

The Golden Age

A JOURNAL OF FACT HOPE AND COURAGE



in this issue

PROPULSIVE POWER
OF LIGHT

THIS, THAT AND T'OTHER

RHYME FOR CHILDREN

HAIL
JEHOVAH OF HOSTS!



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WEDNESDAY

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The Propulsive Power of Light *By E. Charman (Quebec)*

(With an Interrogation and a Reply)

FOR a number of years I have been a reader of *The Golden Age*, and I often get from it information that would not be found in any other publication. I was greatly interested in the article in issue of April 1, 1931, "Consider the Heavens."

For a long time I have been convinced that the astronomy which passes current today is almost as faulty as the prevailing religious doctrines and theories. Thinking that your readers might be interested in an astronomy that seems more reasonable and understandable and which gives more credit and more glory to the God whom we all worship, I wondered if you would not like to have us "consider the heavens" by and through the assistance which your columns might afford, particularly that little corner of the heavens apportioned to the solar system.

The following remarks are offered in the hope that you will put them into print and that some of your readers may be interested. My quarrel with astronomy as taught in the schools today is, first and foremost, in regard to gravitation. On it we are led to believe the processes and stability of the universe depend. And yet we are unable to obtain one proof or scrap of evidence that gravitation, of the Newtonian sort, has more real existence than Santa Claus or the fairies.

Of course we know that small articles are impelled to move toward the earth, but that they and the earth are attracted toward each other cannot be shown. There is nothing to indicate that a force is moving and acting from within the earth to draw small material things toward it.

A very recent scientific writer speaks of electrified particles, of which atoms are built up, sending out feelers or tentacles called lines of force to the bounds of space to pull upon other particles located in the far distance; but no such

extensions of the particles make themselves evident to us. Those particles must have wonderful power plants within themselves to enable them to put out even the smallest sort of arms to the regions of the stars, billions of miles away. The idea is much like that of a certain religious sect, which holds that we do not see by means of light reflected from a distance, but that our eyes send out feelers, in perfectly straight lines, to objects that we cannot reach with our hands; and these feelers inform us about the distant objects by the sense of feeling and not by another sense, that of sight. These people think that the earth is flat! Well, the modern scientist does not think the earth is flat; but is not this belief in the tentacles, or feelers, of the atom quite as childish?

Scientists cannot give us evidence of anything whatever reaching out from the atoms, particles or larger items of material substance. The evidence seems to be that articles said to be "attracted" are really not *pulled* from within the earth, but are *pushed* from without. We do not ask anyone to take this as a child must take a fairy tale: without any evidence except the child's faith in our veracity. We have evidence of something moving toward the earth, all the time, day and night. That something is light, and it has been proven to be moving at the almost unthinkable speed of about 186,000 miles a second. If light is a flight of small material particles, or corpuscles, as Newton called them, those corpuscles must be very small indeed. When they are not in motion we cannot see them. When they are in motion they may strike in our eyes and cause the sensation of sight.

If light, as Newton supposed, is a flow, or ray, of material particles, flying at a tremendous speed those material particles must have some weight and push. If they are continually striking an article up in the air, a stalled aero-

plane, let us say, they will, either quickly or slowly, force it to earth. The light will not be striking from below, because the earth stops the light from that direction. It will strike from all sides, and from the top, but not from the bottom. The average direction will be in a line to the center of the earth, straight down, as we call it; and that is the direction falling bodies take. The light is coming all the time, day and night. A single star sends rays to every part of the surface of the earth facing it. Some scientists have claimed to be able to measure the weight and heat of a ray coming from one of the fixed stars. They would perhaps measure the weight of the light striking a surface of the size of a silver dollar, and might find it only one-billionth of an ounce. Not much power in that; but remember that the light of a star strikes all over a hemisphere of the earth, and that would include many more than a billion faces of the size of a dollar, so that the pressure against the whole earth is considerable, probably hundreds of ounces. And then there are many millions of stars shedding their light upon us. The air is said to be pressed against the earth to a weight of fifteen pounds to the square inch. If light has weight *it* may well be the one that is doing the pressing.

There is something about light, of the corpuscular, or material, kind that you may not have thought of: It could cause stars, suns and moons to rotate and revolve! And this valuable quality is entirely lacking in attraction. What is there in attraction to cause a globe suspended in space to rotate? Absolutely nothing.

And you may say, "Well, out in space, light would strike a planet equally on all sides, and how can its pushing power be made to turn the planet in one direction and not in the other?"

Ah! there is where light differs from attraction; and there is where the new astronomy, which we hope to consider in the columns of *The Golden Age*, differs from any astronomy which has ever been taught anywhere. It tells what causes both the rotation and the revolution of the heavenly bodies: stars, suns, moons and planets.

A little later I will quote the statement of a well known modern scientist to the effect that science has absolutely no explanation of the origin or continuance of planetary rotation.

For the present, take it from me that no

reasonable explanation of such rotation can be given by anyone, in harmony with the prevailing astronomical ideas which include "attraction of gravitation" as an important astronomical function.

Before we go further, it might be well for me, not actually to build, but to imagine a mechanical illustration of the propagation and action of light. An eminent scientific writer has very recently used the popping of corn in a hot pan to illustrate the disintegration of radium, one kernel popping at a time, and not all exploding together; so perhaps I may be permitted to make use of the same homely means of illustration. But I will have to assign to the kernels of corn some unusual qualities, as unusual and almost as wonderful as the qualities attributed by scientists, in the not very distant past, to the "luminiferous ether", which ether is now pretty generally admitted to be altogether nonexistent.

To start with, the kernels will have to represent particles of material that may be turned into light; as bits of the wick of a candle, of wood or coal or any inflammable substance. The interiors of the kernels we will suppose to be packed with small, hard, round pellets, like little bullets or shot. And we must imagine them soaked in some highly explosive substance, like nitroglycerine. And we imagine the pellets held together by an outer coating very similar to the hull of an actual kernel of corn. Now we imagine a large metal pan and place on the bottom of it a layer of the kernels a few inches in depth; and in some way we must cement these together in a solid block. That done, we have ready a small imitation light-producing plant. Apply a lighted match to one of the kernels in the top layer and it will explode with great violence and scatter the little pellets outward in all directions. The explosion of the first kernel causes another, or perhaps a number of the nearer ones, to explode and scatter the pellets with which they were filled, as did the first one. And these again cause still others to explode, and so on, kernel after kernel. They do not all explode at once, but keep on like little bits of wood in a fire, individual particles burning up and communicating the flame to other particles. There would be an almost constant stream of the little pellets issuing from the exploding kernels. There would, however, be some distance in time and space between the pellets from the different explosions. All the pellets

are the same, but some may have been blown away more violently and therefore at greater speed than others.

We cannot think that the light of a candle travels with the speed of sunlight. Even if particles of light start out at the same speed, the different experiences which they will encounter in their journey will change their velocities. One little corpuscle of light goes through clear air, another through smoky glass; one through a piece of cheese, and another through muddy water. These substances all slow the speed, but at different rates. Different velocities may be recognized by the various color impressions made in the eyes. Our eyes are constructed for only a limited range of light velocities.

The lowest band of velocities which the eyes are capable of using in what we call sight produces a sensation which we name "red"; the next appreciable higher band of speeds we call "orange", and then follow "yellow", "green," "blue," "indigo" and "violet". But there are rates of speed below the reds (the infra-red), and rates above the violets (the ultra-violets), which make no impression on our eyes. Although light is material, there may be wave lengths to consider, the wave length denoting either the time or the distance between the shower of bullets which, as we noted, do not all start out together as in one grand explosion, but come from each "kernel" separately.

A few years ago the scientists were pretty well agreed that light was nothing substantial, but a mere condition of waves, or ripples, in an all-pervading ether. Now many of them believe light is (or is caused by) a flow of material but exceedingly minute particles (called by Newton "corpuscles"). We need not mention those who believe it to be both waves and corpuscles: (as some one has said) waves three days of the week, then corpuscles three days, and both on Sundays. The wave theory of light could not possibly account for any of the supposed functions of gravitation; could not move the earth or the planets or displace perceptibly even a small particle of dust.

But in the corpuscular form of light, the streams of little round "bullets" coming with unthinkable velocity could (and do) move the earth and planets and stars.

Now that scientists have gotten rid of the ether, we can think of the earth suspended in empty space, hung upon nothing, as Job ex-

presses it. It would not take very much force to move it to one side or the other of its regular orbit. A pressure of half a ton against one side, with nothing pressing on the opposite side, would, in time, change the course of the orbital flight. Or the removal of half a ton of the usual pressure would have the same sort of effect, in an opposite direction. And the rushing flood of the little "bullets" of light would, in one second, very far exceed the half ton I have used in my illustration.

And now we must answer the question which readers will no doubt have in their minds: How can revolution and rotation be caused by the power of light? Well, you probably know, or can understand, that a slow-moving bullet, from a gun, going through a wooden target would cause much more push against the target than a more speedy bullet of the same size. And if a lot of the slower-moving little light bullets were striking and going through a fringe of materials around the outer edge on one side of a planet and a lot of swifter-moving little bullets were striking and going through the same fringe from the opposite side, there would be more push on the side receiving the slow bullets than on the side receiving the swifter ones, and every ounce of weight pushing on either side would have an effect. A small push long continued would eventually move the earth, or a great push would move it in a shorter time. If there is no ether in space (as is now believed by many), if space is practically empty and void of friction, it would not take very much power to move even an object as large as the earth. It is its momentum that keeps it free from influences of little pushes this way or that. Without momentum the striking of a big meteor might start our globe moving out of its usual course.

If starlight is cut off from one side of the earth by the presence of a planet or moon, the pressure on that side is reduced and the earth moves slightly toward the obstructing body, and scientists observe what they take to be "attraction" by the latter.

The position of Neptune was calculated before that planet was actually discovered; calculated by the effect it had in changing the orbit of Uranus. This was accounted a great triumph for the theory of gravitation, but it might as well have been figured out as due to reduction of light push by reason of the presence of a

body obstructing the light in that part of the heavens.

From whatever cause the earth started in rotation (considered later), we find it now whirling on its axis at a speed of about 1,000 miles an hour.

A planet, or moon, once started in rotation will be kept going indefinitely, and the speed will be all the time increased until it reaches its limit. That limit will not be the full speed of light, because light flashing in an opposite direction will act as a brake, and slow down the rotating body.

Solid and smooth globes will respond to the slowing power of the brake much more readily than the spongy, liquid or gaseous globes, whose penetrable edges are greater in proportion. Light strikes the side that is turning away from it at a slower speed of impact than it strikes the side that is coming toward it. The light striking the projections from the sides of a planet or moon, such as trees and other vegetation, houses, barns, small hills, waves of the ocean, air, etc., goes right through (at least much of it does); and the light striking the on-coming side goes through quicker, and with less friction, than the light striking the receding side. There is consequently much more of a push on the receding side than on the approaching one, and the rotation is thereby kept up, and increased.

Planets whose mass is great, in proportion to their weight, rotate much more rapidly than such solid globes as Venus, Earth and Mars. It takes each of the planets named close to twenty-four hours to perform one rotation, while the insubstantial, light-weight, vapory planets, such as Jupiter, Saturn and Uranus, turn once in from nine to eleven hours, although they are all larger than the earth.

Light striking the equator of a whirling globe acts like a belt on the rim of a wheel. The spongy, vapory planets have less weight to be rotated, and a greater surface for the light belt to pull on.

The revolution of a planet around its sun is just as much due to light propulsion as its rotation is.

The light striking in front of the planet in the course of its orbital flight will strike with a swifter impact than will the light striking from behind. It is the slow light that has the greater push; so the light from the rear pushes the

planet along in spite of the opposing, swifter, light coming on in front. Our great earth is said to whirl along in its orbit at about eighteen miles a second; very much faster than any bullet was ever driven from the mouth of a gun. Remember, please, that it is the light which goes *through* a mere fringe of the surface that counts in motive power. Light sinking into the body of a planet, and not going through, need not be considered, as that from one side has just as much push as that from another side. The rays that go through the material obstruction count. Those that go through with most friction have the most push; those that fly through quickly, with least friction, have the least push. Invisible light and radio waves are now supposed to penetrate the earth for 30 miles or more.

The theory, then, is that the sun and fixed stars all send out light which has a pushing force, and the stars do not attract one another, as required by the old gravitation theory: they push each other away, and none of them ever come near enough to collide. That is a much pleasanter idea than having a dread that stars may rush together, drawn by the supposed power of attraction, and stage a collision of blazing ruin and destruction.

I have lately been reading Sir James Jeans' book, *The Mysterious Universe*, which seems to be held in high esteem by those who believe in the gravitation theory, that is to say, by a great majority of the scientists and college men of today.

I am going to take the liberty of reviewing some of his statements, comparing them with the theories which seem to me to be more reasonable, and more likely to prove true, if a way is ever found to put them to proof.

Beginning on page 1 he says, "The vast majority of stars are wandering about in space . . . they travel through a universe so spacious that it is an event of almost unimaginable rarity for a star to come anywhere near to another star. For the most part each voyages in splendid isolation, like a ship on an empty ocean."

How can that be if the stars attract one another? Were they originally still more distant; and is each one now appreciating the attractiveness of the others, and striving to arrange a "get together" meeting?

Not so, he says! The universe is expanding,

and stars moving rapidly apart. On page 70 we read "it has for some years been remarked that the remote spiral nebulae are, to all appearances, rushing away from the earth, and so presumably also from one another, at terrific speeds, which range up to 7200 miles a second. . . . The actual figures are important, because if we trace the implied nebular motions backwards, we find that all the nebulae must have been congregated in the neighborhood of the sun only a few thousands of millions of years ago. All this goes to suggest that we are living in an expanding universe, which started to expand only a few thousands of millions of years ago."

The scientists tell whether a star is moving away from, or coming toward, the earth by the color of its light in the spectrum. If a star is rushing towards us the light which it sends out comes at greater speed than the average; if the star is receding from us the light comes at less than average speed. The slower rays are of a reddish color, and the swifter ones, violet, the various colors ranging themselves in the spectrum in the order of red, orange, yellow, green, blue, indigo and violet. If the rays in the spectrum have a tendency to gather to the red end, the star sending it is likely to be moving away from us, and astronomers estimate the speed of its movements by the color of the rays received: the more ruddy, the less speed.

The fact that so eminent a scientist as Sir James believes that the stars are moving away from one another speaks little for the theory of gravitation (that every particle in the universe attracts every other particle).

I have already quoted his remark as to the unimaginable rarity of one star's coming anywhere near to another, but he seems to think that at one time such an event did occur, and that to it is due the existence of the earth and all of the planets in the solar system.

On page 2 we read: "We believe, nevertheless, that some two thousand million years ago this rare event took place, and that a second star, wandering blindly through space, happened to come within hailing distance of the sun. Just as the sun and moon raise tides on the earth, so this second star must have raised tides on the surface of the sun. . . . A huge tidal wave must have traveled over the surface of the sun, ultimately forming a mountain of

prodigious height which would rise ever higher and higher as the cause of the disturbance came nearer and nearer. And before the second star began to recede its tidal-pull had become so powerful that this mountain was torn to pieces and threw off small fragments of itself much as the crest of a wave throws off spray. These small fragments have been circulating around their parent sun ever since. They are the planets, great and small, of which our earth is one."

So now we know how the earth came into being. And we see how little Moses knew about it. At his school they probably never mentioned the star wandering blindly through space and getting so near our sun. Moses might well have gone to a night school where they taught my sort of doctrine: that one bright star simply cannot go near to another bright star, because both are pushing everything away by their heat and light rays. Sir James is even out of harmony with himself when he teaches that bright stars attract one another. Hear what he says on page 60: "Heat an ordinary six-inch cannonball up to fifty million degrees, the temperature of the center of the sun, and the radiation it emits would suffice to mow down, by its mere impact, like a jet of water from a fire hose, anyone who approached within fifty miles of it." Now here would be something new: a six-inch star of the temperature of our medium-sized sun, and, far from attracting anything toward it, that little red-hot star by its repellent rays mows down everything within fifty miles! Sir James also tells us (page 61) of a meteorite that fell in Siberia in 1908. He says it "set up blasts of air which devastated the forests, over an enormous area". Sir James has a great fund of facts like this at his command, but seems not to have learned what they, with such fierce energy, are trying to teach: that light and heat do not attract, but repel.

One other thing I would like to quote here, from his book, page 6: "Life can only exist inside a narrow temperate zone which surrounds each of these fires (stars) at a very definite distance. Outside these zones life would be frozen; inside it would be shriveled up. At a rough computation, these zones within which life is possible, all added together, constitute less than a thousand million millionth part of the whole of space. And even inside them, life must be of very rare occurrence, for it is so

unusual an accident for suns to throw off planets, as our own sun has done, that probably only about one star in 100,000 has a planet revolving round it in the small zone in which life is possible. Just for this reason it seems incredible that the universe can have been designed primarily to produce life like our own; had it been so, surely we might have expected to find a better proportion between the magnitude of the mechanism and the amount of the product. At first glance at least, life seems to be an utterly unimportant by-product; we living things are somehow off the main line."

Rather a gloomy horoscope for us! The only comfort I find in the writings of Sir James is that he doesn't appear to believe himself very strongly. If his idea of the way that moons and planets come into being is correct there are likely to be very few of them outside the solar system: none for all we know, for no telescopes have been invented powerful enough to disclose whether or not the fixed stars are attended by planets such as are found in the solar system. But I utterly reject his cosmogony of the earth and the planets. I don't believe our existence is due to the presence here of a blindly wandering star, running amuck through the heavens, and accidentally pulling out, by a gravitation that no star possesses, a portion of the sun, to be made over into planets.

The cosmogony of Moses leaves a chance that space may be plentifully supplied with planets. Most likely very many of the stars have their attendant satellites, teeming with life and happiness. We cannot go back to the old astrology that made the earth the center and most important point of the universe; neither can we, as reasonable creatures, think that our solar system is different from others, and the only abode of living creatures.

I beg to give one more quotation from Sir James relating to life on the earth and the planets. On page 14 he says: "To remain a possible abode of life, our earth would need to move in, ever nearer and nearer to the dying sun. Yet science tells us that, so far from its moving inwards, inexorable dynamical laws are even now driving it ever further away from the sun into the outer cold and darkness. And so far as we can see, they must continue to do so until life is frozen off the earth, unless indeed some celestial collision or cataclysm intervenes to destroy life even earlier by a more speedy

death. This prospective fate is not peculiar to our earth; other suns must die like our own, and any life there may be on other planets must meet the same inglorious end." This inglorious end is what Sir James finds written all across the sky, and in that he does not hesitate to disagree with the psalmist who wrote, some years before Sir James was born, "The heavens declare the glory of God, and the firmament sheweth his handywork."—Ps. 19:1.

Sir James finds the sun throwing off by radiation the vast weight of 250,000,000 tons a minute (or about 4,000,000 tons a second). If that amount of material is thrown off with a great speed the sun cannot help but exercise a tremendous push against everything around it. And Sir James sees all, or nearly all, this material lost to our sun, and very little coming in from other stars to compensate for its loss. Does he think the material thrown off by suns goes away off into space, off into outer darkness, to be forever lost? The light theory of gravitation allows nothing to be lost. Every particle of light sent out eventually reaches some other star or planet. What is lost to one star is gained by another. If no star or planet intervenes the light goes on and on for millions of years; on and on until it does find a lodgment, so that matter is always conserved somewhere in the universe.

It is not necessary to suppose that our sun is growing smaller all the time. Only the radiation to the dark bodies, the planets, gives no return. They are growing all the time from the sun's waste, and that of the stars, but the loose material of the solar system, meteors, etc., help to make up for the light loaned to the planets, and so the balance may be pretty well maintained, and the sun may go on lighting and warming our earth forever.

Now a few words as to astronomy of the solar system.

We might begin with the sun. It is supposed to be a great ball of fire, about 852,900 miles in diameter, and perfectly spherical. The sun's density is said to be only one quarter that of the earth. Gravitation on the sun (the old kind) is figured as twenty-seven times as great as it is here, and an object dropped, near its surface, would fall 436 feet the first second. But if the light repulsion theory is correct an object like a block of wood, a hod of bricks, or a ton of coal would likely not fall at all. That 4,000,000

tons thrown off as radiation by the sun every second would prevent anything of ordinary weight from approaching its surface. Bodies as light as comets sometimes come as near as a million miles, but they never effect a landing; the sun's radiation sends them flying away out into space without a stop.

The sun is said to rotate on its axis in about twenty-six days, its surface turning about 4,300 miles an hour, while the earth turns only about 1,000 miles an hour. This seems to disprove the old saying that "large bodies move slowly".

I do not think anyone can show that the old-style gravitation could play any part in causing the sun to rotate; but it is splendidly adapted to be rotated by light repulsion. Its equator would be a very large rimmed wheel for the light belt to run on. The sun is not heavy in proportion to its size. It would be turned with comparative ease, considering its great size. And here the light has a chance to show what it can do.

The sun attends to the lighting and heating of the planets, and by raising the seawater into clouds to be distributed over the land it indirectly supplies the waterfalls that turn many of the wheels of industry. It may therefore well be termed the great light, heat and power institution of the solar system.

The first planet in order of distance from the sun is Mercury, whose diameter is 3,060 miles. Its orbit is about 36,000,000 miles from the sun. That orbit is, however, very eccentric, so that the planet is sometimes 15,000,000 miles nearer the sun than at other times. Its speed of revolution is about 109,360 miles per hour, while that of Earth is only 68,040 miles. It takes only 88 days for its revolution around the sun; and its period of rotation is also thought to be eighty-eight days, or, in effect, it has no rotation, but keeps the same side always turned toward the sun; but it is so near that luminary that it is hard to get a look at it, and the matter of rotation is rather one of theory than of observation.

Venus is about 67,000,000 miles from the sun. Its diameter is said to be 7,826 miles, while that of the planet on which we live is 7,919, a difference of only 93 miles. Venus performs its revolution in about 225 days (of our time), and it rotates on its axis in 23 hours and 21 minutes. It has no satellite. Its orbit is almost a circle, its distance from the sun being only about 900,000 miles different at different times, in an

orbit of about 234,000,000 miles. My little cyclopedia states that an article falling to its surface would traverse 13 feet in the first second, while here it drops 16 feet.

The next little planet in the order of distance from the sun is Earth, and the distance over 91,000,000 miles. Her orbit, while not so near a circle as that of Venus, is not considered very eccentric as orbits go, there being a difference in distance from the sun at different times of about 3,000,000 miles, in an orbit whose diameter is about 182,000,000.

The earth rotates in exactly 24 hours. This exactness is due to the fact that our clocks were designed to measure the day in agreement with Earth's speed of rotation.

This twenty-four hours measures the time from the crossing of any given meridian by the sun until it crosses it again. That is called a solar day. But the time from the crossing of a given meridian by a fixed star until it crosses it again is three minutes and fifty-six seconds short of the twenty-four hours, as the stars rise over the eastern horizon that much earlier each succeeding evening; and a star will appear to circle the earth $366\frac{1}{4}$ times in a year, or while the sun appears to make 365.242 revolutions. The time taken in the $366\frac{1}{4}$ crossings of the meridian by a fixed star is called a sidereal year. The solar year is the one recognized in our calendars. But there is nothing exact in astronomy, and the calendars are of 365 days for three years and then 366 for one year, and still there is a difference of a fractional part of a day.

Earth is accompanied by a moon 2,160 miles in diameter. The moon could be piled on Canada, and would not reach from Montreal to Vancouver.

The moon always turns the same side, or face, toward the earth. This is said to be due to the supposed fact that the moon is not a perfect globe, but is elongated, and somewhat pear-shaped; and the large end is turned toward us, and held so by the "attraction" of the earth. If this were true we might expect that the axis of rotation would be from the stem end to the blossom end of the pear, but we know positively that such is not the case. We can observe the markings on the moon's surface, and could detect any rotation around a visible point of axis. No rotation whatever is seen, and no point on the moon's visible surface could possibly be one

of the ends of the axis of rotation. Select any point you like as its north, or south pole, and you will see that if the body of the moon rotated around an axis ending at that point we could observe the motion of rotation without the aid of a telescope. Some astronomer has suggested that the earth and moon act in this matter as one body, and rotate around an imaginary axis about 1200 miles within the circumference of the earth. If the two bodies were strung like beads on a long rod (240 thousand miles apart) the center of gravity, or balancing mark for the two, would be that point 1200 miles inside the earth (and always on the side toward the moon), and then the point of rotation would not be on the moon's surface, and would not be visible to us. The fact is that the moon does not rotate, but by its revolution around the earth it turns, as related to the sun and stars, once in about twenty-eight days.

The imaginary geo-lunar axis is supposed to move always on the true oval orbit around the sun, and never departs from it to go to this side or that. Both earth and moon, as complete and separate bodies, move spirally from side to side of the true oval, but the common center keeps to the line (so it is said).

It is possible that the earth may have been blown off from the sun by an explosion, and thrown out into space some ninety millions of miles, and that while it was still a shapeless mass ("without form, and void") it began its revolutions around the sun. The latter body is said to rotate with a speed of over 4,000 miles an hour, and any fragment thrown off would be given a movement toward the east.

And the effect of light propulsion would be to increase that movement continually; so that now we find the old earth rushing around in its orbit at a speed of 68,040 miles an hour, or about 1000 times the speed of an express train. Whether it is still increasing its speed we do not know, as there is no absolute unit of time with which it can be checked up. And how did it acquire a rotary motion? Certainly not by any magnetic attraction. A magnet draws only toward itself, and does not pull on one side more than another.

Henry Norris Russell, director of the observatory of Princeton University, says on this subject:

"They," that is, the astronomers, "are forced to the conclusion that the distribution of rota-

tional momentum in the system is so peculiar that the planets could not have derived the large amount which they now have at the expense of an originally rapidly rotating sun. The only available explanation of their existence appears to be the one now familiar: that the planets were ejected from the sun during huge eruptions caused by the close approach of a passing star, and set moving laterally in orbits by the attraction of this star as it receded.

"So far the methods of astronomy, aided liberally by its inseparable companion mathematics, enables us to follow the problem. But in the chaotic turmoil which must have followed the great outburst, detailed calculations become impossible, and we have to accept it simply as a fact that eight large masses and vast numbers of small ones remained in motion about the sun."

I have read this over very carefully but fail to see in it any reason whatever why the earth, at that time, took on a rotary motion. The ejection of the earth by a rapidly rotating sun might give the earth a revolutionary motion, might start it in revolution around the sun, just as a bullet from a rifle on a rapidly moving train is given not only an outward motion, away from the train, but also a motion in the direction the train is taking. The bullet would land, not opposite the point where the gun was fired, but opposite the place where the train would be when the bullet landed. The bullet would not be caused to rotate.

You see, the earth revolves around the sun in an orbit not far from 572,000,000 miles long. The diameter of the earth is about 8,000 miles. If we make a diagram of that orbit by two lines, one representing where the outside edge travels (the edge away from the sun), and the other the course traveled by the inner edge (the one toward the sun), you will find that the outer line, or track, is about 50,000 miles longer than the inner one; so the outer edge of the earth moves 50,000 miles farther in one trip around the sun than does the inner edge. Then by mathematical necessity the outer edge must move faster than the inner one. There would be a difference of about 50,000 miles a year to start with, and the light propulsion would increase that day by day and year by year, until it reached a tremendous speed. As the part of the earth on the inside track will not be separated from the part on the outside, the in-

creased speed takes the form of rotation. The old-style gravitation gives no reason whatever for the rotation of planets.

We do not know whether or not the sun revolves around some other great star. If it does, our astronomers have not figured out which one it is. Some claim that the solar system shows evidence that it is traveling towards Vega; but if this is true, that rules Vega out as the center around which we revolve, for a heavenly body never moves very far towards its center of revolution, but always keeps at about the same distance. So far as we know, our sun may be really a fixed star, or nearly so.

And now, about the moon. Why did it not acquire a rotary motion as the earth did? As to the old-style gravitation: if it had nothing to do in causing the earth to acquire a motion of rotation, it has equally had nothing to do in preventing the moon from doing so.

The college theory is that, the moon being pear-shaped (which they only imagine), the larger end would be attracted more by the earth than the small end would be. But a magnet is just as likely to choose the little end as the big one, and if the object attracted has a long side (as a pear has) it is more likely still to choose the side in preference to either of the ends, especially if the magnet is larger than the object attracted.

We consider the old-time theory that the moon was blown off from the earth in some violent explosion that took place many years ago. It was blown out into space some 240,000 miles. It would start its career with no rotation, but would inherit some of the earth's eastward revolutionary motion. It would continue traveling eastward along with the earth. Its track in that journey would be about 2,160 miles wide, that being its diameter. And the outer edge of the track would be 13,570 miles longer than the inner edge. The outer side, the side more distant from the earth, must then move faster than the inner edge, and why has not rotation developed as in the case of the earth?

I used to think that the moon moved in a sort of spirals *around* the earth; but I now believe the moon's track in the heavens is only slightly curved first to one side, and then to the other side of the line of the earth's orbit. It crosses that orbit going outside of it, in receding slightly from the sun, and recrosses it coming back. It is never more than about 240,000 miles

from the orbit, but the distance along the orbit from the outward crossing to the inward one is around 22,000,000 miles, so you can see that the width of one-half of the spiral around the earth is, as to its length, as 240,000 to 22,000,000. A diagram representing this, on a scale of 1,000,000 miles to the inch, would be twenty-two inches long and only one-quarter inch wide.

But even with that slight deviation from the straight line, the edge (or side), of the moon away from the earth will of necessity have to move a little faster than the edge that is toward the earth. And why doesn't the light repulsion increase that difference in speed, and work it into a rotation? Well, it does begin to do this, but scarcely makes a start before the moon recrosses the orbit going toward the sun and before the rotation more than makes a very slight turning movement. The turning slows down at the crossing of the orbit and then a slight movement begins in the opposite direction. It is the other side of the moon now that is farthest from the orbit and is traveling on the long side of the spiral track. The rotation scarcely begins in one direction before it is stopped and started the other way. These movements are very slight and can be observed only with a telescope. But they have been observed, and are known in astronomical parlance as the "libration of the moon".

The *Encyclopædia Britannica*, treating this subject, remarks: "The different points of the lunar globe must appear to turn about her centre, sometimes in one direction, and sometimes in the contrary, and the same appearance be produced as would result from a small oscillation of the moon." That is just what takes place, a small oscillation, and not a rotation.

The *Encyclopædia* continues: "The spots near the eastern or western edge of her disk disappear according as her motion in her orbit is more or less rapid than her mean motion." So it seems there is a slight tendency to rotate, the part away from the earth moving a little faster than the part toward the earth, but the change of the moon from one side to the other of the terrestrial orbit about every fourteen days reverses the motion, so that it never amounts to more than a very small part of a complete rotation, a part so small that it was not noticed until the telescope was invented.

Can anyone tell me how attraction can cause a globe to rotate? If a steel ball is hung near

a magnet it will be drawn towards the magnet, but it won't rotate. Why should it? There is no reason why there should be a pull on one side more than on the other, and if it pulls on both sides alike why should one side turn toward it rather than the other? If a magnet would cause rotation, that would establish perpetual motion and the magnet would become a favorite unit of power plants. We would have no need of dams and canals in the St. Lawrence, but could arrange to have magnets turn all our wheels, and create a busy hum for twenty-four hours a day, and at no cost at all.

The light propulsion theory does furnish a reason why planets revolve and rotate; but gravitation does not!

I find that many are satisfied with the old theory of gravitation because the power controlling some of the heavenly bodies can be shown to operate on the principle of proportion inverse to the square of the distance, as per Newton's formula: the greater the distance, the less the power.

Undoubtedly a power to which the name "gravitation" has been given does operate on that rule, the power diminishing in proportion to the square of the distance between the two bodies, but it takes some fine figuring to show why it should do so. It is easy to demonstrate that light distributes itself in quantity according to that rule.

If light is sent through a one-foot-square opening one foot away from its source it illuminates that one-foot space. Two feet from the light it will illuminate a square whose sides are each two feet. The distance from the light is two feet, the square of which is four feet, and the space illuminated is four square feet. Put a screen four feet away from the light that is shining through the one-foot opening and the space illuminated will be 16 square feet (or the square of the distance of four feet). The light coming through the one-foot opening is spread over a space measuring 16 square feet, and the light per square foot is only $1/16$ as strong as that coming through the one-foot opening.

Well, now we'll leave the earth, for a time, a very interesting, but unimportant little ball of mud: interesting to those who have to live and pay taxes there, but of little account to the inhabitants of other planets.

All aboard! The next stop is Mars!

Mars is a planet with a diameter of about 4,400 miles, and it moves in an orbit averaging about 139,000,000 miles from the sun. Its orbit is quite eccentric, so that at one time it is 26,000,000 miles nearer than at others.

Seen through a telescope Mars (as well as most of the planets) has phases of light and darkness the same as the moon, but it is never all dark. Its orbit never takes it between the earth and the sun, and so the sunlight is always striking it on a part of the side that is turned toward the earth.

More has been written about Mars than about any other planet, but much of it is mere fiction and wild imagination; some is in the line of speculation as to the conditions on that planet, whether it has a population of intelligent creatures, like the people of earth, what the weather and temperature may be, and all such matters.

Most of the conditions imagined are badly affected by the false theory of gravitation, and some of them are remarkable for their absurdity. We are told that the people who live there are very much larger than we are here, a height of twenty feet being only ordinary. Gravitation is said to be so much less on that small planet that what would be a ton of coal here would weigh on Mars only ten or twelve pounds. Everything is of light weight there, and a man of Mars can manage with a body of giant size as easily as a bantam weight here can manipulate his diminutive fists and feet. The giant Martians can take up and carry masses of material that could scarcely be handled here by a steam shovel. The well known "canals" of Mars may have been dug by the Martians without any mechanical aids beyond enormous picks and shovels.

Queer, isn't it, that the Creator made the little planets fit only for very large inhabitants, and the large planets for mere midgets? If that sort of theory can be shown to be true, I would certainly be more inclined to give evolution the credit for creation than I have been.

Now the light propulsion theory is much more simple, if perhaps not so scientific. By it, small objects on the outside of a planet are supposed to be pushed toward it by the force of light, not pulled towards it by that 'unseen spirit which inhabits every particle and pulls on every other one'. Light probably strikes Mars with about the same force as it does the earth. Starlight, anyway, will be the same there

as here. Sunlight is spread out more there, and may be somewhat fainter. Starlight has come a great distance and may have slowed down a bit on the way, and if so, would really have more gravitational force than the light of the sun just starting out at great speed.

Lately I have seen in a newspaper an article showing that Mars is losing the nitrogen from its air because its atoms are so very light in weight that the planet does not hold them, and they drop off into space and are forever lost to Mars. So if that planet is habitable now, it won't be for long, if that writer is reliable. Creatures like men cannot get along without air and water.

But telescopes show white caps at the north and south poles of Mars, and these caps appear to melt and disappear when the summer season arrives. And if there is snow on Mars there must be some water.

If there are people on Mars, no doubt they are differentiated as here: carpenters, farmers, lawyers, doctors, loafers and workers. And their astronomers look up at the great planet Earth, ten times as imposing to look at as Mars is to us, and they tell their people 'it's a great pity Earth is so big; why the air there would be heavy enough to crush a man. Think of the people of Earth existing in a pressure of fifteen or sixteen pounds to the square inch, a load of two or three tons for each person! No, there's no life on Earth; that's sure. And besides they are so near the sun that the temperature there must be something awful. People might live near the poles in winter, but in summer they would have to burrow in the ground, and only come up at night to dig a few potatoes and carrots and hurry back with them to the cool shades underground. These summer resorts would be very expensive. Then there are ominous-looking black clouds floating about in Earth's air, something that is never seen in Mars. Evidently the terrible heat of the sun draws up the water of the oceans, and accumulates it in clouds until they have enough to flood the country underneath. Then the clouds burst, and there is a new deluge to record. The people underground have to batten their hatches and wait until they can see by their periscopes that the water has subsided. It's an awful place, and we can be glad we're living where we are'.

Although Mars is a lot smaller than the earth, it has two moons to our one.

One of these moons is quite near to the planet, only about 3,700 miles away, and it flies around the parent body with great velocity, so much so that it completes its revolution in about one-third of the time it takes Mars to rotate. This satellite is seen twice in the Martian heavens in one night. And that lends good support to the light repulsion theory. Anything high above a planet, and disconnected from it, is likely to move faster than the planet itself. The air around the earth, high above it, is always moving eastward a little faster than the solid globe. A balloon sent up six miles will always float away to the east. A monkey-wrench or hammer dropped down the shaft of a deep mine will always fall east of the perpendicular line.

But so far as we know, times may be just as hard on Mars as here; so we may as well move on now toward Jupiter.

There are some hundreds of little planets called "asteroids" between Mars and Jupiter. Gravitation does not draw them together and make of them one fair-sized planet. Probably they reflect enough light to keep themselves apart. They must reflect light or we could not see them. Our moon reflects so much that it almost looks as though every particle on its surface constituted itself a mirror. And the earth reflects very much more. The light from the moon pushes the earth away, and the light from the earth pushes the moon away, to a certain distance; but as it gets farther out the reflected light spreads out and becomes faint (according to inverse square of the distance), and the starlight pushing in becomes more powerful than the reduced reflected light pushing out. The reflected sunlight pushing on the moon, together with the starlight also pushing in the same direction and coming from a whole hemisphere of the sky except the small patch covered by the earth, is sufficient to keep the moon out to its proper distance. If that reflected light were weaker, the moon would come a little nearer; if stronger, it would be pushed out a little.

Sunlight can push a gaseous body out much farther than it can send a solid one of the same weight. It pushes on only one side of a planet, and the gaseous ones present a much larger surface in proportion to weight to be pushed. The starlight strikes from all sides, and an augmen-

tation of size affects one side as much as another.

Every motion of the heavenly bodies, large or small, is regulated automatically. If one star gets too near to another the light push sends them apart. There are many millions of stars in the sky, and no one has seen two of them collide. I would fear to change the working of the universe to the gravitation theory. If by any chance one of the stars approached another beyond the line of safety, the gravitation law would cause their attraction to increase; they would approach nearer and nearer and be attracted more and more, and finally would collide with disastrous results.

The idea that a little extra attraction would cause one (or both) of the attracted bodies to move faster, and the extra speed would send one of them off on a tangent until it got to a place where it would not disturb the balance of the universe, is all bunk! Try it with a magnet. It will draw the escaping articles to itself; and so would a star if it were really a magnet.

Jupiter is the largest of the planets; $2\frac{1}{2}$ times as large as all the other planets together. Its mass is three hundred times that of the earth. Its distance from the sun is about 475,692,000 miles. Its year is longer than eleven of ours. Jupiter's diameter is 85,000 miles. The density is only about one-quarter of Earth's. It has four moons. Its surface seems to be unstable, like moving clouds, always moving east, and it is thought that Jupiter not long ago was a burning globe and that it is not yet cooled off and solidified. Probably all of the planets were once ablaze; that is, if they were in the beginning blown off from the sun, and Jupiter and some of the others have not yet cooled.

Imagination, born of the gravitation theory, would make everything on Jupiter weigh much more than on the earth. And reversing the theory that little Mars may have gigantic inhabitants, we may expect those of Jupiter to be very small, about six inches high, but very strongly built to withstand the great air pressure and the terrible gravitation pull, perhaps having six or eight legs, like ants, to distribute the strain. But then again, by the time Jupiter has cooled off enough to make it fit for inhabitants things may have changed and the light pressure may be installed there so that gravitation will be the same as here and on the other planets.

The next planet is Saturn, the one with the wonderful rings, which so surprised Galileo when he first tried his telescope on them.

Saturn moves in an orbit about 872,000,000 miles from the sun. The orbit is quite eccentric, and the period of revolution over twenty-nine years. Saturn is the second largest planet in the solar system; diameter, 70,000 miles.

Saturn is much flattened at the poles. It rotates in about $10\frac{1}{2}$ hours, and the rings take only a few minutes more.

It seems strange that the larger planets rotate in less time than the smaller ones: Jupiter in nine hours and fifty-five minutes, and Saturn in ten hours and thirty minutes, while Venus, Earth and Mars rotate in twenty-four hours, or a little less.

Gravitation does not seem to connect itself at all with the rotation of the planets, so of course it cannot tell us why the larger ones turn so very much faster than the small ones. Light repulsion (or propulsion) appears to fit right in with the facts. The greater the equator, the longer will be the rim of the wheel for the light belt to run on, and, no matter how great a speed has been attained by the planet in its rotation, it can never come anywhere near to the 186,000 miles a second of the light belt, and so is continually urged to whirl faster, and yet faster.

I have been unable to get any figures for the size of Saturn's rings, but from a picture of that planet in an astronomical work I measure the rings as 166,250 miles in diameter. As the rings and the planet turn in very nearly the same time ($10\frac{1}{2}$ hours), it follows that the planet's surface rotates one mile in about $\frac{1}{6}$ of a second, and the outer edge of the outer ring turns one mile in $\frac{1}{13}$ of a second. What there is in gravitation to make that outer ring fly at a speed a little more than twice that of the planet itself I do not know. Where is the magnet that gives the power? By the accepted theory the greater the distance of the attracting body, the less is the attraction.

If the sun is the magnet, why does it not make Venus and the earth rotate faster, as they are much nearer? Earth rotates about one mile in four seconds, and Venus about the same; Saturn one mile in about $\frac{1}{6}$ of a second, and her rings one mile in less than $\frac{1}{13}$.

Now the light belt that really turns these great wheels has a speed of 186,000 miles per

second, and it might continue to push the planets until a much greater speed than the present is attained.

The light belt pulls much harder on the rings than on the planet itself, because they are moving much faster than the planet and are therefore nearer to the speed of light, and so they give it more hold, or clutch, on the surface.

Next to Saturn comes Uranus, a planet with a diameter of about 33,000 miles (25,000 miles greater than the diameter of the earth).

Its orbit is some 1,750,000,000 miles from the sun, and its year is as long as eighty-four of ours. It is thought to turn on its axis in about nine and one-half hours; another planet very far from the motor but doing great stunts in the line of speed!

It has four satellites, and they revolve around Uranus, not as our moon does, but from east to west.

Neptune, until very recently supposed to be the most distant of the planets, is away out beyond Uranus, probably 2,745,000,000 miles from the sun. It is supposed to have one satellite. Both Neptune and Uranus are thought to emit light themselves instead of reflecting that of the sun. If so, they are still blazing as when thrown off from the sun, if they were ever thrown off.

Having no more planets on which our mental aeroplanes may land, we will notice briefly the comets, those uncertain messengers that have no regular routes, or time tables. They come suddenly into the solar system, uninvited and unannounced. Some of them may be visitors from outside the space properly belonging to our sun, from the lodging places of the other stars, "fixed" stars, as we have known them. Of the orbits of the comets we know very little.

The comets have brushes, or tails, of light, vapory substance. They travel at tremendous speed, but are supposed to be somewhat unsubstantial, mere candles without the candlesticks. The nucleus only is credited with substantial weight and form.

A remarkable peculiarity of the comets is that when they approach our sun the tails always swing away from it. As a comet passes around the sun the tail keeps the nucleus between itself and the sun, so after it turns to retreat away out into space the tail moves ahead of the nucleus, and the comet looks as if moving backwards.

The attraction of gravitation refuses, as far as comets are concerned, to play the game, or follow the rules laid down in the colleges; for instead of the sun's attracting the comets' tails, it seems to push them away.

That is dead right so far as the light repulsion theory is concerned, but it is hard on the professors.

Newton figured out very wonderfully the action and effect of the power that "guides the planets in their course", but he seems not to have recognized what that power was. He would have been quite right had he described it as having an effect *as if* every particle attracted every other particle.

The new astronomy, which is beginning to get a footing, will do well to disassociate itself from theories that are based on assumption growing out of the old ideas of gravitation. We should start out without their handicap, and should take as little as possible for granted, for very learned professors have been deluded by false assumptions.

OUR INTERROGATION OF MR. CHARMAN

We sent your very interesting article on to Prof. Alford, a teacher of physics in the University of Texas, and he advised us to print it, which we have in mind to do. However, before we print it, we feel like asking you to perform a couple of experiments for us or else explain to us why, in your judgment, it would be unwise for you to perform such experiments.

1. Some dark night, please go into a clothes closet and when all the lights in the house are out except the flashlight which you may have in your hand, please poise one of your wife's flatirons about four feet from your toes, and then shut off the flashlight, let go of the iron, and tell us what happens.

2. Suspend the same flatiron by a pulley from the ceiling; put the flashlight immediately under the iron so that the rays of light beneath will bear it up; let go of the string and watch carefully what becomes of the iron.

You may be able to explain to us why these experiments would be improper, but your reply will be much more convincing if you actually try the experiments and are able to bring word to us that the flatiron does not fall in the dark and that it is buoyed up by the rays of the flash-

light when the latter rays shine directly underneath it.

Perhaps you will suspect from the foregoing that we have some misgivings about your theory, and if such is the case we have to admit that your suspicions are well founded, despite the fact that you do certainly reason well as to what it is that keeps the planets revolving.

Like yourself, Prof. Alford of the University of Texas is an unbeliever in gravitation

REPLY TO THE INTERROGATION

I have your good letter of recent date and note with interest the experiments you would have me make, and which I am quite willing to make if, after reading this, you still wish me to; but I may say at once that if your object is to convince me that the rays of the flashlight will have no perceptible effect in holding a flatiron up in the air, there is no need of the experiments. I am already convinced and admit that they will not have any such effect. The flatiron will appear to ignore entirely the gesture of the flashlight.

But I suppose that what you desire of me is really that I shall explain why the light in which I have so much confidence fails me when called upon to do this little exhibition stunt, and why, instead of floating on the stream of light, the flatiron falls to the floor and does damage to my toes or demolishes my flashlight. Well, I still admire the wonderful light, and do not accuse it of playing me false.

I have not actually tried your experiment No. 2, but I am quite sure that the flatiron would fall to the floor and would give no evidence whatever of being "buoyed up by the rays of the flashlight when the latter rays shine directly underneath it". No doubt the fall would be delayed somewhat, about as a rifle bullet would be delayed by passing through a little fog or smoke, but the most refined method of measurement would scarcely be equal to determining the length of the delay.

Starlight is all the time pushing things toward the earth, with a pressure of not less than 15 pounds to the square inch. It may not push the flatiron to the earth so that it will weigh fifteen pounds per inch, because most of the light goes right through the iron as it would go through glass. You could not push away from you a ten-pound lump of soft butter with the

point of a slender sharpened rod. The rod would go right through the butter and exercise almost no push at all. The same rod would, however, be capable of pushing a block of ice of the same size. And just so the pushing power of light depends somewhat upon the amount of resistance (or friction) offered by the material which it strikes. It is air, of such a depth as that which surrounds the earth, upon which light imposes the weight of fifteen pounds to the square inch. Water offers more resistance, and at the bottom of a lake, say forty feet deep, the pressure on the earth, sand or rock below would be very much greater than if the depression were filled with air instead of with water.

Light is capable of all sorts of speeds, from almost nothing up to 186,000 miles a second. It might be divided into many bands or rates of speed (octaves we could call them): 120 to 130 thousand miles per second; 130 to 140; 140 to 150; 170 to 180, and so on. The spectroscope makes some such divisions, but our eyes are sensitive to the effect of only one octave. Below that octave may be much more light than is in our narrow band of illumination; that would be the infra-red. Above our octave also may be more light: the ultra-violet. It is our octave, the band of visible light, whose speed (186,000 miles per second) has been measured, but the infra-red, slower speed, rays would have the most pushing power; and that light we never see. It operates in the night as well as in the day; on the dark clothes closet as well as on the veranda.

Since the great Lick and Mount Wilson telescopes have been with us, scientists are agreed that in the universe are billions of stars. Some would limit the universe to the space occupied by the visible stars; but I cannot think that it has any limit at all. The universe is everything, everywhere, with more or less material in all parts of it.

Every star that is visible certainly sends rays of light to our eyes; and if a billion stars are visible, at least a billion rays of light are continually striking every space of the size of a human eye. It is not likely, then, that any little flashlight or any light that humans can create will be capable of sending out sufficient rays to balance or to push against the tremendous weight of this starlight. And that is why the flatiron falls to the ground.

This, That and T'other

No Local City Taxes

BECAUSE they have their own municipal public utilities, there are no local city taxes in Chanute, Kans., Ponca City, Okla., Hawarden, Iowa, Spooner, Wis., South River, N. J., and fourteen other cities and towns.

2,342 Bank Failures in One Year

DURING the year ended October 30, 1931, there were 2,342 bank failures, with aggregate deposits of \$2,008,729,000. This is much the largest number of bank failures ever recorded in any similar period.

Automobiling Six Cents a Mile

ACCORDING to the American Road Builders' Association the average cost of operating a light four-cylinder automobile is six cents a mile. A heavy six-cylinder car costs 9.45 cents a mile. There is no doubt of the substantial accuracy of these figures.

Food at a Cent a Dish

THE Bernarr Macfadden Foundation has opened a restaurant where the dishes of food will be served cafeteria style at a cent a dish. For five cents one can get a substantial and satisfying meal. The dishes are mostly of whole wheat in some form.

Two Summers in One

THE year 1931 had almost two summers in one in the eastern part of the United States, as mild weather continued till the close of the year. Near Norfolk, Va., strawberries were picked on Thanksgiving day, and in parts of North Carolina at the same time fruit trees were in their second bloom.

Farm Board Loses One Hundred Twenty Millions

TO DATE the Farm Board has lost on its wheat and cotton holdings about \$120,000,000; but that does not represent all it has lost. In a time when some way was sought to help the struggling farmer the Farm Board paid some of its officials \$50,000 to \$75,000 a year. At least one man, reputed to have received \$35,000 a year, an ex-dominie, never made a success of anything in his life until he got a job with this institution which was intended to do so much for the farmer, but has done so much only for certain individuals.

Empire State Buys Its Heat

THE Empire State, tallest office building in the world, buys its steam, like gas or electricity. There are now sixty miles of buried steam mains in the streets of New York, carrying an annual output of ten billion pounds of steam, at pressures of 100 to 130 pounds per square inch.

Wages of Maintenance of Way Workers

STUDIES of the yearly earnings of section laborers on railways shows that of 500 men 29 made wages of less than \$500 for the year, 129 made wages of less than \$750, 212 made wages of less than \$1,000, and only 101 made over that amount. Not a man of the number studied made as much as \$1,250.

Bootleggers Get a Meal a Day

A NEBRASKA judge has sentenced two bootleggers to thirty days in jail, and the sentence limits them to one meal a day. Intended as an act of cruelty, this will probably prove a blessing to the two men, as most people eat entirely too much, but it seems an un-American step for a judge to take.

Hordes Entering California

THE States Building Trades Council of California states that there are 290,000 unemployed in the cities of Los Angeles and San Francisco and that each day one thousand destitute men are entering California, principally in box cars. The immigration by motor cars has also greatly increased.

75 Cents for Seven Lambs

WB. Estes, a farmer at Littleton, Colorado, sold seven lambs to the A. A. Blakely Company at Denver. They were placed with Swift & Company for \$3.30, and after the costs of insurance, inspection and commission had been deducted a check for the balance, 75c for the seven lambs, was sent to Mr. Estes. The Department of Agriculture followed the history of the seven lambs and reported that they were sold to consumers for \$83.70. In one instance two lamb chops were sold for 85 cents, which was 10c more than Estes received for his seven lambs. Yet if you say anything about a thing like this, and want a better state of affairs, you are considered un-American.

Hard Times Crowd the Hospitals

IN HARD times the city hospitals do a rushing business, the admissions to New York city-owned hospitals in 1930 registering 180,652, as compared with 159,040 in 1929. There was also an increase of more than 20 percent in the number of children born in hospitals. There was a marked increase in the congestion of psychiatric and tuberculosis cases.

Ten Years of Peace Conferences

TEN years of peace conferences have produced 300 arbitration treaties and induced sixty-one nations to renounce war as an instrument of policy. The practical results are that the world is now spending on armaments about ten million dollars a day. The British share of this is about two hundred pounds a minute.

What the Friends of Soviet Union Claim

THE Friends of Soviet Union claim that the Japanese seizure of Manchuria has been ratified in all foreign offices, by the League of Nations, and by the American State Department, and that the United States, while sending diplomatic notes, is shipping munitions and poison gas to Japan, and American and Japanese generals are boasting of seizing Siberia.

Chicago to Los Angeles over Night

ONE of the railroads will shortly put on an overnight sleeping car service between Chicago and Los Angeles, making the trip in nineteen hours. Stops will be made at Kansas City and Albuquerque. There will be no rails nor need for any, for the cars will be airplanes and will make the trips through the skies. Each plane will have capacity for sixteen passengers.

Bridgeport Learning the Tricks

AT BRIDGEPORT, Conn., those entertainers who make a living by so-called "mind-reading" (which is merely a system of remembering a large number of questions and answers) have had a falling-out with those other entertainers styled "magicians" who perform physical tricks by making use of apparatus which is constructed with doors and shutters in unexpected places. As a consequence the boys and girls of Bridgeport are being shown how all the tricks are done.

Jersey Central Paid the Boys in Gold

ONE of the best stories of the year is that the Jersey Central paid \$20 apiece in gold to each of six boys who collectively had come running to police headquarters in Plainfield with news of a broken rail. There is little doubt that but for their prompt action a wreck would have occurred. Some of the boys had never seen gold coins before.

Westbound Atlantic Travel Cut in Half

SOME idea of the general falling-off in world business in 1931 as compared with 1930 can be gained from the fact that the westbound passenger traffic across the Atlantic ocean in the latter year was reduced from 540,000 to 300,000 persons. As a result the Cunard Company has stopped construction on what was to have been the world's largest and fastest boat.

"Depression Special" in Idaho

WHEN two Idaho brothers returned to their courses in the University of Idaho they brought with them, on a truck, a little house containing two bunks, a bookcase, tables, chairs and a stove. The university authorities allowed them to park their cabin on the campus, and now their rent bill for the year is paid in advance, without its costing them a cent.

Minnesota's Building Program

MINNESOTA is taking advantage of the reduced cost of materials and supplies by spending \$25,000,000 on roads and \$4,000,000 in construction of public buildings. The taxpayers are thus getting something for their money; and since the unemployed must be sheltered and fed, it seems like a sensible way to meet the unemployment problem.

Forty Deaths from Football

FORTY deaths from football in 1931. Greatest country in the world. Forty deaths from football. Banner civilization of all time. Forty deaths from football. Tens of thousands of students in universities. Forty deaths from football. The crime center of the world. Forty deaths from football. Prohibition, unemployment, narcotics, federal council of churches, movies, politicians, militarism, newspapers, WCTU, football, sheol, hades, gehenna and tartaroo.

San Francisco's Unemployed Women

A SETTLEMENT house in the central part of San Francisco offered free lunches for unemployed women, thinking that possibly several hundred might be helped. They were swamped when more than three thousand responded to their invitation. The applicants were mostly office workers, temporarily unemployed.

The Big Incomes Are Too Big

THE big incomes are too big. In 1930 there were 149 persons who had total net profits of \$355,661,694. Each of these persons had a net income of over a million dollars a year; eight of them had incomes of more than \$5,000,000 a year. In addition, 19,539 people, with incomes of from \$50,000 to \$1,000,000 a year, had a total income, net, of \$2,112,721,137.

On Prevalence of Goiter

IT IS found that sunlight helps to keep the thyroid gland normal. There is less goiter on the sunny side of mountains than on their shady sides. Cattle and rabbits that are kept in the dark show enlargements of the thyroid. Fear, worry, anxiety, anger, jealousy, grief or envy, and their incident disturbance of the nervous system, are contributory causes of goiter.

Plans for Knickerbocker Village

KNICKERBOCKER VILLAGE will be the name given to the great real estate development to take place on the lower East Side of New York city. Fourteen acres of tenements and ramshackle buildings will be removed from thirty-eight blocks, and in their place will be erected model tenements, with intervening park areas that will do much to make New York a better city.

Powers Hapgood in Council Bluffs

FOR offering to go bail for a man accused of exercising the right of free speech in Council Bluffs, Powers Hapgood, student, writer and newspaper correspondent, was mugged and sixteen separate prints were taken of each finger and thumb, every one of which he had to sign. The police of Council Bluffs evidently desire anarchy in America and are doing all possible to create it.

Migration Away from the United States

FOR the first time in history, the year 1931 indicates a migration away from the United States. In other words, more people left the United States and headed for Europe and other lands than came from those lands here. The hoggishness of Big Business has wrecked the country and multitudes are leaving for other lands where the common people have a better chance.

Assumption of Risk

A DECISION of the United States Supreme Court has just reaffirmed the principle that in accepting employment on a job the worker assumes the risk of defective tools and lack of goggles to protect his eyes, even if it results in the loss of an eye. He runs the risk of losing either his job or an eye, and if he loses the eye he cannot recover damages from his employer because of it.

Machine Sorts Cards Numerically

A MACHINE has been devised which sorts numerically and will classify and pile in order one hundred million numbered cards. The machine contains one hundred compartments and automatically puts in each compartment the cards intended for that section. It will take the place of many clerks in banks, railroads, hotels, telephone offices and other large organizations.

High Prices Saved the Man's Life

A MORGANTOWN (West Virginia) man determined to end it all. He paid off his butcher and grocer, bought himself a gun with which to finish himself off, and then stopped in at his undertaker's to arrange for the funeral. He asked for the latest bargains in unused coffins, and was so enraged at what he considered the excessive prices charged that he got abusive. With that the undertaker called up the police and had the man arrested. Now he is in jail for six months, and did not get the chance to kill himself after all, as the police took away his gun. What hard luck some people do have! And, of the two, the undertaker got the worst deal. However, he still stands a chance to make something when the man gets out, if he will only be more reasonable in his charges.

China Buries Writers Alive

THE danger of one's using his brains or his pen in China at this stage is well illustrated by what happened to Li Wei-sen, editor of the Shanghai *Red Flag*. On January 17 he was arrested by the British police in the international settlement and turned over to the Chinese authorities for trial. After being tortured for three weeks he was buried alive, along with four of his comrades, while nineteen others were shot over his grave.

The Schminkus Detonating Ray

THE Schminkus detonating ray, sometimes called the "death ray", the invention of a young German, can explode at a distance ammunition dumps, cartridges, bombs, hand grenades, sea mines, and all similar material in which explosives are used. The ray is expected to make all side arms, machine guns and cannons useless, as the ammunition can be exploded inside the weapons. The same will apply also to airplanes and tanks, it is believed.

Phoning over a Beam of Light

PHYSICISTS of the University of Idaho have invented a method of telephony over a ray of light. By this means conversation may be held between parties on mountain peaks as much as forty miles distant. The sending end of the telephone consists of an acetylene gas flame and a diaphragm which is built into the burner. Vibration of the flame, caused by speaking, operates photo-electric cells at the receiving end.

The Canny City of Seymour

SEYMOUR, Texas, was paying a private company too much for its electric current, so it built its own plant and secured 350 customers at a much lower rate. Thereupon, the privately owned company wanted to get its old customers back by making a specially low rate for Seymour, while it charged as much as ever elsewhere. By that means it hoped to ruin the municipally owned plant. But the Seymour people were wise in their day and generation. They went into the courts and restrained the privately owned company from offering any lower rates than those fixed by the city for its own customers and thus wrecking the municipal enterprise.

Tremendous Astronomical Possibilities Ahead

THE idea has been suggested, and seems not unreasonable, that a way may be found to do with light waves what is done by radio with sound waves. The latter are frequently magnified a billion times in an ordinary home radio set; and if this can be done with light rays, then huge, cumbersome telescopes which can magnify but 2,500 diameters will become things of the past and an entirely new era in astronomical research will begin.

Southern New England Fishermen's Association

THE Southern New England Fishermen's Association has been formed by some two hundred fishermen of eastern Connecticut and Rhode Island to resist the efforts of New York racketeers to collect so much a barrel for the fish which they see fit to bring in to the markets of New York city. It is predicted that if the racketeers get into trouble with these fishermen it will be real trouble for somebody besides the fishermen.

What Milwaukee Has Done

REFERRING to the accomplishments of Milwaukee's socialist administration, The Associated Press, Mother of all Trusts, said in the *New York Times*, Handmaid of Big Business, that "the city of Milwaukee has paid its bills, expended hundreds of thousands of dollars in unemployment relief, and at the end of the year will have about \$4,000,000 in the bank. The cash can be applied to costs of municipal services next year".

Mrs. Ida Wood, Little Old Lady

MRS. IDA WOOD, little old New York lady, wanted to get away from her relatives, put her large fortune into \$10,000 bank notes, and went to live by herself in a hotel. There she secluded herself, even doing her own cooking, but her relatives found out where she was, a nephew got himself appointed her guardian, and her money was grabbed; the court gave her physician a fee of \$3,800 and bestowed \$7,900 on detectives, and now her nephew has her money and her person and she is unhappy in "the land of the free and the home of the brave", a land, seemingly, where "nobody can't let nobody be".

Wabash May Be Split Up

IF THE Interstate Commerce Commission approves the proposition, the Wabash railroad, now in the hands of a receiver, will be split up, most of it going to the Pennsylvania. From the time the Wabash entered Pittsburgh, and thus came sharply in competition with the Pennsylvania, it was doomed. The Pennsy threw across its pathway every obstacle that immense wealth and political power could devise, and is now ready to swallow the bones that are left.

Voyage of the Roald Amundsen

THE Roald Amundsen, sixty feet long over all, came from Norway to New York via Spain, New Orleans, St. Louis, Chicago, Buffalo and Albany. When crossing the Atlantic the captain on one occasion was lashed to his steering apparatus for seventy-seven hours at a stretch, with the waves breaking over him most of the time. The expenses of the trip are paid by admissions to the boat at 25c a head, and the sale of postcards.

Rubber Tires and Rubber Pavements

IT IS hoped that the manufacture of synthetic rubber, now begun on a large scale, may ultimately bring about cities devoid of street car tracks in which rubber-tired vehicles will travel over rubber-surfaced streets, and thus city noises can be greatly reduced. It is calculated that New York city sustains an annual loss of \$44,000,000 a year through interference with school work by the noises of transportation.

What the Government Could Do

IN HIS recent message to the Wisconsin legislature Governor Philip La Follette wrote: "They will tell you that the government cannot put 5,000,000 men to work, although they forget that they put 4,000,000 American young men to work at the business of war; that they squandered \$40,000,000,000 of American money in the most wasteful and futile war of modern history. And still they will say that you are extravagant and wasteful and visionary because you propose to spend millions or billions to build highways and bridges and power plants that will make the farmer's and the worker's life better and happier. You may spend tens of millions to destroy, but nothing to build a richer and finer life."

Hurrah for Judge Borrelli!

HURRAH for Judge Borrelli, an Italian-American judge of the city of Chicago! Not satisfied with the progress being made by the police in cleaning up his section of the city he donned ragged clothing, and made the acquaintance of enough members of a certain gang that thirty-one arrests were made at one time. When the gang members came into court they were astonished to find themselves facing one of their old pals.

Ansonia Man Digs Own Grave

INSPIRED by the example capitalism has made of itself an Ansonia man, Wazil Radzevich, 68 years of age, has been spending his unemployed time in digging his own grave, touching it up with concrete and getting ready for the end. The principal difference is that Wazil expects to die, while capitalism is foolishly hanging on to the edge and is insisting that it will live and must live, even while the death rattle is in its throat.

Automobile Plant at Nizhni Novgorod

THE second largest automobile plant in the world is now located at Nizhni Novgorod, Russia. Patterned closely after the Ford plant at River Rouge, it is planned to turn out 70,000 Ford trucks and 50,000 Model A passenger cars a year. The production program for the first year is set at 70,000 cars. A complete modern city has been erected in proximity to the plant. Each group of five apartment houses will have a communal kitchen.

Appetite of Big Business

THE appetite of Big Business for all the business there is is indicated by the fact that in 1922 there were in the United States 30,325 banks and there are now 21,903. That means that almost one-third of the banks have either been merged into the big ones or have had to close up business. The credit facilities, and that means the right of a business to live, are now all in the hands of the big fellows who have shown that their one conception of business is to hog it all, in every direction, with no thought of a hereafter, and no interest in the welfare of the country as a whole. The fewer the banks, the easier it is for Big Business to gamble with the funds of depositors in such a way as to take over the finances of the entire country.

List of Defaulting Countries

THE list of countries defaulting in December, 1931, in their payments on war debts to Uncle Sam looks like a list taken from some geography: Belgium, Czechoslovakia, Esthonia, Finland, France, Great Britain, Hungary, Italy, Latvia, Lithuania and Poland. All these countries were glad to borrow, and while Uncle Sam was big enough fool to keep sticking his hand in his pocket he was a fine fellow, but as soon as he stopped handing it out and wanted some of it back he became a shylock unfit to live.

Rothschilds Burned the Coffee

IT IS believed that the agreement between the National Coffee Council and the Brazilian Government by which the latter burned 18,000,000 bags of coffee was brought about by the insistence of the House of Rothschild who had loaned the Brazilian Government \$100,000,000, the issue being secured by pledges on the coffee crop. In other words, the American workingman must pay more for his coffee so that Rothschild & Company can get the interest on their Brazilian bonds.

Can't Tell Where They Got the Money

CAN you imagine a New York court attendant, on a salary of \$3,270 a year, carrying around \$2,000 to \$5,000 in his pockets at all times, and acting as a walking bank for his fellow employees? Can you imagine him with accounts in eight banks, and with known deposits in seven years of \$186,673.60?

Of course you can't imagine it; nor can anybody else. Yet that is but one of the scores and scores of cases brought out into the light by Samuel Seabury, counsel of the Hofstadter legislative committee. The man in question could not tell where his immense income came from. Of course not.

Seabury claims that in every direction in which he turns in his investigations of conditions in New York he finds similar conditions. Graft is so rampant and so shameless that there is merely a laugh in the court room as the grafters are caught in their lies. But nothing is done about it, and nothing will be done. The whole New York City government seems to be one reeking mass of corruption from top to bottom.

Incredible Speed of Armored Cars

IF REPORTS are to be believed the United States now has armored cars that will travel across plowed ground at the incredible speed of fifty miles an hour. Moreover, they carry machine guns which will deliver 700 shots a minute. Maybe these new cars will be used to distribute tracts in Manchuria. We know they won't be used for war, because the Kellogg Peace Pact says that war is a crime, and the nations are all agreed, aren't they? that they won't do any more fighting unless they honestly think that they really must.

Sad Conditions in Baltimore

COMMUNITY Fund workers at their seventh luncheon in Baltimore declared that there are now hundreds of men in Baltimore who are willing to do work of any kind for wages of any kind. In the same city the judge of the People's Court said that in the hundreds of eviction cases that come up before him the majority have given up hope and, when asked if they have money to pay rent, make no reply; others answer that they have no money with which to feed their children, let alone money to pay for moving.

Between 10,000 and 20,000 Diseases

THE National Conference on Nomenclature of Disease is expecting shortly to issue a book for doctors which will rename all known diseases and is expected to include between 10,000 and 20,000 titles in its 250 pages. If this were not so serious it would be funny; and that is no joke, for there is but one disease, and giving it 19,999 different names will not teach anybody that his health depends on what goes into his mind, what goes down his neck in the way of food and drink, and the amount of rest, work, fresh air and sunshine he receives.

The Voice of the Sky

AN AERIAL broadcasting device which can be used from an airplane and multiplies the human voice three million times will be used by the British Government to try to tell the liberty-loving and rebellious peoples of Iraq how happy they should be to let the British do their thinking and governing for them. It is hoped that these great voices coming down from the skies will have great influence with

the superstitious people. The device weighs 1,400 pounds. It has been used in America to direct the work of fighters of forest fires.

La Fontaine's Disappointment

JAMES A. LA FONTAINE, doing a large gambling business in Maryland, just over the line from the District of Columbia, was disappointed recently when he had to pay \$206,000 to the Federal government to square unpaid income taxes for the past six years. His defense was that he did not know he must pay taxes on money made illegally. It is supposed that the reason he is never interfered with by the Maryland authorities is that his employees are chiefly the friends and relatives of Maryland politicians.

Baltimore Style Spreads to Paterson

YEARs ago Cardinal Gibbons, of Baltimore, put his OK on stealing in preference to starving, and within a year President Willard of the Baltimore and Ohio, also of Baltimore, gave expression to the same idea. This Baltimore notion seems to be spreading. A man in Paterson, N. J., without work and without money, stole 400 pounds of Erie coal to keep his family warm, and when the case came up in court the judge on the bench refused to sentence him, stating that a father who steals to keep his family warm is better than a father who permits his family to go cold.

Psychology of War Debts

CHARLES E. MITCHELL, president of the National City Bank of New York, told the Senate Finance Committee that there is a generation of Germans born since the World War that objects to being faced with payment of the war debt in future years. In exchange Senator Reed, Pennsylvania, inquired why the progeny of Americans who are not even alive now should pay this war debt, while the progeny of the people who started it should go scot free. The outstanding fact is that the Americans were fools to lend the money. Every dollar that was loaned to France was a dollar invested against the best interests of peace, and as far as militarism is concerned it is now apparent that Kaiser Wilhelm and his gang might have gone clear through France to the Bay of Biscay and the country traversed would not be any more militaristic than it now is.

Sir George Paish Gives Us Sixty Days

THAT was bad enough when Montagu Norman, president of the Bank of England, wanted to go on record as saying that unless something unforeseen happens our civilization will be in chaos within a year. That was some six months ago, and would give us about half a year margin, but now Sir George Paish, one of the world's foremost economists, speaking on December 9, at Manchester, said, "If my information is correct, and I think it is, nothing can prevent a complete world breakdown within the next two months."

Did Not Know They Were Thieves

IN *The American Guardian* Oscar Ameringer says: "There is no need of berating the men who deprived the American people of their inheritance. They did not know they were thieves. Some of them do not know it even yet. Neither were they aware that in taking unto themselves the means of life of our people they were destroying the very foundation upon which our government was founded. What we are dealing with is a case of unpremeditated and more or less impersonal disloyalty and high treason to the American people, their government, their institutions, traditions and ideals, forced by social evolution."

Madness of New World Economics

REFERRING to the burnings of cotton, the destruction of wheat, the throwing of coffee into the sea, and now the proposal to destroy one in ten of all the milk cows in the United States, as advocated by the Dairy Advisory Committee of the Farm Board, the *Manchester Guardian* says:

When it comes to madness the economics of the New World seem to offer more oddities than anything to be found in Europe. The Communists are not the only enemies of our existing order; those who are all for a reorganization are entitled to point with pride to several places where capitalism is doing its best to cut its own throat.

Spent \$200,000 of the People's Money

A PRIVATE utility concern, noting the splendid results obtained by the Kansas City (Kansas) municipally owned light and water system, opened offices and spent \$200,000 of the people's money trying to bluff and bulldoze the people into selling them the plant, but finally gave up in disgust when their profes-

sional solicitors were caught placing names on a petition at so much per name. In Kansas City, Kansas, the cost of 50 kilowatt hours of current is but \$1.80, but right next door, in Kansas City, Mo., the cost is \$2.75. The saving to the people in lower rates amounts to over ten times the amount lost in taxes.

War Is Wicked

A CERTAIN nation uses the billboards for educational purposes. One of its posters tells the people that "war is wicked, wasteful, stupid and unnecessary. Fifty nations by treaty have outlawed war. Why not disarm?" Now what nation do you suppose it is that is so interested in peace? One of the Christian nations, of course. Not at all. The professedly Christian nations are not Christian at all; they are pagan. Well, what country was it that put up the posters that war is wicked? Answer: It was China, poor heathen China, trying to tell her own people what is right, but actually telling the hypocrites of Christendom what is wrong with their way of life. Organized Christianity is a stench in the nostrils of mankind. Christendom has spread the gospel of murder around the world, and now the heathen are trying to bring about a better feeling by making an appeal to reason.

Relief: 1931 Style

IN AN article bristling with facts and filled with irony and sarcasm Governor Pinchot, of Pennsylvania, treats the readers of *The Nation* to an analysis of the work of Messrs. Gifford, Young and Hoover. These gentlemen, so it seems, have in short order provided the wage-earners of 690 cities with abundant opportunities of self-sacrifice, but the big fellows, the ones that have got everything, have been practically left out. On this aspect of the matter, Mr. Pinchot says forcefully:

Practically every cent that is taken from wage-earners for the relief fund would be used for buying if it were left in their hands. Money donated by the rich, however, especially the very rich who have large reserves awaiting investment, is in a different position. Only a little of it can be used for buying goods, since its owners can consume but a limited amount. Nor is it needed as capital for new enterprise. Capital is a drug on the market now. Consequently, the part used for unemployment relief would otherwise not be used at all until the depression subsides and its owners invest it.

Mr. Ratti Makes Too Much Noise

MR. RATTI makes too much noise. First he gets all steamed up over his deal with Mussolini and blesses the whole world. Thereafter everything went to the demnition howls, and things are now in such bad shape that he said in his Christmas speech, "From this terrifying spectacle which the world presents we must raise our eyes to heaven." Then after getting us into this jam he proceeds to blame it on God, saying, "It is the hand of God which weighs upon us." That speaks for itself. In the same speech he explained that the reason his library collapsed was that it was cheaply put up and poorly finished by his great predecessor Sixtus V. By the way, the pope himself barely got out of it in time. If there were not so much graft around the vatican the buildings would be in better shape. The whole thing is rotten from top to bottom, and the big cupola of St. Peter's may come crashing in at any time. The big noise in Rome should quiet down. It talks too much. It has nothing to be proud of, and everything to be ashamed of, and is a menace and curse to mankind.

"Ain't This Something?"

A SUBSCRIBER in Memphis sends us a clipping showing that the Protestant Pastors' Association has taken kindly to the suggestion that a service be held once a year in the potter's field so that those buried there may lie in consecrated ground, and then asks, "Ain't this something?" And we are glad to say it is. In the first place, it is something because "the earth is the Lord's and the fulness thereof", and therefore all ground is holy ground, regardless of whether or not it has any dogs barking around the edges of it. And, in the second place, Memphis would be a good place to put on an exhibition of this kind, because in Memphis, in proportion to its population, one has more chances of a hasty exit from this world than in any other place in creation. How appropriate it is that those who have helped to make Memphis what it is should come together once a year and help garnish the tombs they have been instrumental in filling! The clipping does not say whether a collection will be taken up when the annual consecration of ground occurs, but no doubt it will. That will help to make the ground more holy, in some eyes.

LITTLE rhymes learned in childhood are always remembered. Nearly every mother teaches her children such useless little rhymes as "Old Mother Hubbard went to the cupboard" or "Jack and Jill went up the hill", etc. Why not

teach the children something that will be of use to them as they grow older? With this thought in mind, the following little alphabet has been compiled. Since most of the thoughts were taken from *The Golden Age*, it is called

A GOLDEN AGE ALPHABET

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| <p>A is for APPLE, the king of all fruit.
Eat one each day; 'tis a healthful pursuit.</p> <p>B for the BEET which will make nice red blood
Make your cheeks bloom as the pretty rose-bud.</p> <p>C for the CARROT. 'Tis beauty they say
Will come to you if you eat one each day.</p> <p>D for the DATE. Now then, here is a treat,
Better than candy if you would have sweet.</p> <p>E for ENAMEL on tooth and on nail,
Built up by cabbage. Eat raw without fail.</p> <p>F for the FIGS to keep healthy and well;
Better than pills which the drug store might sell.</p> <p>G for the GRAPES which build tissue just fine,
Especially those we pick fresh from the vine.</p> <p>H is for HONEY. 'Tis better by far
Than syrup or jelly you buy in a jar.</p> <p>I is for ICE CREAM, but not what you buy;
Have mother make it. Pure cream she'll supply.</p> <p>J for the JUICE of the lemon. Behold,
'Tis Grandmother's cure for a cough and a cold.</p> <p>K for the KETTLES. Beware what you choose!
Aluminum kettles you never should use.</p> <p>L is for LETTUCE, the green leafy kind;
An aid to digestion I'm sure you will find.</p> <p>M for the MILK in unpasteurized state;
This will build bone and increase you in weight.</p> <p>N for the NUTS of which children need plenty;
Grown-ups, a few, but not quite so many.</p> | <p>O is for OXYGEN, found in fresh air;
A wonderful tonic; breath deeply, with care.</p> <p>P for the PRUNES. These are good for the pains
Grandpa complains of whenever it rains.</p> <p>Q for the QUARTS of pure water we drink.
"A schoolgirl complexion" is what you will think.</p> <p>R is for REST, which will lengthen your life.
A nap after luncheon will end nervous strife.</p> <p>S is for SALT. If you would feel trim
Put some in your bath, 'twill give vigor and vim.</p> <p>T for THANKSGIVING. This never forget:
A heart full of praise will have no time to fret.</p> <p>U, UPRIGHT Posture; to always maintain
From your chest to the ceiling imagine a chain.</p> <p>V is for VINEGAR. This is <i>not</i> good;
You want to digest, not preserve, all your food.</p> <p>W for WHOLE WHEAT, the best kind of bread;
Toasted in oven, still better, 'tis said.</p> <p>X is for 'XERCISE in open air
Children and grown-ups should each take their share.</p> <p>Y is for YEAST. Not as good as advised.
Beware of those things which are well advertised!</p> <p>Z is for ZION, God's city of Love;
To have happy hearts we must serve God above.</p> |
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Hail Jehovah of Hosts!

JEHOVAH is the one being who reveals His purposes to those who love Him and keep His commandments. Among His purposes is the complete deliverance of His creatures from the enemy and a decisive victory over the wicked one. Those creatures who love Jehovah and appreciate His goodness cannot but hail Him as the great Deliverer; those creatures are welded together in a great organization and continually sing forth His praises.

Ever since the time of Eden, Satan has caused men to worship anything in the universe except the great Creator, to whom all praise is due. The enemy has done this by causing men to have a misconception of the true God, and things and creatures have been the objects of worship. From time to time the enemy has caused men to be lifted up in some achievement or victory, and thus they commanded the attention of the people. When a man dies who is thought to have invented many beneficial things the people do him homage which in truth belongs to God. The truth of the matter is that centuries ago Jehovah placed the powers that operate in the inventions recently discovered by man and that men stumbled upon their existence, not by any ability of their own, as though they could force the existence of such things, but it was the due time of the Creator that the people should have these blessings.

Again, when some military butcher who has murdered thousands of his fellow men has gained some so-called "victory" over his fellows the enemy plays upon the minds of those in power and arrangements are made for some great demonstration in honor of this ravenous "deliverer". Since the World War the people have had examples of these devilish parades in all the major cities.

Realizing that men love great display and are prone to worship their fellows, the Devil carried his schemes into detail in the triumphal marches of ancient Rome. *The Encyclopedia Americana* says that this was "a solemn procession granted to a victorious general of ancient Rome. It was bestowed only on one who had held office of dictator, consul, or prætor, and after a decisive victory over foreign foes, or on the complete subjugation of a province. On the day of the triumph all the temples were thrown open; every shrine was decorated with garlands, and every altar smoked with incense.

The general assembled his soldiers without the city, delivered to them a commendatory oration, and distributed rewards and money as their share of the spoil of the enemies.

"He then mounted his car and advanced to the triumphal gate (*porta triumphalis*), where he was met by the senate, and the procession was formed and marched along the Via Sacra to the capitol. It was led by the senate, headed by the magistrates, and included a train of carriages laden with spoils, models of captured forts and cities, pictures of the country conquered, trumpeters and flute-players, white bulls or oxen destined for sacrifice, attended by priests with their insignia and implements; the most distinguished captives, etc. The triumphant general rode in a circular chariot drawn by four horses; in his right hand he bore a laurel bough, and in his left a sceptre; he was attired in gold-embroidered robe and a flowered tunic, and his brows were encircled with laurel. In the car he was accompanied by his children of tender age, and sometimes by very intimate friends. A public slave held over his head a gold Etruscan crown ornamented with jewels.

"The legates, tribunes and equestrians, with the grown-up sons of the conqueror, followed on horseback. The infantry followed in marching order, their spears adorned with laurel, shouting *Io triumphe!* singing hymns to the gods, and praising or ridiculing their general, according to the license of the day, as their humor might dictate.

"As the procession ascended the Capitoline Hill some of the captives were withdrawn from it and conducted to prison to be put to death. As soon as their execution was intimated the victims were sacrificed, offerings presented to Jupiter, and the general and his friends parted in the temple, returning home in the evening accompanied by flutes and torches and a crowd of citizens. Sometimes when the spoil was great the procession extended over more than one day."

As one views the manner in which Satan has been deceiving the people of earth by turning the masses away from the true God, by causing those who desire to serve the Lord to be persecuted, and by causing the innocent to suffer, one is convinced from the Scriptures that the enemy is pointed out to suffer the end which he designed for others and the pit which he

digged for the righteous will swallow him up in complete destruction. Centuries ago the great Jehovah, the God of justice and mercy, rightly determined upon the destruction of Satan. In Ezekiel 28:16,17 we read, "I will destroy thee, O covering cherub, from the midst of the stones of fire. Thine heart was lifted up because of thy beauty; thou hast corrupted thy wisdom by reason of thy brightness [the selfish desire to make a show of oneself or shine before others]: I will cast thee to the ground, I will lay thee before kings, that they may behold thee." Again, in Proverbs 11:5 is brought to our attention, "The wicked shall fall by his own wickedness." Instead of leading mankind to honor the true and great Jehovah, the enemy has led men to dishonor the Most High; instead of following the course of righteousness himself, he has paved the way of unrighteousness for himself and his followers; instead of having part in the land of the living, he will be cut off in sudden destruction.

It will thus be in the destruction of the Devil's organization that the people will come to know who is the true God. When the blindness which now covers the minds of the people has been removed they will know and understand from the Word of God and His power manifested in the earth that Jehovah is to be hailed as the Lord of hosts. In Zephaniah 3:8,9 are words of assurance concerning the coming victory of Jehovah over this wicked one and the deliverance of the people. "Therefore wait ye upon me, saith the Lord, until the day that I rise up to the prey; for my determination is to gather the nations, that I may assemble the kingdoms, to pour upon them mine indignation, even all my fierce anger: for all the earth [Satan's visible organization, and not this planet] shall be devoured with the fire of my jealousy. For then will I turn to the people a pure language, that they may all call upon the name of the Lord, to serve him with one consent."

Who Is Jehovah?

Before the people can appreciate Jehovah they must know who He really is; and before they know Him they must have knowledge which is the basis of faith and confidence. Jehovah is the one being who reveals His purposes to those who love Him; and as He delivered His people from the bondage of Egyptian cruelty, even so He has now promised to

deliver all the righteous from the Devil's system of oppression. He is the Creator of heaven and earth, and the Provider for His creatures. We read concerning His works of creation and His provisions for His creatures, in Psalm 104:24-33, "O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches. So is this great and wide sea, wherein are things creeping innumerable, both small and great beasts. There go the ships; there is that leviathan, whom thou hast made to play therein. These wait all upon thee, that thou mayest give them their meat in due season. That thou givest them they gather; thou openest thine hand, they are filled with good. Thou hidest thy face, they are troubled; thou takest away their breath, they die, and return to their dust. Thou sendest forth thy spirit, they are created; and thou renewest the face of the earth. The glory of the Lord shall endure for ever: the Lord shall rejoice in his works. He looketh on the earth, and it trembleth: he toucheth the hills, and they smoke. I will sing unto the Lord as long as I live; I will sing praise to my God while I have my being."

Jehovah is the source of all light and understanding. In 1 John 1:5 we read, "God is light, and in him is no darkness at all." He does things in the open, and is not ashamed of His deeds; this is just the opposite course to that of the Devil, whose agents operate in the darkness and desire to conceal wickedness lest they come to judgment. The man of righteousness looks to Jehovah for light, wisdom, and strength, and this makes him bold in the Lord, as we read in Psalm 27:1,2: "The Lord is my light and my salvation; whom shall I fear? the Lord is the strength of my life; of whom shall I be afraid? When the wicked, even mine enemies and my foes, came upon me to eat up my flesh, they stumbled and fell." Again, in Psalm 89:15-18 we find written, "Blessed is the people that know the joyful sound: they shall walk, O Lord, in the light of thy countenance. In thy name shall they rejoice all the day: and in thy righteousness shall they be exalted. For thou art the glory of their strength: and in thy favour our horn shall be exalted. For the Lord is our defense; and the Holy One of Israel is our King."

Since Jehovah is the source of light, it follows that He sheds light for His glory and for the benefit of those who love Him. "O send out

thy light and thy truth: let them lead me; let them bring me unto thy holy hill, and to thy tabernacles." (Ps. 43:3) It is by means of the truth which Jehovah has provided that one is led to His kingdom. Although one might be simple and be shunned by the world, yet the entrance of Jehovah's words gives understanding to such, and the Most High will deliver such from the oppression of the enemy. In support of this we read, in Psalm 119:130-134, "The entrance of thy words giveth light; it giveth understanding unto the simple. I opened my mouth, and panted: for I longed for thy commandments. Look thou upon me, and be merciful unto me, as thou usest to do unto those that love thy name. Order my steps in thy word: and let not any iniquity have dominion over me. Deliver me from the oppression of man; so will I keep thy precepts."

It is necessary for the people to know who the great Jehovah really is, because Satan has misrepresented and blasphemed the name of the Creator. The enemy also has kept the people in ignorance about the truth concerning Jehovah. In the garden of Eden Satan should have told Eve the truth concerning the commandment of the Lord, but instead of that he led Eve and subsequently Adam to disobey the Lord. Adam was plainly told that he should not eat of the tree of the knowledge of good and evil, upon penalty of death; however, the Devil led him to do that very thing, and as a result the whole human family was brought into bondage and into death. In Genesis 3:4, 5, we read the words of the enemy, "And the serpent said unto the woman, Ye shall not surely die: for God doth know that in the day ye eat thereof, then your eyes shall be opened; and ye shall be as gods, knowing good and evil."

It was in the garden of Eden that Satan raised the issue by disputing the truthfulness of God's statement and therefore denying the supremacy of Jehovah. From that day to this the Devil has been misrepresenting the name of Jehovah and turning all he can away from a knowledge of the truth of God. In point concerning this we read, in Psalm 74:18, "Remember this, that the enemy hath reproached, O Lord, and that the foolish people have blasphemed thy name." It is a well known fact that the clergy, both Catholic and Protestant, no longer take the Bible seriously, and have been preaching according to the policy of this world,

which is the Devil's organization; and the people have placed confidence in these religious frauds. This devil worship is an abomination unto the Lord.

In those places where the name of Jehovah should be exalted, and some people are yet found who have faith in God, the Devil has succeeded in setting up the wisdom of this world. This has been very discouraging to those who have yet some faith in the Almighty. In Psalm 74:4, 7 we read, "Thine enemies roar in the midst of thy congregations; they set up their ensigns for signs. They have cast fire into thy sanctuary; they have defiled by casting down the dwellingplace of thy name to the ground."

Deliverance Foreshadowed

When Jehovah made preparations to deliver the children of Israel from Egypt (which pictured the Devil's present organization) the Almighty foreshadowed the manner in which He would ultimately deliver the people who have faith in Him from the enemy's system of oppression. Pharaoh, the ruler of Egypt, represented the Devil himself. And as that ancient monarch refused to let God's people go, even so today Satan refuses to let go his control over the people of good will. As Jehovah with a demonstration of great power delivered the Israelites from Egypt, even so, in the near future, with a mighty arm the Lord of hosts will deliver all who have faith in Him.

When Moses and Aaron went to Pharaoh to command that monarch to let God's people go, that oppressor said, "Who is the Lord [Jehovah], that I should obey his voice to let Israel go?" Even so today the Devil is trying desperately to continue his hold upon the deluded people who wish to serve God but who are in bondage and restraint. This same tyrannical spirit is manifested in the rulers of the present day. If the rulers can't have their way by diplomatic means they resort to force; hence the rise of so many dictators, backed by the strong hand of the military forces, throughout the world.

After interviewing the Egyptian monarch Moses presented the matter before the Lord. We read the decisive words of Jehovah in which He speaks of the certain deliverance of Israel, and in this deliverance His name is involved, according to Exodus 6:1-6: "Then the Lord said unto Moses, Now shalt thou see what I will do to Pharaoh: for with a strong hand shall

he let them go, and with a strong hand shall he drive them out of his land. And God spake unto Moses, and said unto him, I am the Lord [JEHOVAH]: and I appeared unto Abraham, unto Isaac, and unto Jacob, by the name of God Almighty; but by my name JEHOVAH was I not known to them. And I have also established my covenant with them, to give them the land of Canaan, the land of their pilgrimage, wherein they were strangers. And I have also heard the groaning of the children of Israel, whom the Egyptians keep in bondage; and I have remembered my covenant. Wherefore say unto the children of Israel, I am the Lord [JEHOVAH], and I will bring you out from under the burdens of the Egyptians, and I will rid you of their bondage, and I will redeem you with a stretched out arm, and with great judgments."

It is significant that the name of Jehovah is involved with the deliverance of His people from Egypt. It is noteworthy that Jehovah is the One who reveals to His people His purposes, and especially those concerning the vindication of His name and the deliverance of His people. We may rest assured, then, that the mere fact that the Almighty has brought His name at this present time to the attention of His people indicates that their deliverance is at hand, and the power of Jehovah will completely vindicate His name in the sight of all creation.

Why Called Jehovah of Hosts?

The expression "Jehovah of hosts" conveys the thought that the Almighty is at the head of and controls a vast organization of many obedient creatures, many in heaven and a few on earth. This term not only is appropriate of an organization, but is a military name showing that a vast army is about to move into action against the enemy. In this great organization and army Jehovah has placed Christ Jesus in charge and as the commander to lead the forces against Satan. While Christ became the new King of earth in 1914, it was not until 1918 that Jehovah's organization came to completion in the gathering together of the faithful body members of His Son; since 1918 the organization work has been emphasized and Jehovah uses this organization only in accomplishing His present purpose in the earth. While that organization gathered in 1918, it was not until several years thereafter that the few members on earth understood the importance of this

systematic arrangement and the great work to be effected.

The Prophet Isaiah had a vision of Jehovah's organization, and in this connection the term "Jehovah of hosts" is applied to the One sitting on the throne and above all parts of the great array of creatures. In Isaiah 6:1-3 we read, "In the year that king Uzziah died, I saw also the Lord sitting upon a throne, high and lifted up, and his train filled the temple. Above it stood the seraphims: each one had six wings; with twain he covered his face, and with twain he covered his feet, and with twain he did fly. And one cried unto another, and said, Holy, holy, holy is the Lord [JEHOVAH] of hosts; the whole earth is full of his glory."

The same prophet described the mustering of the hosts of heaven and on earth for the final conflict, in these words, found in Isaiah 13:4-6, 13, "The noise of a multitude in the mountains, like as of a great people; a tumultuous noise of the kingdoms of nations gathered together: JEHOVAH OF HOSTS mustereth the host of the battle. They come from a far country, from the end of heaven, even the Lord, and the weapons of his indignation, to destroy the whole land. Howl ye; for the day of the Lord is at hand; it shall come as a destruction from the Almighty. Therefore I will shake the heavens, and the earth shall remove out of her place, in the wrath of JEHOVAH OF HOSTS, and in the day of his fierce anger." The importance of this battle is brought to our attention when we realize that in this army of Jehovah there are members from the end of heaven and the weapons of Jehovah's indignation are employed to make an utter riddance of the Devil's organization both visible and invisible.

Concerning the work to be wrought in the day of battle we read, in Isaiah 2:11, 12, "The lofty looks of man shall be humbled, and the haughtiness of men shall be bowed down; and the Lord alone shall be exalted in that day. For the day of the Lord of hosts shall be upon every one that is proud and lofty, and upon every one that is lifted up, and he shall be brought low." The same prophet also speaks of the breaking of the enemy and the treading of him under foot, which language is descriptive of the decisive victory for Jehovah. In Isaiah 14:24-27, "The Lord of hosts hath sworn, saying, Surely as I have thought, so shall it come to pass; and as I have purposed, so shall it stand: that I

will break the Assyrian in my land, and upon my mountains tread him under foot: then shall his yoke depart from off them, and his burden depart from off their shoulders. This is the purpose that is purposed upon the whole earth: and this is the hand that is stretched out upon all the nations. For the Lord of hosts hath purposed, and who shall disannul it? and his hand is stretched out, and who shall turn it back?"

People to Hail Deliverer

As the people of earth recognize the triumph of Jehovah over the enemy Satan, they will hail the Creator as the great Deliverer. The song which Moses and the children of Israel sang at the time of the overthrow of the Egyptian monarch and his hosts foreshadows the even greater rejoicing that will be upon the lips of the people, and is worthy of study. In Exodus 15: 1-6 we read, "Then sang Moses and the children of Israel this song unto the Lord, and spake, saying, I will sing unto the Lord, for he hath triumphed gloriously; the horse and his rider hath he thrown into the sea. The Lord is my strength and song, and he is become my salvation: he is my God, and I will prepare him an habitation; my father's God, and I will exalt him. The Lord is a man of war: the Lord is his name. Pharaoh's chariots and his host hath he cast into the sea: his chosen captains also are drowned in the Red sea. The depths have covered them: they sank into the bottom as a stone. Thy right hand, O Lord, is become glorious in power: thy right hand, O Lord, hath dashed in pieces the enemy."

Centuries ago the Lord foreknew the joy and triumphant exultation that would be in the hearts of His people when they realize His decisive victory over the enemy. Undoubtedly the peoples of earth will join in the song when they recover from the terrific shock and awake to a realization of their God and their Savior. In Psalm 98 we are given a new song. "O sing unto the Lord a new song; for he hath done marvelous things: his right hand, and his holy arm, hath gotten him the victory. The Lord hath made known his salvation: his righteousness hath he openly shewed in the sight of the heathen. He hath remembered his mercy and his truth toward the house of Israel: all the ends of the earth have seen the salvation of our God. Make a joyful noise unto the Lord, all the

earth: make a loud noise, and rejoice, and sing praise. Sing unto the Lord with the harp; with the harp, and the voice of a psalm. With trumpets, and sound of cornet, make a joyful noise before the Lord the King. Let the sea roar, and the fulness thereof; the world, and they that dwell therein. Let the floods clap their hands: let the hills be joyful together before the Lord; for he cometh to judge the earth; with righteousness shall he judge the world, and the people with equity."

For a long time the common peoples of earth have been sorely oppressed by wars and the taxes of past and future wars. One of the benefits that will result to the people will be the destruction of the war lords and the burning of the implements of warfare. Let us now turn to Psalm 46, beginning with the eighth verse and continuing right through the next Psalm: "Come, behold the works of the Lord, what desolations he hath made in the earth. He maketh wars to cease unto the end of the earth; he breaketh the bow, and cutteth the spear in sunder; he burneth the chariot in the fire. Be still, and know that I am God: I will be exalted among the heathen, I will be exalted in the earth. The Lord of hosts is with us; the God of Jacob is our refuge. Selah. O clap your hands, all ye people; shout unto God with the voice of triumph. For the Lord most high is terrible; he is a great King over all the earth. He shall subdue the people under us, and the nations under our feet. He shall choose our inheritance for us, the excellency of Jacob whom he loved. Selah. God is gone up with a shout, the Lord with the sound of a trumpet. Sing praises to God, sing praises: sing praises unto our King, sing praises. For God is the King of all the earth: sing ye praises with understanding. God reigneth over the heathen: God sitteth upon the throne of his holiness. The princes of the people are gathered together, even the people of the God of Abraham: for the shields of the earth belong unto God: he is greatly exalted."

The people will have reasons to hail Jehovah as their great Deliverer. He will not *try* to secure peace by arming to the teeth as the nations of earth are now doing, but He will secure lasting tranquillity by destroying every implement of warfare and planting in the hearts of the people a love that knows nothing but good for one's fellows. He will not *try* to find health

for mankind through the concoctions of drugs and filth, but will bring healing and vitality in abundance so that the inhabitant will no longer say, "I am sick." No longer will discord mar the ties of domestic relationship, nor will the nations be fearful of one another, but happiness will dwell in the hearts of all people. No longer will the people be confused as to who their God and Benefactor really is, for they shall know that their Savior and Deliverer is the great Jehovah. "Praise ye Jehovah. Praise God in

his sanctuary: praise him in the firmament of his power. Praise him for his mighty acts: praise him according to his excellent greatness. Praise him with the sound of the trumpet: praise him with the psaltery and harp. Praise him with the timbrel and dance: praise him with stringed instruments and organs. Praise him upon the loud cymbals: praise him upon the high sounding cymbals. Let every thing that hath breath praise the Lord. Praise ye the Lord."—Ps. 150.

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