

Dietz on Science
**COPPER SHEETS
 NOW PRODUCED
 BY ELECTRICITY**

Method Is Much Faster
 Than Old Way of Using
 Rollers.

BY DAVID DIETZ
 Scripps-Howard Science Editor

A new method of producing thin copper sheets by electro-chemical methods is expected to reduce the cost materially and to result in many new uses of sheet copper.

Many years of research by metallurgists have resulted in the development of the new method which is known as "electrodepositing."

The old way of making thin copper sheets was to roll a bar of copper between a series of rollers, each trip through the rollers flattening out the copper a little more. This method was slow, it often taking as much as three weeks to produce a very thin sheet. There were also considerable losses due to scrap.

In the new process, the copper sheets are produced in a few hours. The process may be started with less pure material since it is automatically purified as it is deposited. In addition, sheets three times as wide as those obtained by the mechanical process can be obtained.

The new process is somewhat allied to that used for copper-plating, but employs an electric current many times larger. The copper is deposited from a solution upon a large, revolving lead-faced drum. The copper is formed upon the drums into sheets as light as one ounce per square foot and as wide as thirty inches.

If a heavier sheet is desired, the thin sheet is sent through a second tank where additional copper is deposited upon its surface. Any desired thickness up to sixteen ounces per square foot can be obtained in this way.

For Automobile Tops

It is expected that the new copper sheeting will find many uses in conjunction with other materials to which it will be bonded. In this fashion it can be used with composition board, fiber, paper, felt and various textiles.

One automobile concern is reported to be experimenting with a combination of copper sheeting and fabric as a toppling material for closed cars. This would give the car a fireproof copper top. It is believed that this top would weather well and be more resistant to the abrasion of tree branches than the materials now used.

Experiments are also being tried to use the copper sheeting alone or the copper in conjunction with another fabric as a roofing material. At the present time, thin copper sheets are used to cover underground pipes as a means of protecting them from corrosion. It is customary to cover the iron pipes with a plastic coating. The pipe is then wrapped with a spiral of thin copper.

Waterproof Pipe Joints

Copper sheets, eight inches wide, are used for this purpose and so wrapped that layers overlap by an inch. The plastic coating holds the sheet in place and makes the joints waterproof.

It has also been suggested that thin copper could be used to reinforce the covers on library books which are subjected to hard usage. One oil company is reported to be using thin copper strips instead of paper in recording machines. They found errors creeping into the records because changes in humidity caused the paper strip to stretch or shrink, thus distorting the records.

Other important developments in metallurgy, according to Arthur D. Little, Inc. chemists and engineers of Cambridge, Mass., include the developments of porcelain enamel on a pressed steel backing.

Porcelain enamel on cast iron backing is familiar. The kitchen sink is the best known example. Pressed steel backing now is being used in the manufacture of refrigerators, gas ranges, electric stoves and washing machines.

Engineers now are working on lavatories and bath tubs, each pressed from a single sheet of steel, and it is predicted that eventually they will develop a kitchen unit of pressed steel which will include a sink, refrigerator, stove and cabinet all in one.

Other new developments predicted are the use of enameled iron pipe instead of brass or copper pipe for drain pipes and gutters on the exteriors of houses.

Flat sheets of porcelain enamel on steel also are being suggested for use as a building material, either in the form of wall plates or shingles.

It is pointed out that many structures, built of steel frames covered with such panels or shingles, could be set up and taken down at will. It would be possible, for example, to build gasoline station or similar structure in this way, which could be moved from time to time as the trend of business dictated.

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 No Phone Orders. Open Daily
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THE NEW DEAL IN PICTURES—NO. 5

Forest Army Goes to Work

Text by John M. Gleissner

Sketches by Don Lavin



The president asked and got permission from Congress to recruit an army of 275,000 unemployed men for work in the national forests to help relieve unemployment.



The president had young men selected whose families were receiving public aid. Most of their pay of \$1 a day was to be sent home for the assistance of their families.



Congress also passed the Wagner bill providing for a national system of employment offices and for federal assistance in co-ordinating state employment agencies.

NEXT: Federal Funds to Feed the Hungry.

Contract Bridge

BY W. E. MCKENNEY
 Secretary American Bridge League

THE following hand will clarify a problem that often confronts the constructive one over one bidder:

In this hand both sides were vulnerable. North and South were not playing the one over one, but were using a system of bidding that provided for weak first and second hand and strong third and fourth hand openings.

South started the contracting with one spade. Bear in mind that we recommend that South pass with this holding.

What would you do with the West hand? It contains four high-card tricks. You can not overcall because you have no five-card suit. To double, you would inform partner that you were prepared to play the hand at hearts or that you had a good suit of your own, which, of course, is not the case.

Therefore, with this type of hand you should pass. You are not going to lose anything with your pass, because if North should pass, your partner then would make what is known as a deductive double—in other words, he can immediately picture your hand as containing high cards, but no good biddable suit and a hand not prepared to play at hearts.

WHEN this hand actually was played in a tournament, North raised his partner's bid to two spades, which East and South passed. Now West can double. This bid says, "Partner if you have anything in your hand I am prepared to set two spades. I did not double the first time, therefore I am not

prepared to play the hand at hearts."

With this information, East, of course, should have bid three clubs

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knows West is willing to play it in this contract.

Therefore the bid of three clubs simply states, "Partner, I believe it is better to try to play this hand at three clubs than at two spades doubled."

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