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of their poor soil; they produced their own milk, cheese and vegetables and a little meat from home-raised cattle. The children were taught various trades — especially that of locksmith — which might supplement the family income.

It was probably in 1679 that a merchant who had bought a watch in London, brought the precious object to be repaired to the modest locksmith's workshop where young Daniel worked with his father. While talking with the father, the customer noticed a few pieces of the son's work and thereby had enough faith in his skill to entrust him with the repair of the watch — which was of course nothing to compare with the modern Swiss chronometer. Young Daniel set to work to create a second watch like the first; to do this, he had first to invent and make the necessary tools, the watch-case, springs and the whole movement — and his father's modest workshop did not offer many resources. However, thanks to his inventive genius and obstinate perseverance, he succeeded in creating the marvel after a year's patient toil.

Early in the XVIIIth century, Daniel Jeanrichard moved near the town of Le Locle, where can still be seen the low, rambling house where he and his family lived. His work roused great interest among the population of neighbouring towns and villages — La Sagne, Le Locle and La Chaux-de-Fonds — a region where poverty and large families were rife. At Jeanrichard's death in 1741 there were already several hundred watchmakers in the valley of Le Locle and La Chaux-de-Fonds. Fifteen years later they were producing between them over 15,000 gold and silver watches, together with a great number of both simple and complicated clocks. In the space of two generations, the rise of the watch industry was remarkable. So remarkable that in 1765 a collaborator of the famous Encyclopedists in France was able to write: "Who would think to find in such a country an abundance of genius, industry, polite and civilized customs and manners; to see that science is honoured there, as are also useful and agreeable arts which are cultivated with great success by a large population."

The outcome of Jeanrichard's initiative is known to everyone, but best of all to watch importers and the innumerable lovers of Swiss watches throughout the world. Export figures which are counted in millions and a sound reputation prove the worth of this great industry of a small state.

Like all pioneers and creators, Daniel Jeanrichard had many times to fight against weariness and discouragement. Armed only with his genius and his will, his only hope was to attain success and his success remained hypothetical until the very hour of triumph. In a commemoration edition of *La Feuille d'avis des Montagnes* (a newspaper of the watchmaking region of Le Locle) Mr. Rochat-Cenise described Daniel Jeanrichard and his kind with rough but apt eloquence as "splendid fellows." They were the men who founded nations, or laid the foundations of great industries; they were builders as were the hewers of stones and the carpenters who built cathedrals. As Ibsen said, they were "the architects of the high tower which dominates the waters." They deserve our love and homage and to live long in our memory.

That is why the commemoration of the bicentenary of Daniel Jeanrichard is for Le Locle and all other centres of the Swiss watch industry, an act of faith and hope.

J. D.-F.

## REPLACING FUELS IN SWITZERLAND.

Before the war, there were 125,000 motor vehicles in Switzerland, a country of 4 million inhabitants. These figures represent one motor vehicle to every 30 inhabitants. The majority of these vehicles were of course private cars, mostly large-powered, better fitted to the mountainous land than smaller models.

Even though this army of cars has to-day almost entirely vanished from the roads of Switzerland, it nevertheless still exists, hidden away in garages, awaiting the coming of better days.

But as "better days" are long in coming, Switzerland had to adapt itself, already last year, to find replacement fuels. Fortunately, this is the country of chemists, engineers and technicians, who courageously set to work on this new task. They have at their disposal various raw materials which had until now been despised, but which to-day prove to be of major importance.

The Swiss thought first of wood-gas as a replacement fuel. The country is thickly wooded and the process of extracting gas from wood or charcoal has been known for a long time. It was only necessary to perfect the process and to produce charcoal in sufficient quantities to feed some thousands of cars and trucks. This was done, and to-day about 2,000 motor vehicles run on wood-gas, are operating on Swiss roads.

This is not sufficient, however. For wood-gas is poor in quality and not all cars run on this fuel can furnish the power required of them on mountain roads. Moreover, 130,000 tons of wood, cut into small logs or in the form of charcoal, would be needed annually to furnish a sufficient amount of this fuel, and other industries — the paper industry, for instance — would be deprived of an essential raw material.

Another method had to be found to overcome these difficulties. Switzerland has unlimited resources of limestone, and also produces  $7\frac{1}{2}$  milliard kW/hour of electricity annually. By distilling limestone, calcium carbide can be cheaply obtained. Carbide, which can easily be contained in small tanks deposited at the back of cars, gives off acetylene gas when in contact with water. And acetylene gas is an excellent fuel for private automobiles. Switzerland hopes soon to produce 15,000 tons of carbide per annum: and 2,000 more cars will be on the road again.

But even this is not sufficient. Swiss chemists have established plans for the manufacture of 30,000 tons of paraldehyde, a liquid fuel, which is already being mixed with gasoline in the amount of about 30%. Paraldehyde has the advantage of not requiring any transformation of the motor in which it is to be used. Plans are also being studied for the mass production of a mixture of alcohol and ketones by the destructive distillation of wood, and a big plant will shortly be erected for this purpose in the Canton of Grisons.

Finally, mention must also be made of the experiments made in the construction of electrically-driven vehicles, equipped with light but powerful accumulators. An inventor in Berne is said to have solved this problem recently, and it is expected that his discovery will soon be made public.

Thus it is evident that Switzerland is not being left behind in this matter. Until last year this country profited by experiences made abroad; to-day, in view of present circumstances, rapid progress is being made in regard to replacing fuels.

S.I.T.