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given some very cheap thing, as a kind of piacular offering, might not escape other punishment.

**Salv. :** Government cannot be, except there is just judgment in the ruler (21).

**Ovid :** *Hanc animam pro meliore damus.*<sup>1</sup>

[NOTE. — A number of references previously omitted are given by the editor of the folio at this point, which have been also omitted by the translator because their proper places are quite uncertain.]

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## ARTICLE II.

### THE FIRMAMENT.

BY CHARLES B. WARRING, PH.D., POUGHKEEPSIE, N.Y.

AT the present day, when scientific literature is so permeated with the belief that, whatever else may be good and true in our Bible, its account of the creation of the world is of necessity to be rejected, it becomes those who love truth to see whether the apparent difficulties in the Mosaic narrative really belong there, or whether they have been interpolated in the translations by the mistaken zeal of its friends. This duty becomes the more important when we see that the opponents of revelation base their arguments largely upon certain statements in this story which they claim to be errors of fact.

It would be interesting to examine all these "errors"; but I shall for the present confine myself to one which is constantly harped upon by those who reject the Mosaic account, and in reference to which, unfortunately, their assertions are sustained by lexicons and Bible dictionaries, as far as I have examined.

"Whoever," these persons say, "wrote the first chapter of Genesis left upon record the assertion that 'God made a firmament,' by which was necessarily conveyed to the Hebrews then living the idea of something solid, a strong crystalline arch, rising as a dome above the earth, and separating the waters in the seas below it from certain other

<sup>1</sup> ["This life for a better we give."]

waters above it. As no such arch exists, the writer who said so could not have written under the guidance of One infinitely wise." The mind refuses to attribute error to God, and hence it is difficult to see how the conclusion is to be avoided if we admit the premises. There is a class of writers who may be justly styled apologists (in the modern sense of that word), and they declare that this story was intended to be "poetic, symbolical, and unchronological." What it retains of the character of a divine revelation, if this be a true description, I am at a loss to see. Religion is safe from all attacks based upon the errors of such a narrative.

By those, however, who, with the present writer, believe this account to be the most intensely real and chronological document ever penned, such an apology can be accepted only when shown to be sustained by a careful and unbiased examination of the words of Moses himself.

It becomes, therefore, important to discover whether *rakia*, rendered firmament in our version, was employed by the early Hebrews to convey the idea of firmness and solidity, or whether it has been improperly translated to accord with the erroneous science of a much later day.

The word occurs nine times in the first chapter of Genesis; but a careful scrutiny fails to reveal to one without a theory to support any shade of meaning that may not equally well be expressed by *expanse*. The only apparent exception is found in the assertion that the *rakia* divided the waters from the waters. When men began to philosophize, they found, as they thought, a physical absurdity in the idea of a mere *expanse*, sustaining the volume of water which at times descended to deluge the ground. But this, to-day, presents no difficulty, since it is known to every school-boy that no solid arch supports the waters, and that no better word than *expanse* can even now be found in our language to describe that which separates the waters in the sky from those in the sea.

It may, however, be said that although *expanse* is in har-

mony with the actual facts, yet Moses did not know it, and consequently, in accord with the false philosophy of his age, employed *rakia* because it expressed the solidity and firmness which in his opinion really existed.

Such an assertion should be based upon no doubtful evidence. The idea of solidity and firmness should be clearly found in the radical meaning of the word *rakia*, and in its cognates as employed elsewhere. Should this prove to be the case, then we must admit that Moses committed an error; but if, on the contrary, the idea of solidity and firmness should prove to be wanting, then the charge of error, so far as it is based upon the use of that word, entirely fails.

*Rakia* occurs outside of this chapter only eight times. I shall examine each instance. In Dan. xii. 3 we read: "And they that be wise shall shine as the brightness of the stars in the *rakia*." Here, certainly, is no assertion of solidity, nothing to forbid the use of any expression denoting the sky; as, for example, "heaven." When Ezekiel says: "The likeness of the *rakia* was . . . . as the color of the terrible crystal" (Ezek. i. 22), he speaks not of solidity, but only of color. Nor is there any such idea in verse 22: "Under the *rakia* their wings were straight." So in verses 25, 26: "There was a voice from the *rakia* that was over their heads. And above the *rakia* was there the likeness of a throne, as the appearance of a sapphire stone." And again, in x. 1: "In the *rakia* there appeared over them, as it were a sapphire stone, as the appearance of the likeness of a throne."

In none of these is there any idea of solidity necessarily connected with the *rakia*. On the contrary, throughout this mystical imagery there is a careful guarding against it. The prophet says that the *rakia* was glorious in color and appearance; but still it was only in appearance. It was not crystal; it was the color of crystal. It was not a sapphire stone; but over it, or in it, was the appearance of a throne made of sapphire stone. It is probably impossible to reduce this mysterious vision to actual form, harmonizing every detail. Yet in some of its grand outlines we may succeed.

As the prophet stood by the river Chebar a great cloud arose in the north. Out of its midst seemed to come four living creatures. The part of the cloud over their heads glowed in the light emanating from these beings, "like the terrible crystal." They stood below this canopy, with their wings straight, one towards the other. The prophet heard a voice from above it, and, looking up, saw above all, as it were, a throne of sapphire stone, and upon it the figure of a man. In short, the appearance over them was as the brilliancy of that eastern sky. It was the glorious expanse, and was appropriately described by *rakia*, taken in one of its secondary meanings, which will be hereafter discussed.

The word *rakia* occurs elsewhere only twice, both in the Psalms. Ps. xix. 1: "The heavens declare the glory of God, and the *rakia* showeth his handiwork." Here *rakia* is in apposition with heavens, and no more conveys the idea of solidity than would our word "sky." Ps. cl. 1: "Praise him in the *rakia* of his power." Here the same idea occurs as in the previous text. It means no more than "in the heaven of his power." And this recalls Gen. i. 8, where God calls the *rakia* heaven.<sup>1</sup>

It seems to me that from these passages alone the idea of a solid support could never have occurred to minds not pre-occupied with the science of their own subsequent age, when men had begun in an imperfect and blind way to philosophize on the phenomena of nature.

But it may be replied that the idea of solidity and firmness so enters into the radical meaning of the word and its cognates that we are forced to believe that Moses himself thought that there really was a strong, solid arch above the earth, and intended to be so understood. Let us see.

Turning to the lexicon, I find: "רָקַע, the root of *rakia*; to beat, to stamp, to beat out, i.e. to spread out or to expand

<sup>1</sup> Read these two texts in the light of the full meaning of *rakia*, as it will be developed farther on. "In the *rakia* of his power" will be found a weak meaning hitherto unsuspected.

by beating," etc. Cognate with this is "רָקַק, to beat or pound, especially to spread out by beating, to beat thin."

Then there is, "רִקְעִים, plates or laminae"; "רִקְיָה, a thin cake or wafer"; "רִקְוָה, thinness, something thin; hence the temple, or part of the head"; "רָק, thin, lean, said of cattle"; "רִקְוָה, to spice [the primary idea seems to lie in the pounding of the aromatic substances]; hence רִקְוָה, spice, and רִקְוָה, a perfumer," from the same idea of pounding up the aromatic substances.

Thus far, at least, there is not the slightest shade of meaning denoting solidity or firmness involved in *rakia* itself, or in any word allied to it. The verb רָקַק occurs eleven times. It is unnecessary to quote them, as they can readily be found in any Hebrew Concordance.<sup>1</sup> I will only say that in all cases, as far as I can discover, *rakia* and its cognates are used to denote thinness or expansion, almost always associated with more or less noise and violence.

The total absence from the Hebrew word of the idea of solidity, and firmness which is the very essence of a firmament, as I have remarked, is not in harmony with the statements in Bible dictionaries and lexicons. This greatly perplexed me at first; but when I turned to the passages referred to as proofs, my perplexity was turned to surprise; for in nearly all that were quoted as evidence of the Hebrews' belief in a firmament the word in question is not to be found. The reader can see for himself, and must make his own explanation.

In Smith's Bible Dictionary I find the following: "Heaven; there are four Hebrew words thus rendered in the Old Testament. 1st, *Rakia*; a solid expanse. Through its open lattices, Gen. vii. 11; 2 Kings vii. 2, 19, or doors, Ps. lxxviii. 23 the dew and snow and hail are poured upon the earth, Job xxxviii. 22, 37. This firm vault Job describes as being strong as a molten looking-glass, Job xxxvii. 18" [In not one of these seven texts does *rakia* occur].

"It is transparent as a sapphire and splendid as crystal,

<sup>1</sup> See note at close of this Article, p. 469.

Dan. xii. 3; Ezek. i. 22 [I have discussed these a few paragraphs back]; Ex. xxiv. 10 [*rakia* not found here]; over which rests the throne of God, Isa. lxvi. 1 [no *rakia*]; and Ezek. i. 26 [already discussed a few paragraphs back]; and which is opened for the descent of angels or for prophetic vision, Gen. xxviii. 17; Ezek. i. 1 [found in neither of these]; In it, like gems or golden lamps, the stars are fixed, <sup>1</sup> Gen. i. 14, 19 [found here, and already discussed]; and the whole magnificent, immovable structure, Jer. xxxi. 37 [*rakia* not here]; "as its pillars or strong foundations, Ps. xviii. 7; 2 Sam. xxii. 8; Job xxiv. 11" [*rakia* in none of these].

The writer, the Rev. Frederick W. Farrar, late Fellow of Trinity College, Cambridge, makes a clear case for a solid support or firmament, until one finds that in fifteen of his proof-texts (the only ones that have any bearing upon the question of solidity), *rakia* does not occur. Nothing can be learned from them as to the use of this word. Whatever they teach as to other words, it is clear that they tell us nothing about *rakia*.

He adds: "In the Authorized version, heaven and heavens are used to render not only רָקִיעַ, but also שָׁמַיִם, שָׁמַיִם, and שָׁמַיִם, for which reason we have thrown together under the former word the chief features ascribed by Jewish writers to this portion of the universe." Unfortunately for this explanation, heaven and heavens are not used in a single instance in the Authorized version to render רָקִיעַ. In most cases *shamayim* is the word so translated. Whether the Hebrews attached the idea of solidity to that does not concern our present inquiry. It will suffice to say that it means literally "heights," and there is no more reason for thinking that they took literally such expressions as "the windows of heaven" (not of the *rakia*, remember, but of the *shamayim*) any more than they did that verse in Job which speaks of "the bottles of heaven" (also *shamayim*).

From all this it is clear, I think, that the science which

<sup>1</sup> "In it, like gems or golden lamps, the stars are fixed." Moses makes no such statement. He simply says, God made the stars, and placed them in the expanse. It would be so much better not to put words into the account.

demanded crystalline spheres to uphold the heavenly bodies was of a much later date than the time in which it was written: "He stretcheth<sup>1</sup> the north over the empty place, and hangeth the earth upon nothing."

What, then, is the meaning intended to be conveyed by *rakia*? From a careful consideration of all the places where this word and its cognates occur, it seems that the radical idea of the verb is (a) to spread out with violence and noise, or, rather, it is to make thin in that manner. Its sound is indicative of its meaning, a thing common in all languages; as, for example, we speak of the buzzing of a saw, the whizzing of an arrow, etc. *Rak-a* or its cognate *rak-kak* represents to the ear very closely the noise or racket of the mechanic beating or hammering thin a piece of metal, a sound more common in the times before the process of rolling out metal had been invented. It is noise and violence, not firmness, nor solidity. Then succeeds the more abstract idea, (b) an expanding or thinning produced by violent action accompanied by loud noise. Lastly, (c) there is the idea of mere expanse, without any particular reference to the violence or noise. But I cannot discern the least trace of firmness or solidity in this word or any of its cognates. When the gold was beaten into thin plates (Ex. xxxix. 3), nothing whatever is indicated as to their possessing either of those qualities. Most probably they were very thin. They may have been like gold foil.

Such changes of meaning are common in all languages. We may say: "Casting iron is very hard work." The hearer at once thinks of the intense heat of the furnace, as well as the severe muscular labor of the men engaged. If we say: "Casting iron requires much skill," he will think of the

<sup>1</sup> It is an interesting fact that רָקַע is not employed here. The reason is obvious: there is no possible allusion, near or remote, to, or connection with, the noise and violence which help to make the radical meaning of that word. The distinction is nice, but eminently philosophical, and in the light of present knowledge perfectly intelligible. Every fact known to science was infinitely better known to God than than it ever can be to us. As far as he is concerned, an anachronism is impossible.

proper mixing of different qualities of the metal, of the best methods of melting, and the means of determining the proper temperature. But if we say: "The boat is loaded with castings," he thinks only of the results of that operation, and although the word "casting" carries with it a suggestion of the heat and labor, yet he will not think of them.

The changes in the meaning of *rakia* are analogous to these. It is only at the present day, when science has revealed the scene at the time when the first deposition and separation of the waters occurred, that it has become possible to grasp the wealth of meaning in that word *rakia*.

This is the story which geology tells: At a distance back in eternity whose remoteness our arithmetic is powerless to compute, but after the earth had ceased to be self-luminous, and a somewhat lower temperature had changed the invisible vapor of the future oceans into dense masses of clouds hundreds of miles in thickness, the time came for the second divine fiat. In the language of science, the temperature had fallen to the point at which the waters began to condense and descend upon the yet hot earth-surface. Think of the noise, the violence, ten million Niagaras pouring down at once into as many Etnas. No pencil can paint the scene; but we may imagine something of the hot rocks rent by the sudden cooling, the noise of the falling oceans, the added uproar of such electric disturbances as never will be known again until the "crack of doom." In throes such as these began the clearing of our atmosphere, perfected through aeons of time, until the ocean-holding cloud was thinned down to those that now float in the upper air; the thick darkness caused by the dense masses of primeval misty vapors that rested on the surface of the earth grew less and less, until at last the light of the sun passed freely through, and a transparent expanse divided the waters from the waters. When in after ages there came a seer to record what had taken place, we may imagine him searching to the foundation his mother-tongue to find the word which should best depict the scene. Guided by the All-Wise, he selected *rakia*,

a word which no language can equal in power of conveying the threefold idea of an expanse produced by violent physical action and accompanied by noise. "Expanse," the best word our English can give, is poor indeed in comparison.

In these senses (*a, b, c*) the false philosophy of the Septuagint disappears, and in its place is absolute truth. If the texts above quoted containing this word be read in this light, we shall find dominant the secondary idea (*c*), i.e. an expanse only, without reference to the mode of its formation.

In the first chapter of Genesis all the meanings are found. In verses 6 and 7 it is: "Let there be a thinning or expanding in the midst of the waters," carrying with the word an echo of the violence and noise of the process. In verse 8 the writer speaks of the expanse after the noise and tumult had subsided. It was the quiet, open expanse extending through and beyond all limits of vision, which God called heaven.

Again, in verses 14, 15, 17, and 20 occurs the same use as in verse 8. It is the completed expanse of to-day, carrying with it, save in the suggestive sound of the word, no reminiscence of the primeval throes which accompanied its birth.

This combined idea of thinning and expansion, as here applied, comes near to that conveyed by our words, "an open space." But *rakia*, in its intense truthfulness, describes exactly the fact. To it no captious criticism can contrive objections; whereas, had Moses said, Let there be an open space in the midst of the waters, we should have been told that such an expression was clear proof of his ignorance of the depths of science which the future was to reveal; for all philosophy teaches that the apparently open space is absolutely full, and that, so far as we know, there is nowhere in the universe a vacuum. Thus that which has been claimed as an argument against the truth of the Mosaic account is found, when tested in the light of science, to be a witness in its favor.

Considering the general belief at the time of the apostles in a crystalline arch over the earth to support the heavenly bodies, it is very remarkable that no expression is used

by them indicating such a thing. The writers of the New Testament were familiar with the Septuagint, and the use in it of *στερέωμα*; yet they carefully avoid the word. Indeed, it occurs but once in the entire New Testament; and then it is applied to the faith of the early believers, in the expression, "the steadfastness of your faith" (Col. ii. 5).

I cannot close this Article without speaking of a text often quoted by friends, as well as foes, to show that the Hebrews, or at least the countrymen of Job, did believe in a solid crystalline arch. It occurs in Job xxxvii. 18. Our version reads: "Hast thou with him spread out the sky, which is strong, as a molten looking-glass? The word here rendered *strong* does not mean strong in the sense of solid or firm, but, as its derivation shows, strong in the sense of securely tied or fastened. It is the idea of binding up to its place securely, not by solid mason-work, nor even by nails, but by bands and ligatures. Molten here is used in the sense of melted or fluid. I would suggest the following translation as more literal: "Hast thou with him spread out the securely fastened sky, as it were a liquid mirror?"

If the speaker had really desired to compare the sky to something solid and firm, he would never have compared it to a molten (in the sense of cast, as cast brass, for example) mirror. A hammered mirror would have been stiffer than one made by casting. Indeed, if both kinds were used, the latter was the softer and more yielding. We have the notion of stiffness and firmness in connection with cast metal from our familiarity with cast iron. I doubt if Job knew anything of that metal. Silver, brass, or other metal, except iron, is softest when cast, and becomes firm by hammering.

Elihu compares the sky (the clouds, literally) reflecting the brilliancy of an eastern sun to a glowing molten (melted) mirror, somehow securely held up by the Almighty. He mingles the thought with that, so natural to dwellers in that land, of a canopy stretched out overhead, and, in tent-style, tied up with bands and cords. He says to Job: "Are you so great and strong that you can do that?" Pointing to the

bright clouds, he asks: "Can you with him spread out these clouds, so securely held in their places, and sending back the light as if they were a mirror of glowing, melted metal?"

I submit that this text has done forced duty in the service of infidelity long enough, and that henceforth it be permitted to speak to us as, I doubt not, it spoke to Job.

One more remark is due to the common version. No one has the right to draw from the usual rendering, even if it were correct, any argument against the inspiration of the Bible. Job's three friends who spoke first were specially rebuked. Elihu escaped direct reproof; but we have no intimation that their philosophy was inspired any more than their theology. No more responsibility attaches to the Bible for their sayings than for those of Pharaoh or others whose words are recorded. The largest inference that can be justly drawn is, that if the common translation is correct, Job and his friends had erroneous views of the firmament, as hundreds of good men have had since. The rendering, however, which I have given relieves the account even of this.

NOTE.—According to the Hebraist's Vade Mecum, the verb  $\text{פָּרַץ}$  occurs only eleven times in the whole Hebrew Bible, all of which I quote as translated in our common version:

1. Ezek. vi. 11, "Smite with thy hand and *stamp* with thy foot."
2. Ezek. xxv. 6, "Because . . . . thou hast *stamped* with the feet."
3. 2 Sam. xxii. 43, "I did stamp them as the mire of the street, and *did spread them abroad*."
4. Isa. xl. 19, "The goldsmith *spreadeth it over* with gold."
5. Isa. xlii. 5, "He that *spread forth* the earth."
6. Isa. xlv. 24, "That *stretcheth forth* the heavens (*shamayim*) alone; that *spreadeth abroad* the earth by myself."
7. Ps. cxxxvi. 6, "To him that *stretcheth out* the earth."
8. Ex. xxxix. 3, "They *did beat into thin plates* the gold."
9. Num. xvii. 4 (xvi. 39), "And they were made *broad plates*," etc.
10. Jer. x. 9, Silver *spread into plates* is brought from Tarshish."
11. Job xxxvii. 18, "Hast thou with him *spread out* the sky?" etc.

An examination of the above reveals several interesting facts. In 1 and 2 the idea seems to be purely the *noise* made by stamping with the foot either in despair or in exultation, and the word  $\text{פָּרַץ}$  is justly rendered in the Septuagint by  $\psi\phi\phi\acute{\epsilon}\omega$ , and with no reference to the other

idea of spreading out or expanding. In 3 there is no reference to the sound, but only to the spreading out; so in 4, where  $\text{רָקַע}$  is translated by  $\text{περιχυσσω}$ . In 5, 6, 7 it may be that the allusion is only to the spreading out; but to the ear of one who with the author believes that the Bible was in a very real sense indited by him who was himself the Maker of that first  $\text{רָקַע}$ , there is in the use of the word here an echo of the tumultuous deafening violence when first the down-pouring oceans beat upon the hot lava crust whose ridges and peaks then formed the rough face of the earth. Whether this be so may not be as clear to others; but I think all will agree that our English version, *to spread abroad or forth*, or *to stretch out*, is reasonably near the original; while the  $\text{σταπέω}$  of the Septuagint is a gross mistranslation, or, rather, it is no translation at all, but the substitution of another idea to accord with the philosophy of their own day.

With the same unhappy prepossession in favor of solidity, the Seventy have rendered this word  $\text{רָקַע}$  in 11 by  $\text{σταπέω}$ , as well as in 5, 6, 7.

In 8, 9, 10 there is the proper meaning of beating into *thin* plates, not plates *thick* and *strong*.

It is curious to note that this word has always its proper rendering in the Septuagint, except where the philosophy of that day is concerned. Bearing this in mind, I am led to the conclusion that these texts confirm what has been said in the previous Article about the signification of  $\text{רָקַע}$ .