

Disabled Veterans in Chicago Get Radio Sets



Through a drive which was recently launched in Chicago to furnish radio sets for disabled war veterans, many of the hospitals caring for these men have been supplied with sets, which have proved to be a great source of entertainment to the patients and help pass the time away as they lie in their cots day after day.

Produces Huge Copper Crystal

Experiments Reveal Some Unexpected Facts.

Schenectady, N. Y.—Copper bars that can be bent double with one finger, but which require strength to straighten again, are expected to lead to a greater understanding of the properties of metals. The bars, which are really single crystals of pure copper, were produced in the research laboratory of the General Electric company at Schenectady, N. Y., and have been subjected to many kinds of examinations, with the revelation of numerous unexpected facts.

Knowledge about the properties of metals has been limited in the past to observations of masses of small crystals. The usual piece of metal is a conglomeration of small, closely packed crystals, with the crystalline structure usually apparent at a glance. Zinc, for instance, is known as a brittle metal; a rod of it can be bent but slightly without snapping. Yet investigations of small, single zinc crystals show that any one crystal of the metal can be drawn out to six times its length in one direction; in another direction it is extremely brittle. The properties of zinc thus depend upon how the crystal is examined—whether "with the grain" or against it. The usual piece of zinc is really a collection of small crystals pointing in all directions, so that the properties are the combined qualities of the small crystals in the different axial directions. The same holds true for other metals and other substances.

Huge Crystal Produced.
A single crystal of copper seven-eighths of an inch in diameter and six inches long, as well as numerous smaller crystals of the same metal, have been produced by Dr. Wheeler P. Davey of the research laboratory. These crystals, obtained by modification of the method devised by Dr. P. W. Bridgman of Harvard university, are much larger than any previously recorded.

Very gradual heating and cooling of pure copper in an electric furnace is the secret of the success in producing them. The necessary amount of pure copper, in the form of a bar, was placed in a closed cylindrical carbon crucible and slowly passed through the electric furnace. If molten metal is cooled quickly the resultant mass is composed of very small crystals; if the melt is cooled slowly the crystals are larger. Doctor Davey cooled the melt so slowly that only one crystal was produced, and that included the entire melt. The atoms had plenty of time in which to arrange themselves as they desired—to build up a single crystal rather than a multitude of small ones.

Several interesting results have been obtained with the large crystals. A piece of about the size of a lead pencil, if given a jerking motion, bends as easily as does a stick of soft wax; it cannot be bent back, however, any more easily than a similar piece of ordinary copper. When the copper is a single crystal all of the atoms are arranged in columns, equally spaced. When the bar is bent the spacing is changed; the atoms on the inside curve are pressed together, and those on the outside are spread apart. Strains are set up and the crystal structure is altered. The bar becomes an ordinary piece of copper of smaller crystals facing in all directions.

If the surface of the large crystal is nicked or dented the structure in the neighborhood is changed in the same way. It is similarly affected by filing or polishing. When one of the bars is polished it is necessary to take off a mill or less at a time. Even then the structure of the new surface is altered. The condition is remedied by etching away the surface with the usual acid bath.

An etched bar of the copper appears to be rough. There seems to be alternate dark and light lines. The appearance of the lines is due to the

fact that the acid etches more easily in some directions than in others.

Externally the large, single copper crystals differ little from the usual metal. X-ray analysis, however, furnishes conclusive evidence that such a crystal has been produced. Doctor Davey, by means of special apparatus, was able to prove that he had one crystal.

Copper crystallizes in the face-centered cubic system. I. e., the atoms are arranged at the corners of an imaginary cube, with another atom in the center of each face. In studying the single crystal, Doctor Davey revised the method of examination so that the large crystal was used, rather than crystalline powder. The specimen was swung slowly back and forth through an angle of 30 degrees, with the edge in the path of the X-rays. The rotation of the single crystal produced the same effect as using a stationary powdered sample, and a pattern was received on a stationary film. At the same time a moving film was used, mounted on the turntable with the crystal. If the specimen had not been a single crystal no lines would have been obtained on the movable film, since the X-rays would have affected the entire film uniformly. The lines were obtained, however, and calculations based on a comparison of the two negatives showed that the axis of the crystal was parallel with the direction of cooling the ingot.

It is difficult to forget the results which will follow a study of large metal crystals. It has been thought for several years that such specimens would have unexpected properties, and now the prophecy is substantiated.

FRAUD IN STOCKS HAS COST 600 MILLION DOLLARS

Industrial Middle West Is Biggest Loser.

New York.—The Industrial Middle West, Michigan, Ohio, and Indiana, is probably the heaviest loser in the country by the operations of the fraudulent stock promoter, according to a nationwide survey now being undertaken by the national vigilance committee of the Associated Advertising Clubs of the World.

The survey is based upon the answers to a questionnaire sent out to forty better-business bureaus and nearly three hundred chambers of commerce in every state in the country. It revealed that the per capita stock loss throughout the country is about \$6, and that the group of individuals who pay the highest toll are mine and factory workers, chiefly of foreign birth.

Next to Michigan, Ohio and Indiana, the Industrial East—Pennsylvania, New York, Massachusetts, and, to a less extent, New Jersey—is the heaviest loser in the country. The old South and the agricultural Middle West of Iowa, the Dakotas, Kansas and Nebraska are relatively immune

from fraudulent stock promotion. The highest per capita loss of any town or group of towns, \$40, was reported by seven adjoining towns in Pennsylvania. The combined population of all of these towns is about 10,000. Two cities of 40,000 population, one in Michigan and one in Ohio, each reported a loss of \$1,000,000, or \$25 per capita.

It is a significant fact, however, Lou E. Holland, president of the Associated Advertising Clubs of the World, said in commenting on the survey and its objective of "Investigate Before You Invest," that although 90 per cent of the organizations reported losses in their communities during the last year through fraudulent or highly speculative investments, 75 per cent of this number believed that their educational and vigilance methods had proved effective in reducing them.

Although the aggregate stock losses throughout the country are now about \$300,000,000 a year, Mr. Holland estimates that in the next two or three years, with adequate public co-operation in the "Before You Invest—Investigate" movement, this amount will have been cut in half, and \$300,000,000 will be turned back into the pockets of the American public.

"Finger-Printing" an Errant Border

Airplanes and Cameras May Settle Dispute

Washington.—"If airplanes and efficient cameras had been in use for mapping three-quarters of a century ago when American boundary treaties with neighboring countries were adopted and certain state lines were agreed upon, Uncle Sam could rest easier about the title to his old homestead," says a bulletin from Washington headquarters of the National Geographic society. "Incidentally three generations of surveyors and map draftsmen would have been spared much futile tribulation, and thousands of dollars in litigation would have been saved."

The bulletin points out that a suit of many years' standing is before the United States Supreme court to determine the correct river boundary between New Mexico and Texas near El Paso, and that a similar problem concerning the international boundary between Texas and Mexico along the Rio Grande river is to be attacked by United States army photographers who will snap aerial views of the disputed territory.

Some Rivers Poor Boundaries.
"Rivers are popularly believed to constitute ideal boundaries," continues the bulletin, "since they make bold lines with one jurisdiction on one bank and another on the other. Rivers that 'stay put' do make unsurpassed boundaries; but unfortunately there are streams or parts of them that wander, so to speak, all over the geographic lot; and more exasperating and unsatisfactory boundaries hardly could be devised. Such are streams flowing between low banks through broad, flat, alluvial valleys, especially in semi-arid regions where there is little vegetation to assist in holding unruly waters to their channels.

"Much controversy has arisen since the creation of the United States over the water boundaries separating our territory from that of Canada, from the St. Croix river at the northeastern corner of Maine to the Rainy river of northern Minnesota, the westernmost stream boundary along the northern line. But the disagreements have been over the selections of these streams: once agreed upon they have remained fixed lines, running in their accustomed wooded and rock-bound courses.

"Not so with the Rio Grande, which forms the most extensive river boundary of the United States, and, save for some 20 miles along the lower Colorado, constitutes the only international river boundary in the South. This river, crossing numerous patches of alluvial valley lands, keeps Uncle Sam on pins and needles. He can never be entirely sure during certain seasons whether he will wake any day to find his supposed boundary marker where it was the night before. Especially is this true where the river approaches the Gulf of Mexico and where the accumulation of waters from its long drainage basin makes spring floods cut irresistibly across bends. Farms and ranches have thus been shifted over night from American to Mexican jurisdiction and vice versa.

"In the rich alluvial valleys extending for miles above and below El Paso the river has had equally marked vagaries in the past, but changes are few now because of the control of flood waters only a short distance above the city by the huge Elephant Butte dam of the United States reclamation service. From the city of El Paso northward for approximately 20 miles the Rio Grande forms the boundary, theoretically, between Texas and New Mexico. This boundary is not the Rio Grande of today, however, but that of 1850 when the dividing line was supposedly settled for all time. It is the disagreement over the location of this 'Rio Grande of 1850' that has brought about the pending suit between the two states in the United States Supreme court.

"The vagaries of rivers when international lines are affected sometimes lead to queer results. South of El Paso the Rio Grande some years ago branched in the alluvial valley and enclosed a large island. Across this

Sneeze Gas Rids Boats of Stowaways

Manila.—Manila's fame up and down the China coast as a good port for beach combers, where stowing away on army transports is easy, is passing away.

Sneeze gas, furnished by the chemical warfare service of the Philippine department of the United States army, is forced into the hold of every transport for a period of 24 hours just before departure, thus making the hold uninhabitable.

Not a single stowaway was found on the transport Thomas when it touched at China on its last trip. On previous trips, the discovery of fifteen or twenty was not uncommon.

FRENCH SCREEN IDOL



Miss Odette Jacqueline, youngest star in the French films. She is one of the few French actresses that can be compared to Mary Pickford. She is eighteen years of age.

ninety-nine one-hundredths of his cotton. But when he plucked the lint from the row or two nearest the fence he ran foul of the federal customs laws and technically became a smuggler.

"It is in this valley from El Paso southward for some 60 miles that Uncle Sam, with Mexican co-operation, will try the experiment of photographing his border from airplanes. It is believed that a photographic record of the river and its near-by landmarks will be invaluable in the future. Any disagreements as to the line in the river can easily be checked up either by measuring from the locations shown in the picture map or by snapping new pictures and comparing them with those of 1924."

Wrangell Island Scene of Strife

Explorers Die in Effort to Land on Icy Isle.

Seattle, Wash.—Wrangell Island, rife in story of tragedy and of unfinished projects, has attained the status of a Russian possession, to be explored and exploited, according to dispatches which the soviet government has allowed to reach the western world.

The first white man to sight Wrangell Island, so far as recorded, was Captain Kellett of the British ship Herald, in 1849. He didn't land. He thought the island, which is 70 miles long and 35 miles wide and which lies 110 miles north of Siberia and 200 west of the latitude of Bering strait, was part of an arctic continent that has been proved nonexistent.

A small island in that vicinity was named after his vessel. On Herald Island the Stars and Stripes recently was hoisted by Capt. Louis Lane, master of the gasoline schooner Herman, after he had made a vain attempt to reach Wrangell Island.

Interest in Wrangell Island apparently dates back to 1823, when natives reported such an island to Admiral Baron Ferdinand Petrovich von Wrangell, a Russian governor of Alaska. Baron Wrangell tried vainly to reach the island.

From Kellett's time the island was called Kellett until Capt. Thomas Long of the whaling bark Nile, out of New London, Conn., happened around there in August, 1867. He also failed to land, but he clearly saw and delineated the shores, which for the most part are banked by masses of ice that come and go. He called it Wrangell Island, after the baron, whose cognomen is scattered around southeastern Alaska, and the name stuck.

The first recorded landing on the island was by a party from the United States revenue cutter Corwin, August 12, 1881.

The next year a party from the

Rodgers of the United States navy spent 19 days on Wrangell Island.

In 1913 Vilhjalmur Stefansson, heading an expedition for Canada to explore lands and waters of North America, went from Seattle via Nome into the Arctic ocean in the Karluk, a 250-ton steamer. The master of the Karluk was Capt. Robert A. Bartlett, master of the steamer Roosevelt in which Robert A. Peary went north to reach the pole in 1909.

The Karluk was caught in the ice near Point Barrow, Alaska, and on September 29 Stefansson led a hunting party ashore over the frozen ocean. He never saw the Karluk again. She was carried westward in the ice.

John Hadley, a British navigator, one of the crew, is among those who have told the story. When the ice began to squeeze and crack the vessel, the captain gave orders to abandon her. This was 60 miles north of Herald Island. The crew made camp on the ice.

Ten days later Captain Barrett sent the first and second mates and two seamen to Wrangell Island to cache provisions. This party camped on the ice near the island, waiting for a piece of water to freeze over so they could go ashore. The ice carried them into eternity.

On March 12 Captain Bartlett succeeded in landing the rest of his party on Wrangell Island. Six days later he left over the ice for Siberia, accompanied only by an Eskimo.

Stefansson, bereft of his vessel, had turned his energies to proving that men could travel several hundred miles over the surface of the arctic, living on the ice and killing seals for food and fuel. He led his party to safety.

Stefansson considered that Great Britain had a good claim on Wrangell Island, which he predicted would prove an invaluable station for aerial transportation.

Another expedition, promoted by Stefansson, was led to the island in 1921 by Alan Crawford, young son of a Toronto professor.

Lands on Island.
The next summer Capt. Joe Bernard of Nome, in the gasoline schooner Teddy Bear, tried to reach Wrangell Island with provisions for the colony. Ice extended so far from the island that he did not come within sight of it.

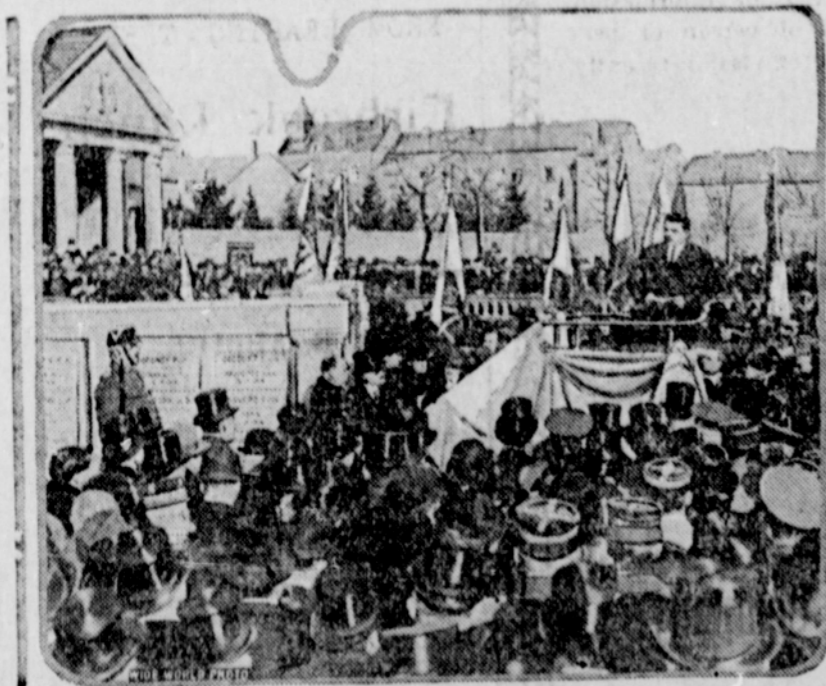
The following summer, 1923, Harold Nolce, a young Scotchman, led a party to the island in the gasoline schooner Donaldson.

Last summer several efforts were made by American and Canadian vessels to reach Wrangell Island, but the ice was the worst that old-time north-ers had known, and all attempts failed.

It was left for a soviet army transport, the Krasny Oktobr (Red October) to make her way up the eastern coast of Siberia from Petropavlovsk, thread Bering strait and, pressing through the ice, reach the island August 20, 1924. She hoisted the Russian flag.

Horse for 26 Cents
Stroudsburg, Pa.—How the automobile has supplanted the horse was illustrated here recently when a horse was sold at public auction for 26 cents. Joseph H. Kerr, district deputy grand master of the Grand Lodge of Masons of Pennsylvania, owned the horse.

Monument to Luxemburg Heroes



Premier Herriot speaking at the dedication of a monument to the men of the Duchy of Luxemburg who served in the armies of France.

Sapphires and Emeralds Intrigue English Women

London.—Sapphires and emeralds have become the most popular jewels apart from the ever-fashionable diamonds and pearls, among English women, according to West End jewelers, while, for some unaccountable reason, there is little call for rubies, and amber and jade have lost much of their popularity of a few years ago.

Flexible platinum bracelets, studded with diamonds, emeralds, sapphires and rubies, are fashion's latest jewelry fad.

Princess Mary is said to have been responsible for the sudden popularity of emeralds. Her engagement ring was a particularly beautiful emerald and created an immediate and pressing demand for the stones. Then it was discovered that sapphires combined strikingly with the green jewels, and they also jumped into favor.

One feature of the new fads, according to jewelers, is the passing of the choker necklace of pearls or large metal or colored beads. Ropes of pearls, however, are as popular as ever.

Thieves Shun This Post Office



Trooper, a Great Dane, has been trained to guard the post office at King street, Southall, Middlesex, England, and during business hours he is on duty behind the grille. At lunch time he does his guarding on the outside.