A New and Beautiful Alloy of Metal.

1st. Into a cupola in which iron has recently been melted, a quantity of zinc is introduced on the top of the charcoal, or it may be coke, the heat of which will soon melt it and cause it to run down through the charcoal close to the sides of the furnace when it comes in contact with the melted iron adhering to the charcoal and sides of the furnace and then combines with it and escapes at the bottom.—This alloy will contain about 4 per cent of iron. This is a cheap way to make this alloy, but it can be made otherwise by introducing 96 parts of zinc into 4 parts of molten iron.

2d. Then take and make another alloy of copper and manganese which have been reduced together in a crucible at the rate of mixture of one-fiftieth of the oxide of manganese to the rest of copper. When these two, the copper and manganese, are thoroughly incorporated in the crucible or melting pot, about one fourth part of the first alloy is to be introduced and the whole covered up with a flux (any of the common kind) to facilitate the fusion and prevent the action of the air upon the compound. This alloy produces a beautiful golden colored metal, capable of being rolled, engraved, and is a far superior substitute for brass or gun metal.

A great variation may be observed in the compounding of these materials for different purposes. For rolling, the less iron used the better, but for casting it is well adapted. The alloy at any rate, is of a fine grain, capable of taking a very high polish if properly manufactured, and is somewhat similar to standard gold. This metal is one of the best ever discovered for the bearings of machinery if a small portion of lead, (say about one per cent) be introduced. It is less liable to heat than brass and consequently there is a decrease of friction, and is therefore more enduring than brass.

By melting the first alloy 6 parts, to 10 of copper and 2 of nickel, a beautiful silvery alloy is the result, which may be cast but not rolled, but can be engraved and receives a very high polish.

These alloys are but recently discovered and just patented in England, this part forming an accompaniment to the patent of Mr Stirling, noticed in our last number. He denominates the alloy British Gold, a kind we believe to be much better than that which used to flourish about so much in print during some of our elections.

To Fix Drawings in Chalk and Crayons.

The Marquis de Varennes has discovered a method, which is equally simple and ingenious, of giving to drawings in pencils and crayons the fixidity of painting, and without injury. He succeeded in obtaining this result by varnishing them on the back, that is, by spreading over the back of the paper an alcoholic solution of white gum-lac. This solution quickly penetrates the paper, and enters even into the marks of the crayon on the other side. The alcohol rapidly evaporates, so that in an instant all the light dust from the crayons and chalk, which resembles that on the wings of a butterfly, adheres so firmly to the paper, that the drawing may be rubbed and carried about without the least particle being effaced. The following are the accurate proportions of the solution:—ten grammes of common gum-lac are dissolved in 120 grammes of alcohol; the liquid is afterwards bleached with animal charcoal. For the same purpose may be used even the ready-made paint that can be purchased at the color shops, containing a sixth of white-lac, and adding two-thirds of rectified spirits of wine. After it has been filtered there is nothing further to be done than to spread a layer of either of these solutions at the back of the drawing, in order to give them the solidity required.

This receipt we think will also fix bronze powder.

Useful Problems.

We have received two very beautiful solutions of the problems answered in last week's Scientific American, in reference to the earth's surface seen from a point at a certain distance above it. Richard Hinchcliff of Ballard Vale, Mass., answers problems 2 and 3, and J. J. H. of Philadelphia, answers problem 3. The answers are the same exactly, and the solutions beautiful and correct. They came after the answers in our last were set up, or we would have published them. We have received a great number of answers to the problems—in fact so many that we have concluded not to propose but a very few more, for the reason that so many were wrong, and it took up more of our time to examine them, than we could well afford to devote to that specific object. Mathematics is a study of such an alluring nature to us, that we are inclined to get too much abstracted from other duties, and hence our conclusion, for prudence sake.

Problem 1.—Given the sides including the right angle of a right angled triangle 16 and 9, to find the diameter of the inscribed circle geometrically?

Problem 2.—A cylindrical vessel whose depth is 12 feet is filled with water and placed at the top of a regular declivity whose angle with the horizon is 20 degrees. Query—How far from the top of the vessel must a hole be made so that water may spout the farthest down the said plane?

Another Cholera Cure.

The following is from a Liverpool paper.

Take three table-spoons full of castor oil, three table-spoons full of the best French brandy, and forty drops of laudanum, mixed well together, and let the patient drink it off. The body must then be rubbed over with a hot flannel cloth. Should the condition of the patient not improve within one hour, and the nails of the fingers begin to get black, administer one table-spoon full of castor oil, one of French brandy, and ten drops of laudanum.—This generally throws the sufferer into a prosound sleep, from which he will awaken perfectly well. This treatment has been proved most effectually in India, where cholera first appeared, and thousands of persons were cured by this simple remedy.

Zinc Pails for Milk.

An article recently appeared in a French paper called the Orleans, stating that several experiments have been tried to find out whether zinc could not be advantageously substituted for pewter or tin for milk pails.—The result has proved that milk kept in zinc pails will curd four or five hours later than that kept in pails of different materials, which allows all the cream to separate. In one of the trials, three zinc pails, each containing two gallons of milk, have been compared with three tin pails containing an equal quantity of milk.

The six pails were filled with new milk on a Monday afternoon, at three o'clock; at nine on the following Wednesday, the milk in the tin pails was found almost entirely curded, while the curding in the zinc pails had scarcely begun; and the cream could not be removed before two in the afternoon. The cream taken from the tin pail, yielded two pounds of butter, and the other two pounds and a half. The butter made from the cream taken from the zinc pails proved sweeter and more agreeable to the taste than that which had been made from the cream preserved in tin pails.

To Destroy Cochroaches.

Take and mix up some arsenic with boiled potatoes and sprinkle it about the hearth before going to bed. Be sure and sweep any of the crumbs that might be left early in the morning and burn them up, for fear of accidents. The cockroach is very fond of potatoes, and the arsenic kills them, and it is of such a preserving nature that no stench arises from the dead ones. Great care must be taken to avoid accidents.

To Boil Potatoes.

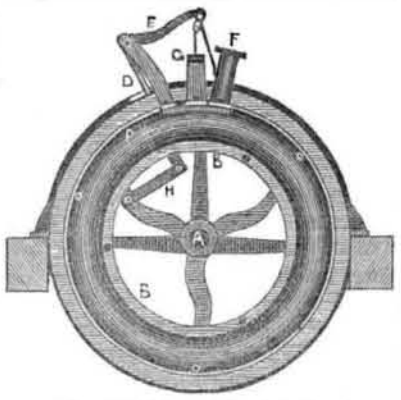
Put them into boiling water, let them remain till they are done, take them out and immediately envelope them in a wet cloth, gently squeezing each with the hand till it cracks sufficiently to let out the watery particles in the form of steam. Managed in this way, almost any potato will be good.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

We again resume the history of the Rotary Engine, and will finish it in a few more numbers. We of course do not include in this, those rotaries that have been published before among the miscellaneous articles in the Scientific American, among which are Cary's rotary pump, on our patent list this week, and Tremper's, the patent for which was issued a few weeks since.

Fig. 60.



HOOVER'S ROTARY ENGINE.

This rotary engine is the invention of Mr. James Hoover, of Lewisburg, Preble Co., Ohio, and it possesses a curious and different way of operating the valve from any that has yet been presented in our history.

The invention consists in working the stop and induction valves by a cam on the fly wheel. A, is the axle. It is attached by arms to the ring B, which moves steam tight by a flange in the annular steam chamber having the convex outside. The annular chamber consists of two parts ground and faced, and united together by bolts like two circular plates, and is stationary, being secured in a proper frame. H, is a crooked arm connected with a piston which projects inside steam tight in the annular chamber. Against this piston the steam acts and carries round the ring B, and thus drives the axle. D, is a fly wheel, it is secured on the axle A, and revolves a few inches from the annular chamber. F, is the steam pipe communicating with the boiler, and P, is the exhaust pipe. The steam pipe has a flap valve in it turned by a flexible rod secured to the axle of the valve on the other side and to the crooked arm E. There is a stop valve or gate which sets steam tight down through G, in the chamber. It is close to the induction opening to let the steam act upon the piston around the chamber. This stop valve must be lifted to let the piston pass, and at that very moment the steam must be shut off. This is done by the cam on the rim of the fly wheel. It is represented by a light mark striking a swinging arm, seen behind the stationary standard at D. This raises the stop valve and at once turns the flap valve and shuts off the steam, when the piston passes the stop valve, and steam opening, and then the cam relieves the valves, the stop drops, and the steam is again admitted. One or two pistons may be used, but one is better than two.

To Correct Sourness in Milk, Cream and Bread.

It is not generally known that the sourness of Milk and Cream may be immediately corrected by the addition of a small quantity of the common carbonate of magnesia, in powder. Half a teaspoonful (about equal to four grains) may be added to a pint of milk or cream, if only slightly sour; a larger quantity in proportion to the degree of sourness.

From two to three grains may be added to every pound of flour to prevent sourness in bread, so injurious to some constitutions.

Carbonate of Soda is sometimes employed for the same purpose, but it communicates a very unpleasant flavour to the bread, and, in the case of milk or cream is worse than the disease.

Headache.

Sage tea is said to be good for a headache. Some people have their headaches cured by fasting and others by feasting. We must place ourselves among the number of those who are never cured by fasting. The head should be bathed once every day; no stimulating drinks should be used, and in all cases persons should have plenty of exercise in the open air.

The Banker's Magazine for May is an excellent number. It is valuable to the Banks and Merchants and instructive to any man. It is edited by Homans & Williams, Baltimore.