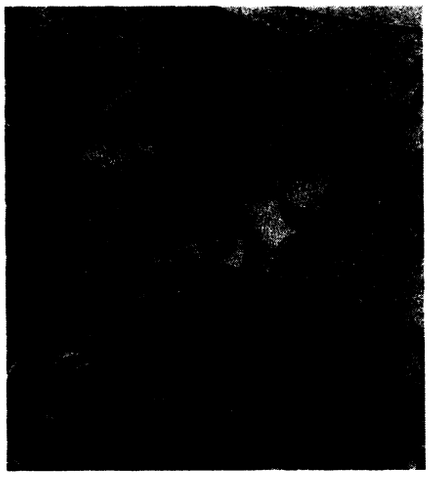

DETAIL

This closeup shows the intricate pattern of the royal embossed armor shown on the facing page.

be worn after the battle to enliven the spectacle of a state entry."

Cost of the outfit is judged from facts known about fees and labor in the medieval armor industry. Three thousand gold crowns was what Philip II of Spain paid to an armorer who made him a similar harness. And Mr. Grancsay figures that both the designer and the artist who embossed and damascened the intricate decorations must have received like sums.

Armor of a strictly business style is having a revival in modern fighting togs, though not to the extent of complete head-to-foot gear. Chief handicap of modern armor, even bullet-proof kinds, is that it is not shock-proof, Mr. Grancsay thinks. If someone could develop a practical shock-proof armor, now, that might be very useful.

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●RADIO

Superintendent Paul Gossard, of the Bloomington, Ill., public schools, Prof. John J. Lee, director of special education, Wayne University, Detroit, and Principal Paul L. Essert of the Emily Griffith Opportunity School, Denver, will take part in a discussion of opportunities for exceptional children, interviewed by Belmont Farley, director of publicity, National Education Association, on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, February 29, 4:15 p.m., EST, 3:15 CST, 2:15 MST, 1:15 PST.

Listen in on your local station. Listen in each Thursday.

METALLURGY

West Coast Steel Industry May Come From Discovery

Monopoly of Pittsburgh and Other Eastern Cities May Be Broken by Metallurgical Coke from Wood

A GREAT steel industry for the Pacific northwest sounds fantastic to those who know the present geographical monopoly of Pittsburgh and other eastern and southern steel centers, but inventive genius and engineering skill have combined to bring near a realization of what was once only a dream.

To make steel you need cheap fuel for the blast furnaces, metallurgical coke, limestone and iron ore. Only in limestone could the West Coast meet these requirements if present day standards of steel-making still existed.

As the great hydroelectric projects of the Federal government in the northwest come into being at Bonneville and Grand Coulee, foresighted men have realized that cheap electrical power might make possible electric counterparts of Pittsburgh's blast furnaces. But like the man who, if he had the ham could have ham and eggs, if he had the eggs, cheap electrical power and limestone alone could not produce a West Coast steel industry much as it might be desired from a military, strategic, decentralized standpoint. There was still the need for coke and the need for iron ore.

The iron ore of the west lacks the richness and easy transport facilities by water which make the Lake Superior region dominant in this field. But it is known that 916,000 gross tons of ore were mined and shipped from the west last year with a dollar value of $1,507,000.

This tonnage, however, is only a drop in the bucket for a man-sized steel industry. To supplement the deficiency the visionaries planning a steel industry for the west coast note that over two and a quarter million tons of iron ore were imported in 1939 for the American steel industry. Two-thirds of this vast tonnage came from Chile via the Panama Canal to eastern seaports. For less transportation cost, it was calculated. this iron ore could be taken on up the Pacific to Puget Sound ports.

That figuring, in a sense, supplied the ham for the ham and eggs but it still left the eggs. The non-existent eggs of the old joke is the non-existent metallurgical coke in the West.

What may be the answer to the missing coke for the now non-existent western steel industry has just appeared in a new patent, No. 2,184,317, awarded to Stevan Ruzicka of Beograd, Yugoslavia.

Dr. Ruzicka may not, just now, be a widely known man but his older brother is Prof. Leopold Ruzicka who, last year, won the joint award for the 1939 Nobel Prize in chemistry.

The younger Ruzicka has been in the United States since 1935 perfecting a way to make a sturdy metallurgical coke out of wood. Woodcoke is the only name one can devise for his new discovery but the name, of course, is a combination of paradoxical terms, for real coke comes from the burning of bituminous coal.

What Dr. Ruzicka has done is to find a way to take the waste wood of the Pacific northwest, burn it to charcoal, grind it to a powder and then, by organic binders followed by reheating, he cements it into lumps the size of real metallurgical coke and of comparable structural strength.

He ends up therefore with a woodcoke which has all the desired purities of a charcoal. It is charcoal which has produced the world-famous, high-quality Swedish steels.

However, charcoal of itself is structurally weak and not adaptable to blast furnace operations where the coke is poured into the furnace with a great charge of limestone and iron ore that may weigh hundreds of tons. The new Ruzicka woodcoke, however, possesses the strength needed to adapt charcoal to American blast furnace operations.

The end of the story of the steel industry for the Pacific northwest is in the future, but the final ingredient for a successful industry appears at hand. From the northwest's wasted wood chips —and they are plentiful—can come the strong wood-coke needed.

The advantages of a western industry producing high quality steel would include proximity to the nation's center of the aviation industry and the possibility of a better steel for armor plate.

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