

## Take this Power in your hand

Pick up any Bovril bottle from the store counter, and let it rest on the palm of your hand. Then picture to yourself another bottle ten to twenty times as big.

That larger bottle would correspond to the proven Body-building Power of the Bovril actually in your hand.

# BOVRIL

## The End of the World.

By SIR BERTRAM WINDLE, F.R.S. (in Lloyd's Magazine.)

THIS earth of ours had a beginning, whatever that beginning may have been, though as to the exact nature of that beginning, as was shown in a previous article, there is some difference of opinion, and there is little doubt that it will have an end, at least, as a place of habitation for living things. In this, it falls in with the lot of other parts of the universe, as to which a recent writer has said that "the picture which physics exhibit to us is that of the universe as a clock running down, of an ultimate physical death." We will not stay to consider how the clock was wound up, nor shall we linger over any of the suggestions which have been made as to the possibility of its being rewound; it is with the way in which it may run down that we are here concerned. If the earth is indeed to become once more what it was in the beginning, a place unfit for living things, how may this take place?

The possible advent of another Glacial Period is the first thing which occurs to one. Many people have seen glaciers for themselves, and it may be assumed that those who have not have at least seen pictures of them, and have a fair idea of what they look like. Most people have heard of the Glacial Period, and will be at least aware that there was a period in the history of the earth when the extent of the glaciers was much greater than it now is, a period during which not only the British Isles, but Scandinavia, Northern Germany, and almost the whole of European Russia as well as nearly half of Northern America were covered by huge and thick sheets of ice. It has been calculated that the thickness of the sheet amounted to about one mile in Europe, and from one to three in North America. It is needless to say that human existence was impossible in those areas and at that time.

Most geologists believe that there have been four such Glacial Epochs, separated from one another by genial intervals, such as that in which we are now living.

In each of these epochs enormous glaciers descended upon the face of the earth, and, slowly moving, acted like gigantic planes, shaving off the surface of the land, and depositing their spoils in the shape of rubbish-heaps or moraines which testify to-day to the happenings of long ago. There is a good deal of difference of opinion as to the dates of these

epochs and even as to the date of the termination of the last, as to which calculations should be more possible than as to the earlier occurrences. One eminent authority says that "large areas in Europe and North America which are now principal centres of civilisation were buried under glacial ice thousands of feet thick while the civilisation of Babylon was at its heyday," that is, some six thousand years ago.

As to the cause of these glacial epochs there is great difference of opinion, and since it must be frankly admitted that we do not know why they made their appearance, or why they disappeared, we have no means of knowing whether or not another is on its way; indeed, some have thought that another five thousand years may see the advent of a fifth Glacial Period. We do not seem as yet to have reached the maximum of the present interval, since the glaciers of to-day still seem to be shrinking. So far as we know, no glacial invasion has ever occupied the entire surface of the land, so that it is unlikely that any fresh incursion of ice would render the whole earth uninhabitable, but nothing is impossible than that it might drive out all life from these islands, from North America and other parts of the world, and ultimately entirely obliterate all traces of the great civilisations which once flourished in those areas. Nor would there be any conceivable method of resisting the approaches of this inexorable foe. Nothing would remain but flight, and, should such a fate once more befall the world, there would be a repetition of those scenes of emigration of human beings and of living things which archaeologists tell us occurred in earlier days. What, however, we are considering is not a mere partial or temporary episode, vast though it might be, but the end of the world as a place of habitation for living things as we know them.

To begin with, then, many have supposed that the earth is slowly cooling down and tending towards the condition mentioned in the previous paragraph. What is there to be said for this theory? In considering it, it will be useful to dwell for a moment on the history of the moon, so far as it can be conjectured by us. Sir George Darwin has shown that there was a time when our satellite was quite close to the earth; only a few thousand miles off, in fact, instead of some quarter of a million. Perhaps it may have been actually detached from our

globe—cast out of it as a single mass of matter by our rapidly rotating planet. At any rate, the moon and the earth seem to have been close to one another and to have rotated together as if they were parts of one rigid body, so that the day and the month were then of the same length, namely, about three to five hours.

It may be assumed that the moon then possessed an atmosphere similar to ours—a point of some importance, since it has now none. To complete the history of the moon, we are told that it slowly receded from the earth—the length of the month becoming proportionately greater and that of the day also—until things came to their present condition, when the lunar month occupies 27.3 days. We are also informed that the day is slowly growing longer, like the month, but more rapidly. After the lapse of many years the day and the month will once more become equal, but instead of being only a few hours, their joint period will be about fifty-five of our present twenty-four hour days. When matters have reached that stage the moon will begin to revert slowly to her first position, and will finally return to the earth from which she may have sprung.

Such are the events foretold by astronomers. Now let us for a moment consider the present condition of the moon. Most people have looked at it, if not through a large telescope, at least through a pair of good field-glasses, and will know what a splendid and thoroughly satisfying object it is—one of the things which is better in itself than in any picture when the sky is really clear. Of course, we only see one face, or a very little more, of the moon, but there is no reason to suppose that the face which is hidden from us but may be visible to astronomers—if any then exist—millions of years hence in any way differs from that which is familiar to us.

When the moon is examined through a telescope it looks as if it had suffered from a severe attack of small-pox, for its surface is covered by a number of irregularly distributed pits. Some persons have suggested that these resulted from bombardments by meteors, and others have thought that they may have been the effects of the bursting of bubbles in the molten mass of the early days of the moon. The general opinion, however, of astronomers is that these pits are the craters of volcanoes long since extinct. On our planet, besides active volcanoes, there are the remains of others which have been out of operation for many years, yet which are quite recognisable for what they were once. There are marked differences between these and the volcanoes of the moon, but in spite of this astronomers are all in favor of the volcanic explanation of the features of the moon.

Gazing upon it through a telescope, one of the things which can scarcely fail to strike any observer of the face of the moon is the general radiance and brightness of the scene and the exceeding sharpness of the shadows cast by the different elevations. This we may attribute to the absence of an atmosphere, a fact which is rendered obvious by the behaviour of stars when the moon passes in front of them, and without any of that previous dimming which would occur if they had to encounter the influences of an atmosphere. No one has ever seen any trace of a cloud over the moon, nor any effects of water in any of its forms on its face.

From these things we may feel quite clear that our satellite is incapable of supporting anything which we should recognise as life; in fact, it is absolutely cold, and, so to speak, dead.

Yet, according to the nebular theory, or even the most meteoric theory, the moon is composed of like materials to those of our earth, of which, as we have seen, some have thought that it may once have formed a part. As it glows with no light of its own, but only with the reflected radiance of the sun, we cannot examine it spectroscopically as we can those heavenly bodies which have their own luminosity, but no one has ever suggested that there is likely to be any marked difference of composition between the earth and its satellite, or between it and the other heavenly bodies which have been studied in the manner indicated. Hence the question arises as to whether what has happened to the moon may not also happen to the earth, and that planet also cool down and lose its atmosphere and become a "has been" of the skies.

Such, in fact, was the fate predicted for this earth until the discovery of radium and radium-activity came to disturb things here as in other corners of the scientific field. Hence, though the cooling down theory is not finally discredited, there is another and very widely differing theory which is put forward by those who have made a study of radio-activity.

This we may now briefly consider. Radium—though no doubt in very minute quantities—exists in most of the solid materials of the earth's crust, and radium is capable of disengaging a good deal of heat; it can, in fact, produce sufficient heat every hour to raise its own bulk of water from freezing to boiling point. Moreover, it is not the only radio-active substance known. The process of radiation must have been going on for a long time, but there is no obvious sign of its coming to an end.

The heat thus produced at the surface, as well as that which reaches

## Nothing Else Ever Helped Him, Says Bob Young

Was All Run Down When He Began Taking Tanlac—Gains Twelve Pounds.

"I have actually gained twelve pounds in weight and that is surely proof of what Tanlac has done for me," said Robert A. Young, of McDougall Street, St. John's, when in M. Connors' Drug Store the other day. "Bob" as he is familiarly known to his friends, works in the office of The Daily Star, and his case is still another demonstration of the fact that Tanlac is a most powerful reconstructive tonic and tissue builder. He made the following interesting facts known to the Tanlac representative and gladly assented to their being published.

"I have been more or less sick for about a year, and really was completely run down. I had no appetite and scarcely ate enough to keep me alive. You can imagine how thin I was when I tell you that I only weighed a hundred and six pounds. I couldn't sleep at all well at night, and I never seemed to have enough strength for the day's work. I was losing all interest in life and felt that it wouldn't be long before my folks collected my life insurance money. I didn't consult a doctor because I didn't know there was anything doing for me. I just had no energy, and felt as though I wanted some good medicine to give me strength.

"I tried quite a number of tonics but they didn't seem to meet my need. Hearing that so many people were getting good results from Tanlac I thought I would try a bottle. In but a few days I began to feel stronger. I found that my appetite increased enormously and I began to get better sleep at night. I have just finished my second bottle and up to the present I have actually gained twelve pounds and I'm feeling dandy. I am only too pleased to speak of my experience with Tanlac and shall speak a good word for it wherever I can."

Tanlac is sold in St. John's by M. Connors, and by the leading Druggist in every town.—adv't

the surface from lower depths by ready conduction is, like all other waste heat, radiated off and becomes ineffective for all purposes. But what about the occurrences at greater depths? Is there any radium there, or do any radio-active manifestations take place there? There was probably a sorting out of materials during the molten condition of the earth's crust. Were the radioactive substances all or mostly sorted out into the superficial layers? It is hard, perhaps impossible, to say. One eminent observer has made a number of calculations which go to prove in the first place that if the interior of the earth to a depth of only fifty miles contains radio-active substances in an amount proportionate to those of the samples of the crust which he examined, the heat which they must generate would be ample to make good any loss of heat which could occur on account of the cooling down process of which we have been speaking.

But he further claims that if the entire of the interior of the earth was as rich in radium as we know the exterior to be, then the surface of the earth ought to be a great deal hotter than it is, always supposing that radium in these deeper regions can exert the same effects as in the shallower, and that there is perfect conductivity throughout, a fact which some consider to be very doubtful.

In this connection it may be well to remind readers that "rich" is perhaps a somewhat misleading term to apply, having regard to the fact that pitchblende, which supplies more radium than any other mineral, only contains one part in every four millions. Further, it must be borne in mind that all we know about radium and radio-activity is but of yesterday, and that doubtless there is far more yet to be found out than has so far come to the knowledge of scientific observers.

Suppose, however, that there is radium at these lower depths, and that it there displays the activities with which we have become familiar in recent years; and suppose again that there is no perfect conductivity or anything like it, all of which things are not impossible according to those who have studied the matter, what then?

The result of that state of affairs would be that some of the heat evolved must be stored up where it is produced, and thus must be making the

bowels of the earth progressively hotter and hotter.

That is not a process which can go on for ever; that is obvious. Professor Joly, whose interesting calculations as to the bearings of the saltiness of the sea on the question of its age were dealt with in another article, has also been exercising his ingenuity in this matter. He calculates that if there are two parts of radium in every million million parts of the globe—and that is less than the average found in the surface materials—the temperature of the globe must increase by 1,800 degrees C. in one hundred million years. What that means is that at some point or another the world must explode and burst into bits. When that event would take place would depend upon the resisting power of the crust, but it must come sooner or later.

Why has it not come before? Some would say that it has happened before, perhaps more than once; that is to say, that some pre-existing body has burst into fragments which, reinforced or not by meteoric fragments, have consolidated once more to form our planet. Overcooling or overheating, such seem to be the alternatives. Which—if either—is the true solution,



## All Kinds of SEA FOOD FOR THE LENTEN SEASON

FROZEN CAPLIN.  
FROZEN CODFISH.  
FROZEN TURBOT.  
BLOATERS.

Tinned Lobster, Salmon, Codfish,  
Cod Tongues, Baby Herring (nothing nicer), Sardines,  
Sardine Sandwich,  
Chicken Haddies.

# AYRE & SONS, Limited,

'Phone 11.

Grocery Dept.

'Phone 11.

## Smallwood's Big Sale



## STIRRING NEWS

100 Pairs MEN'S FINE GUN METAL BLUCHER BOOTS, all sizes. Price only \$8.00 pair. These Boots are easily worth \$10.00 per pair to-day.

500 Pairs LADIES' BLACK BUTTONED & LACED BOOTS, all sizes. Price only \$4.25 per pair.

BOYS' BOOTS, sizes 9 to 13, only . . . . . \$3.00

BOYS' BOOTS, sizes 1 to 5, only . . . . . \$3.50

You can't beat these prices, try where you will.

**SPOT CASH ONLY.**

MAIL ORDERS RECEIVE PROMPT ATTENTION.

# F. Smallwood,

The Home of Good Shoes, 218 & 220 Water Street.

## "Windsor Patent" Makes New Customers Wherever it Goes.

duced, and thus must be making the bowels of the earth progressively hotter and hotter.

That is not a process which can go on for ever; that is obvious. Professor Joly, whose interesting calculations as to the bearings of the saltiness of the sea on the question of its age were dealt with in another article, has also been exercising his ingenuity in this matter. He calculates that if there are two parts of radium in every million million parts of the globe—and that is less than the average found in the surface materials—the temperature of the globe must increase by 1,800 degrees C. in one hundred million years. What that means is that at some point or another the world must explode and burst into bits. When that event would take place would depend upon the resisting power of the crust, but it must come sooner or later.

Why has it not come before? Some would say that it has happened before, perhaps more than once; that is to say, that some pre-existing body has burst into fragments which, reinforced or not by meteoric fragments, have consolidated once more to form our planet. Overcooling or overheating, such seem to be the alternatives. Which—if either—is the true solution,

he would be a very rash or a very wise man who could say to-day. It does not concern us nor our children nor their children, for either of the events is spoken of in those terms of

millions of years with which geologists delight to juggle. It is probable that we may experience another Glacial Epoch, perhaps even several epochs, before the final curtain.



Choose your "D & A"—there is one to suit your figure—which will do full justice to it—help it—give the latest contour—and absolute comfort.

Made in a perfectly equipped Canadian corsetry—one of the largest in the world—giving the benefit of a perfect system, working to produce in Canada at lowest cost, corsets best suited for Canadian women.

Sold by the best dealers.  
DOMINION CORSET CO., Quebec, Montreal, Toronto.  
Makers of "LA DIVA" and "GODDESS" Corsets.

# D & A

CORSETS

1-120

## Southwell's Lemon Crystals,

2 oz. bottles. Shipment just received.

## Moir's Cake

Slabs and 1 lb. packages, Sultan and Plain. Fresh supply just received.

## JAMS

Wilson's, 1 lb. jars. Wagstaff's, 1 lb. and ½ lb. jars. St. William's, 1 lb. jars.

## Fresh Green Cabbage.

MOIR'S CONFECTIONERY—½ lb., 1 lb. and 5 lb. bxs. and Bar Goods.

New stock and very fine full selection on hand. HOOTON'S BARS and MAPLE BUDS.

## C. P. EAGAN,

Duckworth Street & Queen's Road