

THE ELECTRICAL WORLD

WELDING BY ELECTRIC ARC.

Powerful Current That Melts Iron and Steel in a Few Minutes.

The person in the accompanying illustration is not a character in one of Jules Verne's romances, but a workman engaged in welding iron by one of the new processes employing the electric arc. The head must be completely protected to avoid injury from the intense radiation—hence the grotesque head-gear. Mr. C. B. Auel, of the Westinghouse Company, who describes these new processes in the American Machinist, tells us that there are two chief types—the Benardos, which uses but a single electrode, and the Zerener, in which two are employed. He says:

"For small work and for work where a certain degree of accuracy and refinement is necessary, the Zerener process will give rather better results than the Benardos, for the reason that in the former the arc is, comparatively speaking, under close reg-



The Benardos Process in Use.

ulation, while in the latter there is only such regulation as may be obtained by hand. Nevertheless, for general work the Benardos process, on account of its simplicity, is to be preferred.

"It is necessary to conduct the welding in an inclosure, as the intense rays of the arc seriously interfere with any other work in the immediate vicinity. For a similar reason, when the Benardos process is employed, welder should be thoroughly shielded, eyes as well as body. A head-gear of canvas or of stovepipe is readily made and fitted with a small projecting window of thick colored glass. Gloves provided with long gauntlets will answer for the hands, while the ordinary clothing, if not too thin, will suffice for the rest of the body. Exposure to the direct rays of the arc causes an irritation of the skin in effect much like sunburn; the skin reddens and subsequently peels, but with no more serious consequences. A short trial will, however, be more effective in demonstrating the desirability of care in this matter than any words of caution.

"When the Zerener process is employed, however, the welding is usually on a much smaller scale, and it is then only necessary to protect the eyes by a pair of suitable colored glasses."

The method of operation in the single-carbon process is thus described by Mr. Auel:

"Assuming now that everything is in readiness for making a weld, the operator places himself in front of the casting, holding in one hand the carbon (negative) electrode by means of an insulated handle, and having within convenient reach of the other hand the material to be used as filler, either iron rod, . . . bits of broken steel castings, or small punchings from boiler plate. He then pulls the hood down over his head, touches the carbon electrode to the casting, thereby closing the circuit and thus producing the arc. As soon as the arc is sprung, the carbon electrode should be withdrawn to a distance of at least two inches, more if possible, and the arc continued until the melting temperature of the metal is reached.

"If it is not possible to maintain the arc at the proper distance, or if it is too intense, the depth of the triangular plates in the water rheostat or the number of grids in the resistance should be altered accordingly. The arc, instead of being concentrated on one spot, should be given a rotary motion in order to heat the casting thoroughly in the vicinity of the proposed weld.

"When the melting temperature is reached, either the iron rod, small bits of steel castings, or punchings of boiler plate are fed into the boiling metal. This feeding is continued, the arc meanwhile also being maintained, until the weld is completed. To make the casting conform to a particular shape, or to give it a smoother finish or closer grain, the surface of the weld may be hammered while cooling."

Vegetables Indigenous to America. The sweet potato and the Jerusalem artichoke are supposed to be indigenous to America.

ELECTRIC HAIR DRYER.

Device Which Will Prove of Great Service to My Lady.

Probably one of the most satisfactory of all the electric toilet articles is the hair dryer. The machine shown in the illustration is made of aluminum, weighs but 2 3/4 pounds, and drives a strong current of either cold or warm air by the simple turning of a key. Turned one notch, a strong current of cold air is forced out of the tube. Turned two notches and the air becomes warm. The turning



Latest Electric Novelty.

of the key to the second notch switches in a resistance, and the current of air flowing through this resistance generates the heat which warms it.

Like all other electric household articles it is connected to a convenient electric lamp by an electric cord.

AN ELECTRIC MOTH TRAP.

Powerful Light and a Suction Pipe Get Three Ton of Insects in One Night.

The Saxony authorities have discovered what would seem to be an excellent way to put an end to the caterpillar plague which is having such a disastrous effect on the local forests. They have discovered a method to catch the brown nun moths that lay the eggs from which the caterpillars come in enormous quantities. They make use of what they call the electric light trap. This consists of two large and powerful reflectors placed over a deep receptacle and powerful exhaust fans. The whole has been erected on top of the municipal electric plant at Zittau. At night two great streams of light are thrown from the reflectors on the wooded mountain sides half a mile distant.

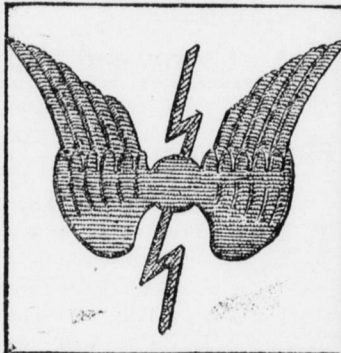
According to the Electrical Review the results have been astonishing. The moths, drawn by the brilliancy, come fluttering in thousands along the broad rays of light. When they get to a certain distance from the reflectors the exhaust fans take up their work and with powerful currents of air swirl them down into the receptacle. On the first night no less than three tons of moths were caught. It has been decided to build another trap on the Rathaus tower, and the fight with the moths will be continued.

The forests of central Europe have, from time to time, been ravaged by raids of moths from Russia, whose larvae denude the trees of their foliage. The splendid pines of the Lausitz mountains are this year threatened with destruction.

WIRELESS TELEGRAPH BADGE.

Proficiency in Service of British Navy Earns One.

This gold badge has been designed for the wireless telegraphy branch of



Badge for Wireless Corps.

the British navy and every man who becomes proficient will be awarded one. It is worn on the right sleeve just above the elbow. A fully qualified wireless telegrapher wears one star above the badge; a first-class petty officer, two stars, and a chief petty officer, a small crown.

Testing Electric Furnaces.

At the Heroult electric iron smelter on the Pitt river in Shasta county, California, a number of new types of electric furnaces are being tested on a small scale, instead of working with one large furnace alone, as has been heretofore the plan. A bank of transformers will be ready by the time the new Lyon furnace under construction is completed. The new furnace of a capacity of 25 tons of pig iron per day is on the same plan as the original experimental one. It is claimed that it will remove the objections found to the Heroult furnaces first erected.

Balloons and Bullets.

Experiments have recently been made in Berlin to ascertain the height at which a balloon may be considered immune from hostile rifle shots. Captive balloons were sent up, and they were shot at from angles of from 15 deg. to 45 deg. Balloons traveling at a height of from 600 to 2,000 yards could be hit only once out of six shots, while they were absolutely safe at a height of 3,000 yards. Even when struck, the damage to the gas bag was so small that the balloon was able to continue its journey for hours before the escaping gas made a landing necessary.

FARM GARDEN

THE NITROGEN PROBLEM.

It is Not Solved as Easily as Some Farmers Suppose.

The nitrogen problem is solvable, but not solved so easily as some people suppose. One speaker at a farmers' institute said: "A rotation including sufficient clover or other legumes will solve the nitrogen part of the fertility problem for us."

This statement does not cover the whole situation, by any means, declares Farmers' Review. How can a rotation with legumes settle the nitrogen question when the legumes cannot be made to grow in the first place? And often, even when they do grow well, it is several years before nodules develop on the roots, without which nodules no increase in nitrogen can be made.

It very often happens that the cheapest way to supply nitrogen is to buy it, even at 15 cents a pound. It takes several years to get nitrogen from the air by the help of leguminous plants, even under the best conditions; that is, to get enough of it to count for much.

The process of gathering nitrogen from the air is one of growth and decay. A soil deficient in nitrogen cannot produce the plants desired, and if they are produced they will be so small and weak that they will amount to nothing when they decay. Therefore before plants can be grown at all luxuriantly it is necessary to add to the soil nitrogen as well as other elements of plant food.

It is better to add to the soil a liberal amount of some form of nitrogenous fertilizer than to take chances on gradually developing the nitrogen producing bacteria in the soil. Therefore in the very first stages of solving the nitrogen problem, it may be necessary to make considerable purchases of chemical nitrogen.

But after the first good start has been made, it should not be necessary to again have resort to commercial nitrogen. There are many plants that are hardy and produce pods, and all pod-producing plants are nitrogen gatherers. Either clover or peas will stand severe conditions of drought, if they are well rooted. Clover and alfalfa will both stand winter conditions. Where red clover will not do well, alsike clover or white clover will.

In some sections, cow peas and soy beans will do well and can be grown for plowing under. Southern localities are, however, likely to reap the most benefit from these two plants. This must be said about cow peas and soy beans, that they have a limited root system and so if only the roots are plowed under they do not give the beneficial results secured from the plowing under of a clover sod.

In any rotation carried on for the purpose of keeping up the supply of nitrogen, the leguminous crop must be brought in often enough to give the results desired. How often this leguminous crop should be grown will depend on the natural richness of the particular field in nitrogen and also on the kinds of crops being generally grown as well as the quantities of crops taken off.

KEEPING SEED CORN.

See That It Is Thoroughly Dry Before Freezing Weather.

Never let it freeze before it is dry. We have had seed corn exposed to a temperature of 30 degrees below zero without injuring its vitality, and have had it ruined at ten degrees above zero. We would not recommend kiln drying for the general farmer, as this is only practical where a grower is in the seed business.

We have found, says Farm and Home, a very convenient way is to take four pieces 4x4, six feet long, set them up in a square, and nail laths on them two and two opposite. Leave a six-inch space between the laths so the corn will have plenty of ventilation. Lay your corn on this to dry, and if thoroughly dry it can lay there all winter.

Cement and Steel Culverts.

The price of lumber in the near future will stop the idea of building bridges and culverts of wood. Cement and steel must take its place. There is nothing cheaper than cement, if durability is figured. It is cheaper than corrugated steel, glazed sewer pipe, lumber or cast-iron pipe. Bridges will come to be made of arched spans of concrete, steel beams cement covered, or steel beams with checkered steel floors. Piling, piers and abutments can be made of concrete and will stay for all time.

BRIEF HINTS.

Never put soil or sods on top of a gravel road. It simply means mud in wet weather and dust when the season is dry.

Supply the hopper so the mill will grind, no matter what kind of an animal your mill may be.

Be good to yourself by being good to your stock.

LAME BACK PRESCRIPTION.

The increased use of whiskey for lame back rheumatism is causing considerable discussion among the medical fraternity. It is an almost infallible cure when mixed with certain other ingredients and taken properly. The following formula is effective: "To one-half pint of good whiskey add one ounce of Toris Compound and one ounce Syrup Sarsaparilla Compound. Take in tablespoonful doses before each meal and before retiring."

Toris compound is a product of the laboratories of the Globe Pharmaceutical Co., Chicago, but it as well as the other ingredients can be had from any good druggist.

BOTH UPLIFTING.



"I see that they're a-goin' to uplift us farmers!"

"What do they calculate ter use—balloons or dynamite?"

15 YEARS OF SUFFERING.

Burning, Painful Sores on Legs—Tortured Day and Night—Tried Many Remedies to No Avail—Cured by Cuticura.

"After an attack of rheumatism, running sores broke out on my husband's legs, from below the knees to the ankles. There are no words to tell all the discomfort and great suffering he had to endure night and day. He used every kind of remedy and three physicians treated him, one after the other, without any good results whatever. One day I ordered some Cuticura Soap, Cuticura Ointment, and Cuticura Resolvent. He began to use them and in three weeks all the sores were dried up. The burning fire stopped, and the pains became bearable. After three months he was quite well. I can prove this testimonial at any time. Mrs. V. V. Albert, Upper Frenchville, Me., July 21, 1907."

The Doctor's Fee.

The average man will give a lawyer \$300 to \$500, together with a lifetime's praise, to keep him out of the penitentiary for from two to ten years, and at the same time he will raise a phosphorescent glow and a kick that can be heard around the world if a doctor charges him \$50 to \$100 to keep him out of hell for a lifetime. We are the only people under God's eternal tent to-day who keep open shop 24 hours each day and 365 days in each year. We are also the only laborers to keep on working for people who do not pay. I can carry my part of charity with as good a grace as most men. I can go through rain, snow or mud and do my best, provided the case is one of worthy need, but to reward continually downright rascality, willful drunkenness and wanton laziness is getting out of my line.—Texas State Journal of Medicine.

From Frying Pan to Fire.

Some years ago, when the late Judge John Henry McCarthy was a candidate for the bench, says the Hebrew Standard, in a district populated by both Hebrews and Irish, there was displayed in an East Broadway window a banner which read: "Vote for John Henry McCarthy—the friend of the Hebrew." An Irishman on his way to the polls espied the sign and grew indignant. He remarked, "Vote for the friend of the Hebrews? I'll be hanged if I will. I'll vote for the other fellow." And he did, the "other fellow" being Henry M. Goldfogle.

PUZZLE SOLVED.

Coffee at Bottom of Trouble.

It takes some people a long time to find out that coffee is hurting them.

But when once the fact is clear, most people try to keep away from the thing which is followed by ever increasing detriment to the heart, stomach and nerves.

"Until two years ago I was a heavy coffee drinker," writes an ill. stockman, "and had been all my life. I am now 56 years old.

"About three years ago I began to have nervous spells and could not sleep nights, was bothered by indigestion, bloating, and gas on stomach affected my heart.

"I spent lots of money doctoring—one doctor told me I had chronic catarrh of the stomach; another that I had heart disease and was liable to die at any time. They all dieted me until I was nearly starved but I seemed to get worse instead of better.

"Having heard of the good Postum had done for nervous people, I discarded coffee altogether and began to use Postum regularly. I soon got better, and now, after nearly two years, I can truthfully say I am sound and well.

"I sleep well at night, do not have the nervous spells and am not bothered with indigestion or palpitation. I weigh 32 pounds more than when I began Postum, and am better every way than I ever was while drinking coffee. I can't say too much in praise of Postum, as I am sure it saved my life."

"There's a Reason."

Name given by Postum Co., Battle Creek, Mich. Read "The Road to Wellville," in pgs.

Ever read the above letter? A new one appears from time to time. They are genuine, true, and full of human interest.

LAMENT FOR CHANGED TIMES.

Adoniram Corntop Discourses on Present-Day Extravagance.

"Yes, sree, Bill, times is changed since you an' me was doin' our courtin'." said Adoniram Corntop, with a note of sadness in his voice, to old Andy Clover, who had come over to "set a spell."

"When we was doin' our courtin', Andy, a gal thought she was bein' treated right hansom if a feller bought her ten cents' wuth o' pep'mints once in awhile, an' if he tuk her to any doin's in town she didn't expect him to go down into his jeans to the tune of a dollar or two fer ice cream an' soda water an' candy at fo'ty cents a pound. My son Si tuk his duckey-doodle to the band concert in town yistiday an' there wa'n't a quarter left of a dollar bill he struck me fer time he got home. Beats all the way young folks throw the money away nowadays. I tell ye times is changed mightily since we was boys, an' the Lawd only knows what the end will be with a feller layin' out 75 cents on a gal in one day."—Puck.

Unusually Severe Drought.

The water in Lake Champlain during the recent drought reached the lowest point recorded in local history, nine feet below high water mark. Steamers were obliged to abandon many of their trips on account of the impossibility of making landings at the docks. The mountain brooks became almost dry, and the beds of some of the largest rivers were mere threads of water. The drought and forest fires were ruinous to agricultural interests.—New York Sun.

Pennsylvania Statesmen.

The Pennsylvanians in George Washington's first cabinet were Timothy Pickens, secretary of state, and for a time secretary of war and postmaster-general, and William Bradford, attorney-general. Pickens was the only Pennsylvanian in his second administration.

LOCATED.



"Goodness, sonny, are you in pain?" "Naw, the pain's in me—boo-hoo!"

Putting It Politely.

It was evident that the directors were very nervous. Anxiously they awaited the coming of the president, who had summoned them in haste. A length he appeared, greatly distressed.

"Gentlemen," he said, "I am very sorry to say that it is my duty to impart to you some disagreeable news. I assure you that this is the saddest day of my life. I would rather have cut off my right arm than been compelled to send for you on an occasion of this kind. It is most—"

"What's the matter?" one of the directors impatiently asked.

"The cashier has aviated."

A Cure for Poison Ivy.

Before the skin blisters scrub the affected parts with a brush and soap and water. Then apply a saturated solution of sugar of lead in 50 per cent. of alcohol. The alcohol must contain some water. Pure alcohol would not dissolve the sugar of lead. This relieves the burning of the poison ivy, and it is supposed that the alcohol dissolves the poison and the sugar of lead neutralizes it.—Suburban Life.

Conquering One's Self.

Every sin thou slayest, the spirit of that sin passes into thee, transforms into strength; every passion subdued by a higher impulse is so much character.—Robertson.

Put new shoes on the youngster. Look at them in a week. They're usually hattered, scraped, almost shapeless. Get a pair of Buster Brown Shoes. Scuffing, scraping, kicking—doesn't mar them—they thrive on knocks. They wear.

BUSTER BROWN Blue Ribbon SHOES
For youngsters, \$1.50 to \$2.50

White House Shoes for grown-ups. Ask your dealer for them.

THE BROWN SHOE CO., Makers
ST. LOUIS, U. S. A.

For Sprains

Sloan's Liniment is the best remedy for sprains and bruises. It quiets the pain at once, and can be applied to the tenderest part without hurting because it doesn't need to be rubbed—all you have to do is to lay it on lightly. It is a powerful preparation and penetrates instantly—relieves any inflammation and congestion, and reduces the swelling.

Sloan's Liniment

is an excellent antiseptic and germ killer—heals cuts, burns, wounds and contusions, and will draw the poison from sting of poisonous insects.

Price, 25c., 50c., and \$1.00.

Dr. Earl S. Sloan, Boston, Mass., U.S.A.

Sloan's book on horses, cattle, sheep and poultry sent free.

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