

Sergei Witte, The Maker of Modern Russia



M. WITTE LEARNS THE PRACTICAL SIDE OF RAILROADING

ABOUT two years ago court circles at St. Petersburg were upset by a quarrel between the Grand Duke Michael, brother to the Czar, who is heir to the Russian throne, and the birth of a son to the reigning monarch, and M. Witte, the Czar's famous Minister of Finance.

At a state ball the Grand Duke ignored the Minister's bow, and gave him what Englishmen call "the cut direct." M. Witte's face showed no trace of annoyance. He passed on through the crowded ballroom as if he had not noticed the public affront.

Highly-placed officials who had fawned upon him the day before left away from him. They avoided conversation with the man whom they thought to be disgraced in the eyes of his imperial master, and gathered instead around the Grand Duke. M. Witte's isolation was as complete as that of Richelieu on "the Day of Pools," when not a single courtier attended his levee because they all thought the King had quarreled with him finally.

Like Richelieu, M. Witte was the victor. Next day he sought an audience with the Czar, and placed the facts of the case before him. Because, in his capacity of Finance Minister, he had felt it his duty to refuse the Grand Duke certain large sums of money for military purposes, the latter had publicly insulted him. Unless the Grand Duke apologized to him privately and made atonement as public as the insult, he would, he declared, be obliged to leave the Czar's service.

The Czar appeared to him to reconsider this decision, and pointed out how difficult it would be, in view of the dignity which hedges the Russian Imperial family, to make the Grand Duke apologize.

"I appreciate that, sir," M. Witte answered, in effect, "and I make no demand for an apology. You will, then, allow me to retire from my office. My usefulness to you and to the empire is necessarily ended by this incident. No influence or authority can be left to me."

But the Czar would not dispense with his best servant—the maker of modern Russia, the managing of the empire's industrial and commercial activity. He sent for his brother and talked to him privately. When they returned to the room in which M. Witte was waiting, the Grand Duke apologized freely and graciously. At the next court function he made a point of greeting the Finance Minister warmly before the latter had time to bow to him.

It is evident that the man who can bend to his will the autocrat of all the Russias and his probable heir must be a remarkable person. Sergei Witte is such a person. He started his career without any of the advantages of high birth and influential connections, which count for more, probably, in the Czar's service than in any other public service in the world.

M. Witte is not even a Russian. He was born at Tilsa, in Transcaucasia, in 1848.

and is, therefore, an Asiatic by birth. His origin is German. The latter fact has proved a heavy handicap to him all through his career. His numerous enemies have a strong appeal to Russian prejudice always ready to their hands. "Why should this German rule over us?" But Sergei Witte soon "broke his birth's invidious bar." He was educated at Odessa, and astonished his teachers by his genius for mathematics and physics.

Leaving college, he entered the service of a private railroad company. He could not go into the army or the navy or the civil service because he was not nobly born or connected with any public officials.

He showed great talent for the organization and administration of railroad affairs, but only his fellow-workers knew of his ability. It is extremely difficult for any man to make a reputation in Russia unless he is either a public official or a Nihilist. But when he was 27 Witte's chance came.

The Russo-Turkish war broke out, and the Russian railroads proved hopelessly inadequate to the task of transporting the Czar's troops to the front. Road after road was choked up by commissariat supplies, while the regiments for which those supplies were destined were waiting a thousand miles away for transportation, and Generals were losing battles because their regiments did not arrive to reinforce their armies.

In the midst of this madhouse one man kept his head. Sergei Witte was still a subordinate, but he was the only railroad official who understood the situation and possessed initiative.

"He had things done before his superiors started to think of them," said a man who knew him at that time. "The audacity of his orders took everybody's breath away. He sidetracked dozens of trains which had been ordered through at top speed by great personages, and he rushed soldiers through instead. He countermanded many of the orders given by his official superiors, but they dared not rebuke him, for he straightened things out, and the Czar heard of his work and personally thanked him."

After the war M. Witte was called to St. Petersburg and given a high position in the railway department of the civil service. It had been shut against him when he started on his career, but now it was only too glad to have him. In a few years he became director of the Russian Southwestern railways; two years later

head of the railway department; and then, by rapid promotion, Minister of Means of Communication, chairman of the Tariff Commission, Minister of Finance, and finally, a few weeks ago, Imperial Chancellor—the crown of his great career.

"Why has he risen?" said a Russian official in New York, who is well acquainted with him. "Simply because he has never been afraid to do big things on his own responsibility. Nothing is valued in the Russian service more than initiative, just because it is so scarce there."

"M. Witte had a great advantage over his rivals in being a practical man. He knows all about railways, from the outfitting of a truck, or the driving of a locomotive, to the planning of a new transcontinental road."

"Other Russian officials, especially in the railroad and industrial departments, may be immensely clever men, but they are merely theorists. They would regard it as beneath their dignity to connect with mechanics and engineers in order to learn the practical details of the railway business."

"I remember once, several years ago, when I was in St. Petersburg, the Czar wanted to consult with M. Witte in a hurry. He was not to be found in his office or at his house, but after a long search an aide-de-camp discovered him seated on the step of the cab of a locomotive several miles up the line, chatting affably with the driver and sharing his dinner of black bread, cheese and vodka. He had gone out there to inquire personally into the details of a railroad accident."

M. Witte's work of developing Russia's material resources and latent strength has been phenomenal.

In his report on the budget estimates in 1900 he was able to tell the Czar that the value of Russia's industries had increased within 20 years from \$41,000,000 to 1,816,000,000 rubles. In 1881, when he took charge of the Railway Department in the Ministry of Finance, he initiated the policy of acquiring railroads for the state. Within ten years he had secured possession of two-thirds of the entire mileage, and now there are only three or four private roads in operation in the whole of the Russian dominions, while he has 8000 miles of new track has been laid down by the government or is in course of construction. Great manu-

factories have been started all over Russia; over 50 towns and cities have been lighted by electricity; the currency has been established on a gold basis, and the equilibrium of the budgets restored after many years of disastrous finance. These are only a few features of the immense industrial and commercial development of Russia in recent years.

M. Witte has known defeat and disappointment in some of his great schemes, but the Russians admire him because he has never despaired of the destiny of the empire.

The public debt was over \$400,000,000 and the finances were none too prosperous, he did not fear to add \$250,000,000 to that debt for the purchase of existing railways and the building of new roads.

One excited statesman after another besieged the Czar, trying to convince him that "the German" was plunging the country into hopeless bankruptcy. "Russia is good for ten times the amount," was M. Witte's answer to all such objectors, and he had his way, as he usually does, sooner or later.

The military party, headed by General Kuropatkin, M. Witte's greatest political

enemy, objected strenuously to so much money being spent for railways. They wanted it spent for more soldiers.

"But what is the good of having soldiers," M. Witte argued, "if you cannot move them. By giving you railways I multiply each one of your soldiers by ten."

They saw this patent fact at least, and enthusiastically aided his plans. Today there is no man more popular with the war party than M. Witte, because he has linked the Far East with European Russia and made it possible to pour troops into Manchuria. Yet it is quite

certain that his influence has always been exerted on the side of peace, and it is known that he shared with M. Bloch the responsibility for the Czar's peace rescript.

M. Witte has never posed as a political reformer, confining himself strictly to his own work of railway administration and finance; but there is little doubt that he is strongly in favor of more liberal government for Russia. He has taken no part in the representative measures which have been so sternly enforced in recent years against the working classes, the Jews, the Nonconformists and the Nihilistic students.

In September, 1902, he took a daring step, which plainly showed his liberal sympathies. He appointed a number of committees to investigate the acute agricultural and industrial depression of Russia. Some of these reforms might have been taken direct from the programme of the Nihilists. They covered the social and industrial ills of Russia, and even advocated starting constitutional reforms tending in the direction of democracy. The bureaucratic system of government and the crushing burdens of military service and indirect taxation were bitterly complained of.

The Russian bureaucrats were against the audacity of such a report, especially when M. Witte sent it to the Czar with his strong endorsement. All his enemies united to seize the chance to crush him, and it seemed for a time as if they had achieved their purpose. He fell out of favor, and had to resign some of his offices.

M. de Plehve, the Reactionary Minister of the Interior, declared that such discussion of public affairs was "revolutionary," and even went so far as to propose the arrest of some of M. Witte's committee-men. But evidently the Czar has discovered that he cannot do without his wizard of finance. M. Witte has been restored to office and promoted to the post of Imperial Chancellor—the greatest in all the Russias, excepting only that of the Monarch.

Amidst all the internal troubles and foreign complications of Russia, M. Witte keeps a steady faith in the destiny of the empire. That was shown plainly in his last Budget report in 1902, in which, while admitting that grave industrial depression existed, he declared that the general prosperity of the country showed no sign of diminishing, and that he had greater faith than ever in the rapid progress of Russia.

WILLIAM THORP.
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THERMIT, A NEW COMPOUND THAT MELTS IRON

A WONDERFUL in its production of high temperatures as liquid air is in its cold-producing properties, ranks thermit, the latest invention. This marvelous new compound, to which its inventor, Dr. Hans Goldschmidt, of Essen, Germany, has given the name thermit, is made by combining in the proper proportions two elements most frequently occurring on the earth's surface, namely, oxygen, in the form of oxides, and aluminum, the metal found in common clay.

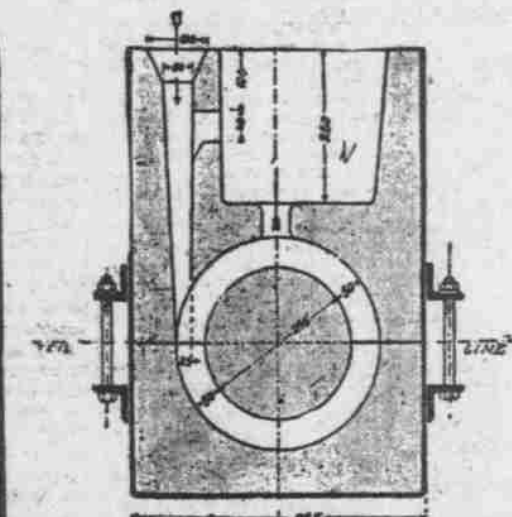
When these two substances are combined and then ignited an enormously high temperature, equal to the intense heat of the electric arc light, is instantly produced. The exact method of making the compound, the simplest way of obtaining the highest calorific value and the most practicable manner of utilizing the resultant energy created by this process of combustion have opened a new field of unlimited application and thus another science is brought into the realm of those termed exact.

Aluminothermics, or aluminothermic science, is the designating title given to the new art and comes easily, and consequently, from its generic derivatives, aluminum, thermal employed, and thermal meaning heat. While the reducing properties of aluminum were discovered at least 50 years ago, the scientific investigators who studied these phenomena overlooked entirely its most essential characteristic. It remained for Dr. Goldschmidt to point out and invent a thermit mixture which when once ignited in a single place continued its self-combustion throughout its whole mass without any external source of heat. Thus a crucible filled with a seething mass of thermit hot enough for the production of artificial diamonds or the welding of a crank shaft can be held in the hands with impunity, and many other equally interesting and useful experiments may be performed, utilizing a temperature diametrically opposite to that of liquid air and in every way as spectacular.

But, unlike liquid air, the commercial value of thermit has already been proven beyond peradventure of a doubt. Its application in the production of pure metals and the facility with which gigantic pieces of metal are welded together are in evidence.



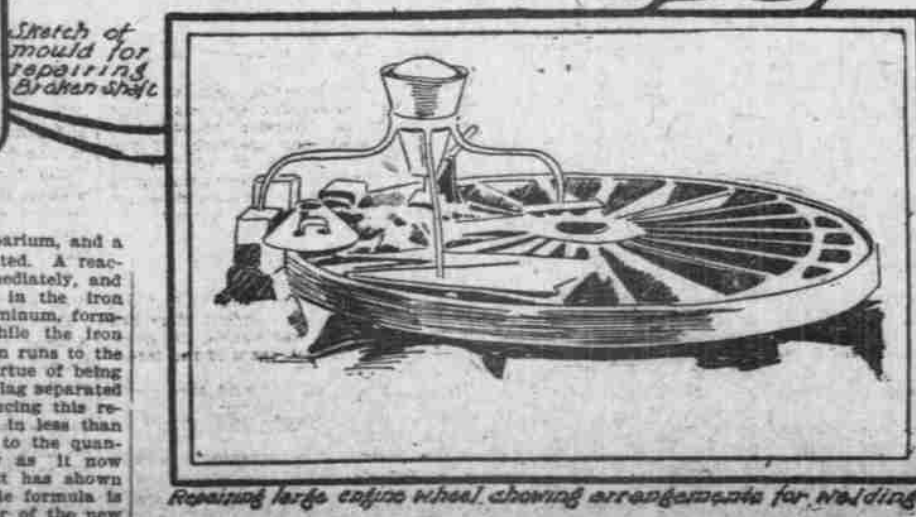
Stern post of the S. S. Sevilla (Hamburg American Line) welded in dry dock.



Sketch of mould for repairing broken shaft



Dr. Hans Goldschmidt, inventor of Thermit



Repairing large engine wheel showing arrangements for welding

COMBINATION OF OXYGEN AND ALUMINUM EVOLVED BY DR. HANS GOLDSCHMIDT OF GERMANY

science is unlocked and its secrets revealed. The experimenters who undertook to reduce aluminum during the last half century, without exception, heated the mixtures externally, and so used the oxygen of the air to support combustion, instead of igniting the substances internally and liberating enough oxygen to permit combustion to take place inside.

The result is an enormous heat, developed with safety, while in other and older experiments of external combustion there have been violent and explosive effects, and therefore only the smallest quantities could be tested. The chemical reaction provides a rapid evolution of heat, which, when started from a given point, raises the next nearest portions of the mixture to a temperature sufficiently high to cause another reaction, and this mode of heat propagation continues until finally the entire mixture is ignited. To find a method for the initial ignition of the thermit was in itself no easy task, and while barium peroxide is now used for the purpose of ignition, a long line of experiments were made before it was definitely ascertained that that of-

fered the best medium that could be found.

Second only in its usefulness to the production of pure metals, but capable of a more spectacular demonstration, is the thermit welding process. As a method for welding, thermit begins where the blacksmith's forge ends. It is not intended to use the new process for welding small pieces of iron or steel, but where broken pieces of metal of great size are to be repaired, especially in situ, it fulfills a place unsupplied by any other method known.

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