

# EARTH'S CORE HOT

MOLTEN MASS FORTY OR FIFTY MILES BELOW THE CRUST OF THE GLOBE.

## HEAT MAY BE UTILIZED

From Planets Interior Supplies of Warmth Possibly May Take the Place of Coal and Oil—Notable Eruptions Are Told Of.

BY GEORGE FREDERICK WRIGHT, A. M., LL. D.

(Author of "The Ice Age in North America," "Man and the Glacial Period," Etc.)

(Copyright, by Joseph B. Bowles.) It is perfectly proper to speak of the "crust" of the earth. The existence of volcanoes and the fact that the temperature regularly increases as you penetrate the rocks by borings or mining shafts prove that the interior of the earth is hot enough to melt all known mineral substances. In boring for gas or oil or water and in descending along the line of mineral veins or to reach deep-seated coal deposits it is found that the temperature increases about one degree for every fifty or 75 feet, so that it is a serious question with miners how far they can follow a vein into the earth before reaching a point where the heat will be so great that it would be impossible for workmen to endure it.

Taking the average increase of heat to be one degree in 50 feet, we should reach a point where water would boil at a distance of about 8,000 feet or a little over a mile and a half. It, therefore, would be a feasible plan to bore a hole to that depth, and by letting cold water into it by one pipe bring it up hot in another, thus making use of the heat of the interior of the earth to warm our houses. Very likely before the coal and oil are exhausted this may be the source through which to dispel in our homes the rigors of winter even in arctic climates.

At the same rate of increase we should have to descend only 30 or 40 miles to find a degree of heat which would melt any known substance and produce a molten interior. The only escape from the conclusion that the earth consists of this thin crust of consolidated material arises from the fact that the melting point of metals rises under pressure. For example, iron when subjected to very great pressure will remain solid long after reaching the temperature at which it

studied, is Kilauea, on the island of Hawaii, the crater of which is 13,675 feet above the sea. The crater is nearly three miles in diameter, and is filled with boiling lava, which varies greatly in height at different times.

When visited by Prof. Dana in 1859 it lacked only 400 feet of being full, so as to run over from the top. In 1840 the lava had subsided, so that it was 1,000 feet below the rim. No recent eruptions have projected the lava over the rim, but at various times since the discovery of the island great streams of lava have burst out from the side of the mountain, 2,000 feet or more below the summit.

COST \$500 AN OUNCE.

Some of the More Rare Flower Seeds Are Expensive.

"Just as good as gold," remarked a young Boston suburbanite who thinks himself something of an amateur gardener, as he ran his hand through a sample bag of fine spring seed wheat in a South Market street seed store.

"Yes," said the seedsman to whom the remark was addressed, "but unlike the seed of some other farm and garden products we have in here it isn't worth its weight in gold.

"Every year there is a great variety of new flowers. The growers are continually at work hybridizing to produce fine strains of flowers. It requires considerable time and labor to do it, and this makes them very expensive.

"Take the petunia grandiflora, for instance, as a sample. It is an exceedingly beautiful flower. The packages of its seeds contain between 300 and 400 seeds each, but the seed is so fine as to be almost impalpable powder. The package retails at 75 cents, but by the ounce the seed is worth \$500.

"An ounce will make about 5,000 packages. You can easily see, then, how the seed is worth even more than its weight in gold.

"An ounce of high-priced seed may represent the entire product of a season's work by the grower on one particular variety. We have frequently paid a French hybridist as high as \$60 an ounce for a special variety of pansy seed, that retails for a great deal more than that an ounce. Packets of it sell for 50 cents each.

"In the matter of vegetable and grain seeds, the market gardener or the farmer must pay prices for these that sometimes gives him a shock. Take one of those mammoth squashes, say, that weighs 200 pounds or over. The seeds obtained from a big squash like that actually sell for four cents

# PRETTY COSTUMES



Visiting-Dress. Linen Costume. Home-Dress.

**Visiting Dress.**—A very effective but simple dress of Aubergine colored soft cloth is shown here, the skirt is slightly full at the waist, and is trimmed with cross-wise bands of silk of the same color, one and a half inches wide. The over-bodice is trimmed to match the skirt, the fronts being connected by straps of silk attached each side under small rosettes. The under-slip is of piece lace. Hat of silk to match the dress, with a soft frill of lace under the brim. Materials required for the over-bodice and skirt, six yards 46 inches wide, three yards silk.

**Linen Costume.**—Here is a very trim costume, in rather coarse white linen. The skirt is set in very deep plaits, turned up at the foot with a deep facing of blue linen; the fronts are ornamented with pearl buttons and blue cord loops. The jacket is edged with blue, and ornamented with buttons like the skirt. A skirt of white lawn is worn with the costume. Sailor-shaped hat of Tuscan-colored straw trimmed with pale pink roses. Materials required for the costume, seven yards white linen 44 inches wide, two and a half yards blue linen, 22 buttons, two and a half yards cord.

**Home Dress.**—A pretty flowered cotton is used for the dress shown here; the skirt, which is slightly eased in at the waist, has two deep tucks above the hem, and a band of muslin embroidered insertion above the tucks. The blouse bodice has deep tucks over the shoulder to waist each side, and small tucks and insertion in center of front. The telescope sleeves are finished with a deep tight cuff of finely tucked material, trimmed with insertion. Materials required, 12 yards 28 inches wide, six yards insertion.

## BUTTONS SEEN ON EVERYTHING EASY TO MAR PRETTY GARMENT

Must Be Acknowledged Favorite Trimming of the Season.

Much Depends on the Fastenings Being Properly Arranged.

Buttons are a most favored trimming. They are used not only upon tailored gowns and summer frocks, but upon the more elaborate evening costumes. They are oftentimes placed the full length of the clinging skirt at one side, in the center front or at the center back. This line of buttons is a continuation of the button trimming upon the bodice portion, and is one of the little tricks employed to give the much-desired "long-line-effect."

There is ample opportunity for the enthusiastic needlewoman to make buttons which will prove a feature of her costume. An old-fashioned method was to embroider upon the covered button-mould a five-pointed star. This requires time, but is very simple to make, and, if the embroidery silk be in a tone darker than the covering of the button, the effect is very handsome.

Other embroidered buttons have heads introduced. French knots assist in the decoration of buttons. Whole buttons are covered with southe braids.

Some buttons are slipped into little crocheted covers of embroidery silk. There is opportunity in the making of buttons to show great individuality and taste.

## PRETTY AND STYLISH.



Pretty coiffure formed of a bandeau of silver paillettes and two black velvet bows; hair dressed low at the back with soft curls.

The latest Charlotte model is the revolutionary cap of enormous proportions.

## Pretty Model for Stout Women.

Recently a smart model in a coat suit was seen. It was made up from the bordered goods that would be coming to a stout, elderly woman, provided she were not too stout.

The skirt was pleated in four groups, with the border forming the hem, and the coat was barely half length, cut into four points at the lower edge, breaking up the straight line—an excellent fashion for stout figures. This decorative portion of the material also trimmed the fronts of the coat, the cuffs and the neck. The sleeves were coat shaped.

## Fashions from Old Egypt.

One of the most famous dressmakers in Paris says that Rameses II. set the fashion in tea gowns this year. "The Rameses gown is one of the most comfortable designs possible," she says. "It is like a loose tea gown with a crossover bodice which resembles one of the fashionable boleros. I have made a gown of brilliant ultramarine, embroidered with a pattern of marine flowers in dull mauves and purples. Another Egyptian novelty is the introduction of long chains, which I have copied from old pictures."

The whole appearance of an otherwise pretty garment may be marred if the fastenings are carelessly or incorrectly put on. There are many garments which are too fine for hooks and eyes and which are, in fact, fitted only for tiny buttonholes and buttons or hooks and loops. These loops are used both for small buttons and for hooks and are put on the collars of lingerie blouses, on baby clothes, and other sheer garments. When they are to be used for buttons they are put at the extreme edge of a hem or band and sometimes they are placed on the underneath part of a hem when it has been folded over and so closes the opening in an invisible manner. They are made by arranging loose threads of a certain length to form a loop large enough for the button to pass through. Use strong sewing cotton and fasten on by passing the middle between the folds to the edge of the band. Make it quite firm by taking a seaming stitch on it and give it a jerk to test it. Now take a stitch like a seaming one as far distant from the first as the diameter of the button, and draw the cotton in to within three-quarters or half an inch from the first stitch. Keep this loop around the forefinger and make another one by taking up the first stitch again, which of course takes the needle back to the right of the one last made. Repeat this four or five times, keeping all the loops the same length over the finger. Let the last stitch come on the right hand side, so that when the work is turned around for the loop to face the worker it becomes the left hand. Holding the work with the loop toward the body, pass the needle under the loops with the point toward you and pass the single thread to the right under the needle. This will make a purled edge at the top of the loop. Continue this from right to left and finish off securely. Loops for hooks are made in a similar manner, but the strands are drawn much tighter and they are made a quarter of an inch or so from the edge of the hem.

## Sailor Hats of Black Net.

Very smart are the black net sailor hats trimmed with crepe cords and bound at brim edge with a wide crepe band. At side wing effects of crepe-edged net stand upright and spread toward front, and a ruche of maline tucks tilts the hat slightly up at left.—Vogue.

## Season's Novelty.

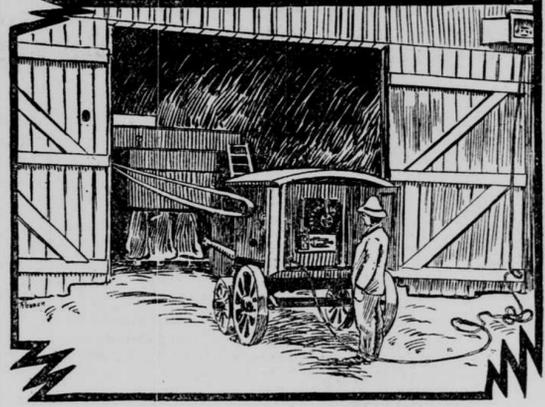
One of the novelties of the season is a line of linen just inside the revers of a jacket, which gives it a clean and neat appearance that nothing else so small could possibly do. This is really a very good idea, and one that may be carried out in many attractive ways. For instance, if one's suit were a plain black and looked too dark for the season, one might easily add a little line of cerise or magenta, which would brighten the whole and take away that mourning look to which so many people object. Linen bands are especially used on suits for girls between 12 and 13 years.

## Hair Curlers.

Take a smooth piece of wood, about as large around as an ordinary lead pencil, three or three and one-half inches long. Cut little grooves in the ends. Part your hair as usual, and twist around wood. Then snap a rubber band into grooves in each end. By damping the hair and doing it up the night before you will have beautiful waves. It takes about two hours for it to curl if you do it in the morning. Eight curlers are enough for front and back.

# THE ELECTRIC FARM

A POSSIBILITY OF THE FUTURE.



Here is a picture of a twentieth century farm house when electricity will have come to its own as a power factor on the farm: It has a cool, clean kitchen, a laundry where all the hard work is done by an electric motor; good lights, with no lamps to fill; and a small vacuum cleaner run by electricity replaces the broom. A cleaner house and better food in half the time! The sewing machine is run by electricity and the incubator in the cellar is heated at an even temperature in the same way. The tank on the top of the house is filled by an electrically run pump and there is running water in the house. The woman who lives in this house has not the dull, tired look which we see so often now.

This is as Arthur W. Page, who writes of the "Age of Electric Servants," in the World's Work, sees it, and he proceeds to explain how the farmer is to procure his electricity to do these things. Down in North and South Carolina a company has been organized which utilizes the water powers of a district to produce electricity. The extent of the company's service covers more territory than many a state and the company stands prepared to sell power to farmers, mills and factories. It charges \$20 per horse-power a year, which is about the same as \$10 of a cent per kilowatt hour, a rate which, if doubled, would still be as cheap as wood, coal or gas.

The region operated by this company is not exceptionally well supplied as to water power; and what is being done there may be done in many a part of Canada. There are indeed, few farming regions in this country that are beyond the reach of electricity generated by running water. Even in the arid and semi-arid regions the same water that is used for irrigation could often be made to generate power.

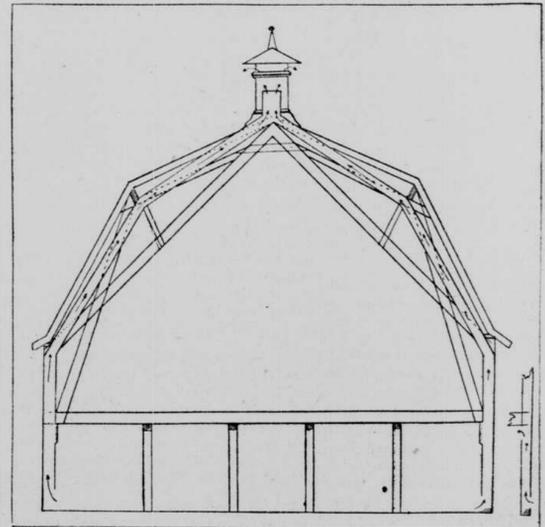
But electricity can be made to help the farmer as well as his wife. It is to make farming more profitable. An electric motor would save farm labor, and labor is now hard to get. It would supply energy to draw water, to run the milking machines, to thresh wheat, and to do a hundred other things. On a farm in Germany, near Berlin, is an

## Increase Grain Production.

If the farmers of this country could increase their production of grain only ten per cent, they would increase the nation's wealth \$214,000,000. In most sections of the country it is possible to increase the production fully 100 per cent. Are you doing your part to assist in the increase?

# VENTILATE YOUR HORSE BARN

Proper Placing of Intake and Outflow Flues Important.



System of Ventilating Horse Barn.

Ventilation is a matter that should receive attention in preparing plans for stables and barns. The health of animals depends upon the supply of pure air they get when confined indoors. In the above illustration is shown the system adopted in a horse barn erected at the Michigan Agricultural College. For the removal of air there are four flues 12 inches by 21 inches, built of sheet-iron. These are set into the walls, two on a side and run up in pairs, each flue pairing with the one opposite it. The flues of a pair after passing up into the mow follow up just under the roof and meet under a cupola, unite and extend up into the cupola half way, to its top. These flues take the air from just above the foundation wall, but are provided with registers 18 inches by 18 inches just below the ceiling which can be opened when it is desired to remove the warm air from near the ceiling. Ten intakes are provided for admitting fresh air. These are six inches by 23 inches; each occupies the space between the inner and outer walls and two adjacent studs. Each opens to the outside at the bottom and to the inside at the top as shown in the small diagram to the right of the illustration. The openings should be fixed

to permit of their being closed partly or wholly on windy days.

## EXTERMINATE TUBERCULOSIS

A plan has recently been proposed by Dr. Burton Rogers, a Kansas veterinarian, for the eradication of tuberculosis, which includes the following steps: First, to discover what animals are infected with the disease, which can be accomplished by the enforced testing of every cow in the county with tuberculin; second, infected animals should be disposed of at once and finally the animals remaining upon the farm should be regularly tested, and those infected removed as soon as discovered.

While this plan would work a hardship in some cases, he claims most of the stock could be disposed of at full value or a reasonable discount by the packers. He also suggests that it would be a profitable financial investment for the nation to cause every cow in the land to be tested and those found to be tuberculous to be put upon government land reservations and finally to be bought either at full value or at a discount from a fund made up by the federal and state governments and the packers.



Proof is inexhaustible that Lydia E. Pinkham's Vegetable Compound carries women safely through the Change of Life.

Read the letter Mrs. E. Hanson, 304 E. Long St., Columbus, Ohio, writes to Mrs. Pinkham:

"I was passing through the Change of Life, and suffered from nervousness, headaches, and other annoying symptoms. My doctor told me that Lydia E. Pinkham's Vegetable Compound was good for me, and since taking it I feel so much better, and I can again do my own work. I never forget to tell my friends what Lydia E. Pinkham's Vegetable Compound did for me during this trying period."

## FACTS FOR SICK WOMEN.

For thirty years Lydia E. Pinkham's Vegetable Compound, made from roots and herbs, has been the standard remedy for female ills, and has positively cured thousands of women who have been troubled with displacements, inflammation, ulceration, fibroid tumors, irregularities, periodic pains, backache, that bearing-down feeling, flatulency, indigestion, dizziness or nervous prostration. Why don't you try it?

Mrs. Pinkham invites all sick women to write her for advice. She has guided thousands to health. Address, Lynn, Mass.



Of course, it may be all right—still, you don't feel inclined to eat sausages when you find your butcher has removed to a shop next door to the Home for Lost Dogs, do you?

## The Tangled Web.

Charley is the white-haired negro man employed by a southern family on Charlotte street. And Charley is cautious about lending anything. The other day a man new to the neighborhood appeared at the door and asked if he could borrow a spade.

"No, sir," said Charley. "Ain't got no spade."

"Haven't you any sort of a shovel I could use to dig fishworms with?"

"No, sir, ain't got no shovel."

The stranger hesitated a moment and then asked:

"Do you suppose the folks next door have a spade they'd lend me?"

"No, sir," replied Charley, promptly "they's all the time 'a-borrowin' our'n."

—Kansas City Times.

## Hurt a Convict's Pride.

A church missionary had a letter recently from a convict begging him to reform the writer's wife, who was also in prison.

The convict—who is serving a long term—was very anxious about the matter, because, as he said: "It was no credit to him to receive letters from such a place as prison."

Another convict, in the course of a letter to his brother, a pauper, remarked: "Well, Jack, thank goodness I have never sunk so low as the work house yet."—London Daily News.

## WIFE WON

### Husband Finally Convinced.

Some men are wise enough to try new foods and beverages and then generous enough to give others the benefit of their experience.

A very "conservative" Ills. man, however, let his good wife find out for herself what a blessing Postum is to those who are distressed in many ways, by drinking coffee. The wife writes:

"No slave in chains, it seemed to me, was more helpless than I, a coffee captive. Yet there were innumerable warnings—waking from a troubled sleep with a feeling of suffocation, at times dizzy and out of breath, attacks of palpitation of the heart that frightened me.

"Common sense, reason, and my better judgment told me that coffee drinking was the trouble. At last my nervous system was so disarranged that my physician ordered 'no more coffee.'"

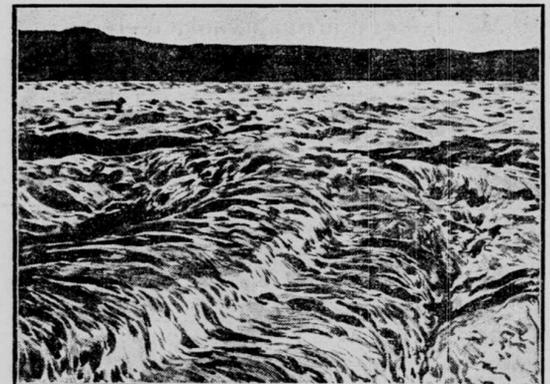
"He knew he was right and he knew I knew it, too. I capitulated. Prior to this our family had tried Postum, but disliked it, because, as we learned later, it was not made right.

"Determined this time to give Postum a fair trial, I prepared it according to directions on the pkg.—that is, boiled it 15 minutes after boiling commenced, obtaining a dark brown liquid with a rich snappy flavor similar to coffee. When cream and sugar were added, it was not only good but delicious.

"Noting its beneficial effects in me the rest of the family adopted it—all except my husband, who would not admit that coffee hurt him. Several weeks elapsed during which I drank Postum two or three times a day, when, to my surprise, my husband said: 'I have decided to drink Postum. Your improvement is so apparent—you have such fine color—that I propose to give credit where credit is due.' And now we are coffee-slaves no longer."

Name given by Postum Co., Battle Creek, Mich. Read "The Road to Wellville," in pkgs. "There's a Reason."

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



Part of the Rim and Floor of the Crater of Kilauea.

ordinarily melts, so it is supposed that the pressure toward the center of the earth is so great that no amount of heat, or, at any rate, the intense heat in the interior of the earth, can make it assume a liquid form. This also agrees with the calculations of physicists, who affirm that the earth behaves like a solid, and therefore cannot have a liquid interior, as was formerly supposed.

But the many other positive indications of the existence of molten matter in the interior of the earth have led to a conclusion which satisfies all parties, namely, that after descending 40 or 50 miles from the surface the heat is so great and the pressure so limited that all substances are melted, so that there is a segment, probably many hundred miles in thickness, consisting of molten matter, while the interior nucleus remains, both intensely hot and at the same time solid.

One of the most striking positive indications that there is such a molten mass at no great distance below the surface of the earth is to be found in the volcanoes of the world, which are best explained as vent holes through which this molten matter escapes to the surface in response to the varying degrees of pressure from the crust of the earth over different areas. When, for example, through long-continued deposition of earthy material about the mouths of the great rivers, a portion of the earth's crust becomes overloaded, so that it presses with undue weight over a limited area, it would squeeze a portion of the molten material to the surface, just as if you press with your thumb upon the rind of an orange in one place it will crack the rind in another place and force the juice out through it. The slow contraction of the diameter of the earth, also, through its loss of heat by radiation, may result in the wrinkling up of the crust in such a manner that the molten matter will be forced out along the lines of greatest weakness.

Jorullo in Mexico is one of the most remarkable instances of intermittent volcanic action. Up to 1759 the site where the volcanic cone now stands was occupied by a fertile plain, surrounded by hills composed of very ancient rocks. In chasm opened in the plain, from which flames issued, and ashes and lava were ejected in sufficient quantities to form in a short time a mountain 1,500 feet high. Since then there have been no eruptions, and the lower flanks of the mountain are now covered with trees and the surrounding country is cultivated as formerly.

One of the largest volcanoes and one which has been most carefully

piece, or four dollars an ounce. Then there is the seed of a new variety of lettuce that sells for three dollars an ounce, while some kinds of beet seed bring at retail from \$2.50 to three dollars a pound. Even a new variety of parsley is high-priced, the seed of one kind selling at two dollars a pound.

"Not long ago a Vermont man brought in to us a new variety of oats that he had been working to produce for three or four years. It was a very fine product, and it retails at seven dollars a bushel for seed. There are some other kinds of oats that sell for five dollars a bushel, and the enterprising farmer pays that price for his seed, as he knows that it will double the market value of the output of an oat field.

"Some varieties of celery seed are also high priced. Boston market celery is the king of all the celeries raised in this country. It sells at six dollars a pound."

When the South Market street seedsman had finished with his talk on high priced seeds, the amateur gardener bought a few five and ten-cent packages of ordinary flower seeds and left the store with a thoughtful countenance.—Boston Globe.

## Useful Qualities of Alum.

Alum should never be absent from any household. It has a very good effect if applied to bleeding wounds, as it checks the loss of blood. Boiled in milk in small quantities it is good for toothache. It must be held in the mouth, not swallowed. For bleeding of the mouth or tongue a wash in cold water in which alum has been dissolved is very effective.

## Butterflies in Cold Climates.

It is a common experience among mountain climbers to find butterflies lying frozen on the snow, and so brittle that they break unless they are very carefully handled. Such frozen butterflies on being taken to a warmer climate recover and fly away. Six species of butterflies have been found within a few hundred miles of the north pole.

## The Crisis.

"Gentlemen," said the orator who sometimes was careless about his metaphors, "although the time is ripe to be forging to the front, we are wallowing in the slough of dependance like a ship without a rudder, unmindful of the fact that while the ground is slipping from beneath our feet every day brings us nearer to the point at which we must either draw cards or drop out of the game."