COPPER KING

A FEATURE OF

The Streamliner

CITY OF LOS ANGELES

UNION PACIFIC R. R.—CHICAGO & NORTH WESTERN RY.

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CITY OF LOS ANGELES

CHICAGO & NORTH WESTERN RAILWAY
UNION PACIFIC RAILROAD

COPPER KING

The Observation-Lounge car on the North Western-Union Pacific Streamliner "City of Los Angeles" has been named the COPPER KING. Just as the discovery of gold helped greatly in the settlement of California, so has the production of copper contributed in large measure to the development of the inter-mountain region through which the "City of Los Angeles" takes you.

Copper is the decorative motif selected for the COPPER KING. The side walls of this car are covered with paper-thin copper made by a new process called "electro-deposition." By this method, copper in the form of a chemical solution is electrolytically deposited on a revolving metal drum and removed as a continuous sheet.

The unique and colorful decorations were deftly chosen by Mrs. W. A. Harriman, wife of the Chairman of the Board of the Union Pacific. Her contribution to the unusual interior decorations of other Union Pacific streamline trains has created much favorable comment.

✓ The COPPER KING is the first "light-conditioned" car in railroading or any other type of transportation and the first in which copper has been featured so extensively for interior decoration, finishings and appointments. The final touch of the selection of color schemes for the furniture, decorating, upholstering, carpeting, exquisite buffet and other interior appointments was added by Mrs. Harriman.

Tables, smoke-stands and other accessories are trimmed or finished with copper bronze. The same metal has been skillfully used in the trim of specially designed lounges and chairs which are richly upholstered in contrasting Kelly green and henna colored material.

✓ The COPPER KING is equipped with Polaroid windows. By simply turning a knob, passengers can eliminate glaring sunlight without shutting off the view . . . thus insuring complete "eye comfort" at all times.

A completely equipped buffet and barber shop; valet service; and shower

bath facilities are other features of the COPPER KING.

The art of smelting copper from its ores and of making bronze, an alloy of copper and tin, was discovered in western Asia some time prior to 3500 B.C. The appearance of tools and weapons of copper and bronze led to the creation of organized trade and commerce, and the development of means of transportation to expedite the exchange of goods. Thus, most of our modern civilization can be traced to this turning point in history.

Yet, perhaps more important from our present day viewpoint is the role that copper is playing in our modern electrical age. There is scarcely an industry that is not dependent on some form of this versatile metal, for of all the commercial metals, copper

combines, to the best advantage, high electrical and heat conductivity, ductility, and resistance to rust and corrosion.

These properties of copper can be interpreted in terms of better living . . . in our homes, in modern streamlined trains and in automobiles, refrigerators, radios, telephone . . . and much that is yet to come in the years ahead.

The Ankh, a circle resting on a cross, which is displayed in this Observation-Lounge car, was the ancient Egyptian symbol of enduring life. It is also the modern symbol for copper, the enduring metal.

Do you know?

Copper for use as coins antedates gold and silver money. Ancient Romans cast copper and bronze bricks with the figure of an ox on the early units, or "pecunias," as they were called. The ox was an ancient unit of barter and the connection becomes obvious.

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In 1659 Sweden issued a copper coin, worth about $5.20 which weighed 31 pounds and measured about two feet by one foot. It would take quite a cash register to hold one or two of these "coppers."

The American nickel contains three times as much copper as nickel. Nearly three million pounds of copper are used annually in minting United States coins. The familiar penny, or "copper," is really made of bronze, containing 95% copper and 5% tin and zinc.

Many bank vaults and doors are lined with copper to make them safe from attack by the oxy acetylene cutting flame. The copper conducts the heat away so rapidly that it is not practical to melt thick copper plates by this method.

Some years ago a copper pipe was removed from the 4,800 year old pyramid of the Egyptian Pharoah Cheops. It was found that even after so many centuries this pipe still held water.

If each of us were to receive our share of the copper put into use in the United States last year, we would have exactly 13.31 pounds.

The 300 year old copper rooster which served as a weather vane on the Second Reformed Church in Albany, N. Y., was lost in the fire which destroyed the edifice recently. However, it was eventually found in the ashes and will once more adorn the spire of the church when it is rebuilt.

The largest solar water heater in America was built and installed by students at the Punahou School, Honolulu. The sun's rays heat the water. The system covers 308 square feet of roof area and contains 1,400 feet of copper tubing.

When Thomas Jefferson designed the Rotunda of the University of Virginia, he was forced to put on a tin roof instead of a copper one because the State Legislature did not appropriate enough money. The building burned in 1895 and when rebuilt it was covered with copper as originally planned.

The largest brass cannon ever cast weighs 80 tons. It was made in India in 1548 and it remains an unsolved mystery how it was transported in those days.

A brass clock made by an artisan at the Court of Philip the Good of Burgundy in 1439, before Columbus discovered America, still keeps good time. It was made with only one hand—the hour hand.

A telephone call between New York and San Francisco brings into use 800 tons of copper wire.

The Statue of Liberty in New York Harbor, made by Frederic Auguste Bartholdi, is composed of 300 pieces of sheet copper, fitted over a framework like a giant jig-saw puzzle.

There is believed to be only one piece of copper in existence which measures exactly one cubic foot. It reposes on a pedestal in the library of the late Thomas A. Edison in West Orange, N. J. Presented to him in 1911 at a luncheon in his honor, it weighs almost 500 pounds.

The art of tempering copper was never lost because it never existed. Old copper knives and swords were hard because the copper contained impurities that had a hardening effect and also because hammering hardened the metal. Today there is a copper alloy containing 2% beryllium and a trace of nickel which can be made hard enough to cut steel.

Since 1882 the copper mines in Butte, Mont., have yielded over 11 billion pounds of copper, or more than one-fifth of all the red metal ever produced in the United States.

Photo-engraved copper plates were used in the first mechanical reproduction of illustrations and are still used today.

Most keys are made of nickel silver, an alloy of copper, nickel and zinc. This metal also forms the base of tableware. Sheffield plate has a base of copper plated with silver.

Most pins are made from tin-coated brass wire requiring some 5 million pounds of copper per year. Since most of the pins are lost, this is one use of copper where the metal is not salvaged.

Continuous copper sheet as thin as 13/10,000 of an inch, about one-half the thickness of the paper on which this is printed, can be made up to 60 inches in width, with no limitation as to length other than the ability of man and machine to handle it economically.

Copper of the utmost purity is essential to efficient electrical conductance. As little as 6/100 of 1% of arsenic in the metal reduces the conductivity of copper by 28%.

To meet the Electrical Industry's need for pure copper, the electrolytic refining process was developed. The first electrolytic plant in the U. S. A. was built in 1883. Today most of the copper produced is electrolytically refined to a purity of 99.9%. This country has one-half of the copper refinery capacity of the world.

The electrolytic refining process results in the recovery of much gold, silver and platinum that could not otherwise be separated profitably from the copper. The amount of precious metals per pound of copper is insignificant. But their aggregate by-product value is substantial.

Just southwest of Salt Lake City, Utah, at Bingham, is the largest copper mine in the United States.

At Garfield, about fifteen miles west from Salt Lake City, is a copper smelter, one of the largest in the world. Nearby is the largest copper concentrator.

In the suburbs of Salt Lake City are two of the largest lead smelters in the United States—one at Murray, the other at Midvale.

Major Andree, leader of the ill-fated attempt to fly to the North Pole in a balloon in 1897, dropped twelve buoys, each containing a sealed copper tube in which messages were placed to inform the world of his progress. The sixth of these buoys has recently been found with the message intact.

The oldest copper roof, and probably the oldest roof of any kind in America, is the 200-year-old roof on Christ Church in Philadelphia. Many American patriots worshiped in this historic church, among them George and Martha Washington, Betsy Ross, Benjamin Franklin and Robert Morris. The Marquis de LaFayette was also a regular worshiper there.

The largest bell in the world is in a 1,300 year old Buddhist temple in Osaka, Japan. It is made of bronze and weighs 155 tons, being sixteen feet wide and twenty-six feet high.

Although bells have been made out of virtually every known metal, copper and bronze bells give the best quality and warmth of tone. America's famous "Liberty Bell" in Philadelphia is one of the most noted bells of bronze.

The first power boat ever built had a Tobin bronze propeller shaft. This shaft is still in good condition after fifty-three years of service.

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The earliest bronze objects found by excavation date around 3500 B.C. They contain from 12% to 14% tin and 86% to 88% copper. This general purpose bronze mixture is still used.

Followers of Isaac Walton will be interested to know that the oldest metal fish hooks are those of native copper found in graves of the Badarians, the first farmers in Egypt, who lived around 6000 B.C.

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The art of making brass was lost in the Dark Ages and was rediscovered later in Medieval times.

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At the fall of Rome the bronze and other metal workers of western Europe fled to Byzantium and did not return until Charlemagne brought them back.

Special for the ladies

In Roman times bronze pins were used of the same design as today's brass safety pins. In the Middle Ages, and later, the cost of brass pins represented a considerable part of milady's personal expenditures. This no doubt led to today's expression of "pin money."

Cleopatra, famous queen of ancient Egypt, adopted the vogue of wearing copper and bronze ornaments. Although their popularity has waxed and waned many times since, recent style notes indicate that the age-old metals will be more fashionable than ever this year.

A 5,000 year old copper frying pan was excavated at Tepe, Gawra, in 1930. If it were not in the University of Pennsylvania Museum, it could be used for frying eggs today, so little has time affected the enduring metal.

The first cosmetic was powdered carbonate of copper, mixed with resin, used by the Badarians, in Egypt, around 6000 B.C., to paint their eyelids.

The first metal double boiler for cooking was made of bronze by the Shang people of China 3,500 years ago.

Designs in many colors are printed on dress goods with copper rollers which are either engraved by hand or photographically.

Bronze mirrors were a part of milady's boudoir before 3000 B.C.

One of the mirrors excavated at Mohenjo-daro in India had a raised rim to protect the polished metal. These mirrors were a true bronze; they contained about two parts of copper to one of tin and were silver-like in color.

Bronze tweezers were also an article of a lady's toilet table over 4,000 years ago.

The earliest corset yet found came from Crete where it was made of cloth with reinforced ribs consisting of bronze strips.

Some of the earliest hairpins found were made of copper and were in use 5,000 years ago.

A considerable part of the export trade of the Bronze people of Mesopotamia, 3000 B.C., was bronze jewelry for women.

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In recutting the famous Jonker's diamond, a whirling phosphor bronze disc was used. At 5,000 revolutions per minute it took days of patient work for the saw, covered with olive oil and diamond dust, to cut the gem.

For those under 14 years of age

Brass is an alloy of copper and zinc; bronze, an alloy of copper, zinc and tin. Next to silver, copper has the highest electrical conductivity of any commercial metal.

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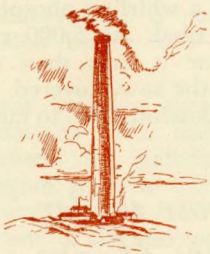
There are about 50 pounds of copper in the average modern automobile.

The brass cartridge shells used by the Army and Navy are reloaded many times.

A kit of parts, including copper wire, for building a toy electric motor that actually runs on a dry battery, can be bought in the 10-cent store.

A single pound of copper may be drawn into one continuous strand of wire so fine that it would be more than 60 miles long.



The world's largest chimney is the smelter stack at Anaconda, Montana. It towers 585 feet above the ground, has a girth of 273 feet at the base, 201 feet at the top, and an inside diameter at the top of 60 feet. It can easily discharge 4,000,000 cubic feet of gas per minute.

Seamless brass tubes are being made with an inside diameter so small that it will not admit a human hair.

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The first penmanship "copy books" are the clay tablets used in the schools of the Bronze people in Mesopotamia 3200 B.C. Characters to be reproduced by the student were on one side of the tablet. These the student was required to reproduce from memory on the other side.

Diving helmets are made of brass because this metal does not rust.

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An electromagnet can be made by winding insulated copper wire around a nail or soft iron rod, and connecting to a battery. The more turns of wire, the greater the pull of the magnet.

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Bending a piece of soft copper wire several times will make it hard at the bend. Heating it to a dull red color and cooling it slowly will soften it.

Copper is the safest material to use for lightning rods because rust cannot destroy it and because it conducts the electrical discharge to ground quicker than any other commercial metal.

The copper ignition coil in an automobile takes current from a 6-volt battery and delivers it to the spark plugs at several thousand volts.

The accuracy of the electric clock in your home is controlled through your electric light wires by a master clock at the power station.

A transformer made of copper wire is used for stepping down the 110-volt alternating house current to voltages suitable for operating toy trains, bells, buzzers, etc.

Hundreds of miles of wire are used in the transmission equipment required to send a "wireless" message across the ocean.

In a modern telegraph system, many different messages can be sent over one wire at the same time.

Features of the

"CITY OF LOS ANGELES"

Streamliners

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The "light-conditioned" COPPER KING Observation-Lounge Car, described in the preceding pages.

Open and private section Pullman accommodations with windows in upper berths. Also Pullman bedrooms and compartments.

Roomy, comfortable Chair Cars with individual reclining seats and soft, blue night lights.

Luxurious Dining Car for Sleeping Car passengers. And "Coffee Shop" Dining Car featuring moderately priced meals for Coach passengers.

Complete air-conditioning, assuring a constant flow of fresh, pure air.

Registered Nurse-Stewardess service . . . graduate nurses who look after the welfare of all passengers.

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There are two "City of Los Angeles" Streamliners providing 39¾-hour service, every third day, each way between Chicago and Los Angeles. The one features such innovations as the COPPER KING. The other, such attractions as the "Little Nugget" theatrical club-lounge car.

The Streamliners "City of Los Angeles" leave Chicago 6.15 p.m.—Los Angeles 6.30 p.m., the 3rd, 6th, 9th, 12th, 15th, 18th, 21st, 24th, 27th and last day of every month.

NORTH WESTERN—UNION PACIFIC

Route of The Streamliners and The Challengers

The North Western-Union Pacific famous fleet of air-conditioned trains between Chicago and all the West includes—

LOS ANGELES LIMITED—famous all-Pullman train and

THE CHALLENGER—Coach-Challenger Sleeping Car train on fast schedule between Chicago, Omaha, Salt Lake City, Los Angeles; also Chicago–San Francisco.

PACIFIC LIMITED—Chicago, Omaha, Los Angeles, San Francisco, Portland, Tacoma, Seattle.

THE FORTY NINER—(all-Pullman) Chicago–San Francisco.

OVERLAND LIMITED—(all Pullman) Chicago–San Francisco.

PORTLAND ROSE—Chicago, Omaha, Portland, Tacoma, Seattle.

THE COLUMBINE—Chicago, Omaha, Denver.

THE STREAMLINERS:

City of Los Angeles,
39¾ hours, Chicago–Los Angeles.

City of San Francisco,
39¾ hours, Chicago–San Francisco

City of Portland,
39¾ hours, Chicago–Portland.

City of Denver,
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