr. A. Lampert at the Meeting of the City Swiss Club on October 6th, 1931.

A most successful lecture on the above subject was given at Pagani's Restaurant on the occasion of the last Monthly Meeting of the City Swiss Club.

With rapt attention the members listened to the lecturer, who very ably managed to interest even those hearers who are not acquainted with technical engineering matters.

The Saurer Company has early this year amalgamated with the Armstrong-Whitworth Co. of Newcastle and London, under the name Armstrong-Saurer Company, and has thus become an institution of the greatest importance in the engineering world. We therefore propose for the benefit of our readers to publish this lecture in abridged form, as we feel sure that same will be of great interest not only to those who are connected with the Engineering profession, but also to our readers in general.

The name of Saurer has, in the Automobile trade all over the world, almost become a household word; its history has been one long series of unique achievements and progress, having won over fifty first prizes, medals, diplomas, etc., in all the important International vehicle trials. To the general public, Saurer is also known as the maker of the famous Alpine Coaches. Of every Swiss and of every visitor to our lovely little country, who does not know of those wonderful coaches of the Swiss Postal Authorities, making their way up and down our winding Alpine paths with a comfort and safety which leaves nothing to be desired. These vehicles are hard to beat and compel great admiration by every motorist who happens to meet them on these roads. Such achievements however, do not come from one day to another, they are the outcome of experiences gained over many years.

In 1853, Mr. Franz Saurer started a foundry at St. Georgen with two workmen. Ten years later the foundry was moved to Arbon, at that time a small town of approximately 500 inhabitants. Mr. Adolphe Saurer joined his father and worked in the factory for some time, leaving later for a visit to France and England, in which countries he joined large Works and made a particular study of foundry work in all its branches.

In 1866, Mr. Adolphe Saurer returned from abroad and re-entered the factory, and the firm began the manufacturing of embroidery machines. The power for driving the machinery was at that period obtained from a horse driving a shaft. Progress, however, was continually made, and it became necessary to purchase a more up-to-date outfit for driving the manufacturing machines.

In 1878, the delivery of the first embroidery machine, which was $4\frac{1}{2}$ yards in length was made by Saurer.

Following the death of Mr. Franz Saurer in 1882, the firm, who had grown to employing over 500 men, was carried on by Mr. Adolphe and Mr. Emil Saurer, who shortly afterwards completed an automatic embroidery machine of 23 yards in length. By real hard work and countless new inventions, these machines were brought to a state of perfection not dreamed of before, and I am sure, in quoting the following figures, it will give an idea as to the activities of Saurer in embroidery machines: From 1878 to 1910, 22,750 embroidery machines were delivered, thousands of which were of the ten and fifteen yard type. The manufacturing of embroidery machines, however, had one great drawback, namely, that the amount of work done by these large works was entirely dependent upon the state of the embroidery market and the changes of fashion.

In order to make up for these fluctuations, Mr. Adolphe Saurer joined by his son Hippolit, decided on the construction of Paraffin Motors, being the first Swiss firm to undertake the making of such engines. As time went on, these machines were more and more perfected, and in 1893, one of this type of machines was scientifically tested by a well-known authority, and the excellent results obtained created such great interest all over the world that several big foreign firms took a licence for the manufacture of these Saurer engines.

In 1894 carburettors, far superior to those previously in use, were produced and which ultimately were used for single cylinder petrol engines, and put for the first time in commercial vehicles.

In 1896, the first of these single cylinder petrol-engined vehicles was delivered to a customer in Paris. This, by the way, was still running in 1911.

The preliminaries for the construction of a motor lorry, driven by a multi-cylinder petrol engine, were made about 1903, completed in 1904, and this vehicle was in every respect one of the most advanced machines of its day. This type of Saurer Chassis was exhibited in Paris that year and created immense interest, owing to its many unique features, such as compressed air engine starter, the engine brake, and a new special car-

burettor of Saurer's own manufacture, and as a result of which large orders for Bus Chassis were received, some of which were ordered by a Railway Co., and delivered to London.

In 1907, the Swiss Postal Authorities ordered two omnibuses with a passenger capacity of twenty persons each. These cars were used without a break up to 1924, that is to say, for eighteen years, when from one of these cars the old-fashioned body was removed and the vehicle turned into a lorry, carrying sand and stones for a few further years. This is without a doubt a splendid testimonial to the excellent quality of workmanship done by the Saurer Company.

At a time when the motor car industry still had great odds to face, Saurer's were able to pile success upon success during the ten years from 1904 to 1914. In parallel with the successes of commercial vehicle designs, great results were also obtained with our engines built for motorboat racing, and for which, already in that period, engines with an output of over 100 h.p. were built.

The beginning of the war in 1914, however, caused—like to many other big enterprises—a great set back to Saurer. Fortunately, however, the falling out of orders from foreign countries was somewhat compensated by large orders received from the Swiss Government and the Swiss Army respectively who, up to that time, possessed only a limited number of commercial vehicles, owing to the fact that for manoeuvres and such like army movements, the necessary commercial vehicles were requisitioned from private owners. The manufacture of the vehicles, however, became more difficult, owing to Switzerland depending entirely on the supplies from its neighbours and other foreign countries. The greatest difficulties, however, were experienced with the supply of petrol. All private users were rationed as the petrol had to be reserved for the army. The situation became gradually worse so that one was compelled to find all sorts of substitutes to keep the works and industries in general going. These difficulties were, perhaps for me, a great opportunity as I had the privilege to carry out tests with all possible substitutes. Various gases were tried, such as coal gas, acetylene and hydrogen. Of the liquid range of fuels, mixtures of solvent naphtha and other fuels were tried in addition to alcohol and several other special commercial substitutes. At this very same period, the question of running vehicles on heavy oil was seriously considered, and as a result of which the first oil engine for a motor car was produced and tried. The system tried at this period (1915), however, was entirely different from the one I shall describe to you later on during my address.

In our aim to produce an extra light engine, we went, perhaps, a little too far in weight reducing and the engine failed during the first few hours of the trial run. Owing to the second breakdown with this type of engine, we found that the whole arrangement required to be re-designed which, however, was delayed for a certain period owing to pressure of other work.

Realising the great possibilities for a real up-to-date chassis which we could offer immediately following the end of the war, especially also to Commercial Vehicle users in countries where the geographical and climatic conditions are such as to necessitate particularly efficient and reliable vehicles, the construction of the first "A" type chassis of five to six ton carrying capacity, was commenced in 1917. In order to ensure perfection of the first design of these chassis, a series of this types were tested out in the Sahara Desert, where the conditions were so severe that any weak point in the design came to light without much loss of time. Here, I was again fortunate enough to be chosen for this mission, and in 1919, I departed for Morocco and the Sahara Desert. On returning from my first visit to the Sahara, three and one-half months later, I had an opportunity of taking part in the International post-war trial in Spain, which was run from Barcelona to Madrid, when the Saurer lorries came through with flying colours taking the first and second prizes.

During my stay in Europe at this time all the necessary parts for the improvement of the chassis running in the Desert were prepared, and I returned for a second time to North Africa with a squad of fitters to execute all alterations required on a large number of vehicles already supplied to an important user in that country. This user undertook all Transports for the French Government, carrying food and equipment to the Military outposts of the Foreign Legion in the Desert, a great task over trackless country and often connected with serious danger owing to the convoy's getting attacked by wild Arab tribes.

In August 1921, the first Saurer Service Station was opened in this country, and a few weeks after, we submitted one of our vehicles to the R.A.C., for a trial in the Devonshire hills, mainly to demonstrate the efficiency of our engine brake. With our coming to England, Saurer also introduced to this country the first six-ton chassis with direct bevel drive. In 1923 such a chassis was again sub-

mitted to the R.A.C., for a trial run under their observation for over 1,000 miles. The fuel consumption for this trial was a record, being the first four-wheeled lorry to obtain over 100 ton miles per gallon.

In 1925, at the Olympia Show Saurer was again the first firm to introduce a six-ton lorry on pneumatic tyres. A prominent user stated, at the time, that it was madness to do such a thing, or at any rate just an expensive plaything. Today this very user has had his whole fleet, a fairly large number of lorries, converted from solid to pneumatic tyres. By this time, Saurer's had been well introduced into this country, and by reason of their economical running, were readily adopted by all big users keen on having up-to-date transport vehicles, so that not even the introduction of McKenna duties in 1926 could prevent still further progress being made.

If Autumn 1928, Saurer once more was first in this country to deliver a heavy oil engine chassis to a customer in London, and the splendid results and performance obtained from this heavy oil engine caused immense interest amongst all people connected with road transport. One of our clients, in submitting his report on the performance of this type of engine to his Board of Directors, made a very interesting comparison. This heavy oil engine chassis, one day went out with a load of six tons to Eastbourne, where about thirty deliveries were made, the vehicle returning intimately to London with a load of empties weighing approximately two tons. The total mileage of that trip was 442 miles, and the fuel consumed amounted to ten gallons. The price of fuel oil at that time was 4½d. per gallon; the cost, therefore, of fuel for the whole trip for the huge six-ton vehicle works out at 3/9d. A little Austin-Seven car, with a consumption of approximately 40 miles per gallon, would use for the same distance about 3½ gallons of petrol, the cost of which at that time was approximately 1/5½d. per gallon, so that the fuel cost for the little Baby Austin amounted to 5/1½d. The cost of petrol used with an identical commercial vehicle but running with a petrol engine and engaged on exactly the same work, works out at 21/2d. Needless to say that this comparison report did not fail to convince the Directors of the great advantages of the Heavy oil engine, and I am sure that you would now like to know something more about this marvellous machine.

The Saurer History would, however, be very incomplete without quoting the latest milestone in same, which is the amalgamation of Saurer with Messrs. Armstrong Whitworth of Newcastle and London, and the forming of the new Armstrong-Saurer Company Limited. Armstrong-Whitworth is one of the greatest engineering firms in this country, and whose name is also world renowned for excellent engineering productions and workmanship in all classes of engineering from locomotives to the complete battleship. Here are two Engineering Firms which have world wide reputation each in their own sphere, joining hands for the production of a new all-British Commercial Vehicle, and the result cannot be anything else than a first-class job and the last word in Commercial Vehicle designs and construction.

TO BE CONTINUED.

THE SITUATION IN SWITZERLAND.

In order to judge the general situation in Switzerland at present, it is best to begin by recalling the situation as it was at the beginning of this year. Since the second half of 1930, Switzerland has experienced a gradual slowing down of her industrial activities. Before that, it was only agriculture that was unfavourable. The banking situation remained strong, however, and the balance sheet of the Swiss National Bank at the end of 1930 showed a note circulation of 1,062 million francs and a cover of 1,057 millions, or nearly 100 per cent. Since then, the decline of industrial activity has become accentuated. For the first eight months of the current year, the trade balance (excluding gold movements) shows a deficit of 549 million francs against 502 millions in 1930; imports amounted to 1,476 millions against 1,700 millions last year, while exports declined from 1,190 millions to 926 millions. In particular, for some time, the visible balance of trade between Switzerland and Germany has been becoming more and more unfavourable to Switzerland. The deficit of Swiss-German trade, which was 96 per cent. in 1929 and 151 per cent. in 1930, amounted to 234 million francs for the first seven months of the current year, equal to a deficit of 180 per cent. This means a breach in equilibrium. The heavy exports by the aid of which Germany seeks to improve her position are directed in the first place to countries adjacent to Germany. This explains why Switzerland has to suffer particularly, at the same time when, owing to the internal crisis in Germany, her exports to that country are tending to decline. Should this tendency become accentuated it is possible—regrettable as it would be—that the countries