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JOB 28: 1 "Surely there is a mine for silver, and a place for gold which they refine.

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Job, in showing the vanity of human pursuits in reference to genuine wisdom, mentions mining for and refining gold and silver, Job 28:1; iron and other minerals, Job 28:2; the difficulties of mining, Job 28:3, Job 28:4; produce of grain for bread from the earth, and stones of fire from under it, Job 28:5. He speaks of precious stones and gold dust, Job 28:6; of the instinct of fowls and wild beasts in finding their way, Job 28:7, Job 28:8; and of the industry and successful attempts of men in mining and other operations, Job 28:9-11: but shows that with all their industry, skill, and perseverance, they cannot find out true wisdom, Job 28:12; of which he gives the most exalted character, Job 28:13-22; and shows that God alone, the fountain of wisdom, knows and can teach it, Job 28:24-27; and in what this true wisdom consists, Job 28:28.

#### Verse 1

Surely there is a vein for the silver - This chapter is the oldest and finest piece of natural history in the world, and gives us very important information on several curious subjects; and could we ascertain the precise meaning of all the original words, we might, most probably, find out allusions to several useful arts which we are apt to think are of modern, or comparatively modern, invention. The word מוצא *motsa*, which we here translate vein, signifies literally, a going out; i.e., a mine, or place dug in the earth, whence the silver ore is extracted. And this ore lies generally in veins or loads, running in certain directions.

A place for gold where they fine it - This should rather be translated, A place for gold which they refine. Gold ore has also its peculiar mine, and requires to be refined from earthy impurities.

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JOB 28: 2 Iron is taken out of the earth, and copper is smelted out of the ore.

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#### Verse 2

Iron is taken out of the earth - This most useful metal is hidden under the earth, and men have found out the method of separating it from its ore.

Brass is molten out of the stone - As brass is a factitious metal, copper must be the meaning of the Hebrew word נחושא *nechusah*: literally, the stone is poured out for brass. If we retain the common translation, perhaps the process of making brass may be that to which Job refers; for this metal is formed from copper melted with the stone calamine; and thus the stone is poured out to make brass.

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JOB 28: 3 Man sets an end to darkness, and searches out, to the furthest bound, the stones of obscurity and of thick darkness.

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#### Verse 3

He setteth an end to darkness - As it is likely Job still refers to mining, the words above may be understood as pointing out the persevering industry of man in penetrating into the bowels of the earth, in order to seek for metals and precious stones. Even the stones that lay hidden in the bowels of the earth he has digged for and brought to light, and has penetrated in directions in which the solar light could not be transmitted; so that he appears to have gone to the regions of the shadow of death. Mr. Good translates: "Man delveth into the region of darkness; and examineth, to the uttermost limit, the stones of darkness and death-shade."

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JOB 28: 4 He breaks open a shaft away from where people live. They are forgotten by the foot. They hang far from men, they swing back and forth.

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#### Verse 4

The flood breaketh out from the inhabitant - This passage is very difficult. Some think it refers to mining; others to navigation. If it refer to the former, it may be intended to point out the waters that spring up when the miners have sunk down to a considerable depth, so that the mine is drowned, and they are obliged to give it up. Previously to the invention of the steam-engine this was generally the case: hence ancient mines may be reopened and worked to great advantage, because we have the means now to take off the water which the ancient workers had not. When, therefore, floods break out in those shafts, they are abandoned; and thus they are,

Forgotten of the foot - No man treads there any more. The waters increase *לדל* dallu, they are elevated, they rise up to a level with the spring, or till they meet with some fissure by which they can escape; and thence *מאנוש נעו* meenosh nau, they are moved or carried away from men; the stream is lost in the bowels of the earth.

Mr. Peters thinks that both this verse, and Job 9:26, refer to navigation, then in a state of infancy; for the sea is not so much as mentioned; but *נחל* nachal, a torrent or flood, some river or arm of the sea perhaps of a few leagues over, which, dividing the several nations, must interrupt their hospitality and commerce with each other, unless by the help of navigation. According to this opinion the verse may be translated and paraphrased thus: The flood-rivers and arms of the sea - separateth from the stranger, *ג מעם* meim gar, divides different nations and peoples: they are forgotten of the foot - they cannot walk over these waters, they must embark in vessels; then they dwindle away, *לדל* dallu, from the size of men, that is, in proportion to their departure from the land they lessen on the sight; *נעו* nau, they are tossed up and down, namely, by the action of the waves. This receives some countenance from the psalmist's fine description, Psa 107:26, Psa 107:27, of a ship in a rough sea: They mount up to heaven; they go down again to the depths: their soul is melted because of trouble. They reel to and fro, *ינעו* yanuu, (the same word as above), they stagger like a drunken man. Mr. Good's translation is singular: -

He breaketh up the veins from the matrice,

Which, though thought nothing of under the foot,

Are drawn forth, are brandished among mankind.

This learned man thinks that it applies solely to mining, of which I cannot doubt; and therefore I adopt the first interpretation: but as to agreement among translators, it will be sought in vain. I shall

just add Coverdale: With the ryver of water parteth he a sunder the straunge people, that knoweth no good neighbourheade; such as are rude, unmannerly, and boysterous.

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JOB 28: 5 As for the earth, out of it comes bread; Underneath it is turned up as it were by fire.

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#### Verse 5

The earth, out of it cometh bread - Or the earth, מִמֶּנָּה mimmennah, from itself, by its own vegetative power, it sends out bread, or the corn of which bread is made.

And under it is turned up as it were fire - It seems as if this referred to some combustible fossil, similar to our stone coal, which was dug up out of the earth in some places of Arabia. The Chaldee gives a translation, conformable to a very ancient opinion, which supposed the center of the earth to be a vast fire, and the place called hell. "The earth from which food proceeds, and under which is gehenna, whose cold snow is converted into the likeness of fire; and the garden of Eden, which is the place whose stones are sapphires," etc. The Vulgate has, "The land from which bread has been produced has been destroyed by fire." If this be the meaning of the original, there is probably an allusion to the destruction of Sodom and Gomorrah; and the seventh and eighth verses may be supposed to refer to that catastrophe, there being no place left tangible or visible where those cities once stood: neither fowl nor beast could discern a path there, the whole land being covered with the lake Asphaltites.

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JOB 28: 6 Sapphires come from its rocks. It has dust of gold.

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#### Verse 6

The stones - the place of sapphires - In the language of mineralogists, the gangue, matrix, or bed in which the sapphire is found. For a description of this stone, see on Job 28:16 (note).

Dust of gold - Or rather, gold dust.

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JOB 28: 7 That path no bird of prey knows, neither has the falcon's eye seen it.

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#### Verse 7

There is a path which no fowl knoweth - The instinct of birds is most surprising. They traverse vast forests, etc., in search of food, at a great distance from the place which they have chosen for their general residence; and return in all weathers, never missing their track: they also find their own nest without ever mistaking another of the same kind for it. Birds of passage, also, after tarrying in a foreign clime for six or seven months, return to their original abode over kingdoms and oceans, without missing their way, or deviating in the least from the proper direction; not having a single object of sight to direct their peregrinations. In such cases even the keen scent of the vulture, and the quick, piercing sight of the eagle, would be of no use. It is possible that Job may here refer to

undiscovered mines and minerals; that notwithstanding man had already discovered much, yet much remained undiscovered, especially in the internal structure and contents of the earth. Since his time innumerable discoveries have been made; and yet how little do we know! Our various conflicting and contradictory theories of the earth are full proofs of our ignorance, and strong evidences of our folly. The present dogmatical systems of geology itself are almost the ne plus ultra of brain-sick visionaries, and system-mad mortals. They talk as confidently of the structure of the globe, and the manner and time in which all was formed, as if they had examined every part from the center to the circumference; though not a soul of man has ever penetrated two miles in perpendicular depth into the bowels of the earth. And with this scanty, defective knowledge, they pretend to build systems of the universe, and blaspheme the revelation of God! Poor souls! All these things are to them a path which no fowl knoweth, which the vulture's eye hath not seen, on which the lion's whelps have not trodden, and by which the fierce lion have not passed. The wisdom necessary to such investigations is out of their reach; and they have not simplicity of heart to seek it where it may be found. One of the Chaldee Targums gives a strange turn to this verse: - "The path of the tree of life Sammael, (Satan), though flying like a bird, hath not known; nor hath the eye of Eve beheld it. The children of men have not walked in it; nor hath the serpent turned towards it."

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JOB 28: 8 The proud animals have not trodden it, nor has the fierce lion passed by there.

JOB 28: 9 He puts his hand on the flinty rock, and he overturns the mountains by the roots.

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#### Verse 9

He putteth forth his hand upon the rock, - Still there appears to be a reference to mining. Man puts his hand upon the rock, he breaks that to pieces, in order to extract the metals which it contains.

He overturneth the mountains - He excavates, undermines, or digs them away, when in search of the metals contained in them: this is not only poetically, but literally, the case in many instances.

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JOB 28: 10 He cuts out channels among the rocks. His eye sees every precious thing.

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#### Verse 10

He cutteth out rivers among the rocks - He cuts canals, adits, etc., in the rocks, and drives levels under ground, in order to discover loads or veins of ore. These are often continued a great way under ground; and may be poetically compared to rivers, channels, or canals.

His eye seeth every precious thing - He sinks those shafts, and drives those levels, in order to discover where the precious minerals lie, of which he is in pursuit.

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JOB 28: 11 He binds the streams that they don't trickle. The thing that is hidden he brings out to light.

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## Verse 11

He bindeth the floods - Prevents the risings of springs from drowning the mines; and conducts rivers and streams from their wonted course, in order to bring forth to light what was hidden under their beds. The binding or restraining the water, which, at different depths, annoys the miner, is both difficult and expensive: in some cases it may be drawn off by pipes or canals into neighboring water courses; in others, it is conducted to one receptacle or reservoir, and thence drawn off. In Europe it is generally done by means of steam-engines. What method the ancients had in mining countries, we cannot tell; but they dug deep in order to find out the riches of the earth. Pliny says, nervously, *Imus in viscera terrae; et in sede manium opes quaerimus*. "We descend into the bowels of the earth; and seek for wealth even in the abodes of departed spirits." The manes or ghosts of the dead, or spirits presiding over the dead, were supposed to have their habitation in the center of the earth; or in the deepest pits and caves. Ovid, speaking of the degeneracy of men in the iron age, *Met. lib. i., ver. 137*, says: -

*Nec tantum segetes alimentaue debita dives*

*Poscebatur humus; sed itum est in viscera terrae:*

*Quasque reconderat, Stygiisque admoverat umbris,*

*Effodiuntur opes, irritaenenta malorum.*

*Jamque nocens ferrum, ferroque nocentius aurum*

*Prodierat: prodit bellum, quod pugnat utroque;*

*Sanguineaue manu crepitantia concutit arma.* "Nor was the ground alone required to bear

Her annual income to the crooked share:

But greedy mortals, rummaging her store,

Digg'd from her entrails first the precious ore;

And that alluring ill to sight display'd,

Which, next to hell, the prudent gods had laid.

Thus cursed steel, and more accursed gold,

Gave mischief birth, and made that mischief bold;

And double death did wretched man invade,

By steel assaulted, and by gold betray'd."

Dryden.

By binding the floods from overflowing, some have supposed that there is an allusion to the flux and reflux of the sea. In its flowing it is so bound, has its bounds assigned by the Most High, that it does not drown the adjacent country; and in its ebbing the parts which are ordinarily covered with the water are brought to view.

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JOB 28: 12 "But where shall wisdom be found? Where is the place of understanding?"

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 Verse 12

But where shall wisdom be found? - It is most evident that the terms wisdom and understanding are used here in a widely different sense from all those arts and sciences which have their relation to man in his animal and social state, and from all that reason and intellect by which man is distinguished from all other animals. Now as these terms חכמה chochmah, wisdom, and בינה binah, understanding or discernment, are often applied in the sacred writings in their common acceptations, we must have recourse to what Job says of them, to know their meaning in this place. In Job 28:28, he says, The fear of the Lord is Wisdom, and to depart from evil is Understanding. We know that the fear of the Lord is often taken for the whole of that religious reverence and holy obedience which God prescribes to man in his word, and which man owes to his Maker. Hence the Septuagint render חכמה chochmah, wisdom, by θεοσεβια, Divine worship; and as to a departure from evil, that is necessarily implied in a religious life, but it is here properly distinguished, that no man might suppose that a right faith, and a proper performance of the rites of religious worship, is the whole of religion. No. They must not only worship God in the letter, but also in the spirit; they must not only have the form, but also the power of godliness: and this will lead them to worship God in spirit and truth, to walk in his testimonies, and abstain from every appearance of evil; hence they will be truly happy: so that wisdom is another word for happiness. Now these are things which man by study and searching could never find out; they are not of an earthly origin. The spirit of a man, human understanding, may know the things of a man - those which concern him in his animal and social state: but the Spirit of God alone knows the things of God; and therefore Wisdom - all true religion - must come by Divine revelation, which is the mode of its attainment. Wisdom finds out the thing, and understanding uses and applies the means; and then the great end is obtained.

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JOB 28: 13 Man doesn't know its price; Neither is it found in the land of the living.

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## Verse 13

Man knoweth not the price thereof - It is of infinite value; and is the only science which concerns both worlds. Without it, the wisest man is but a beast; with it, the simplest man is next to an angel.

Neither is it found in the land of the living - The world by wisdom, its wisdom, never knew God. True religion came by Divine revelation: that alone gives the true notion of God, his attributes, ways, designs, judgments, providences, etc., whence man came, what is his duty, his nature, and his end. Literature, science, arts, etc., etc., can only avail man for the present life, nor can they contribute to his true happiness, unless tempered and directed by genuine religion.

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JOB 28: 14 The deep says, 'It isn't in me.' The sea says, 'It isn't with me.'

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## Verse 14

The depth saith, It is not in me - Men may dig into the bowels of the earth, and there find gold, silver, and precious stones; but these will not give them true happiness.

The sea saith, It is not with me - Men may explore foreign countries, and by navigation connect as it were the most distant parts of the earth, and multiply the comforts and luxuries of life; but every voyage and every enjoyment proclaim, True happiness is not here.

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JOB 28: 15 It can't be gotten for gold, neither shall silver be weighed for its price.

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Verse 15

It cannot be gotten for gold - Genuine religion and true happiness are not to be acquired by earthly property. Solomon made gold and silver as plentiful as the stones in Jerusalem, and had all the delights of the sons of men, and yet he was not happy; yea, he had wisdom, was the wisest of men, but he had not the wisdom of which Job speaks here, and therefore, to him, all was vanity and vexation of spirit. If Solomon, as some suppose, was the author of this book, the sentiments expressed here are such as we might expect from this deeply experienced and wise man.

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JOB 28: 16 It can't be valued with the gold of Ophir, with the precious onyx, or the sapphire.

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Verse 16

The gold of Ophir - Gold is five times mentioned in this and Job 28:17 and Job 28:19, and four of the times in different words. I shall consider them all at once.

1. סגור Segor, from סגר sagar, to shut up. Gold. in the mine, or shut up in the ore; native gold washed by the streams out of the mountains, etc.; unwrought gold. Job 28:16
2. כתם Kethem, from כתם catham, to sign or stamp: gold made current by being coined, or stamped with its weight or value; what we would call standard or sterling gold. Job 28:17
3. זהב Zahab, from זהב zahab, to be Lear, bright, or resplendent: the untarnishing metal; the only metal that always keeps its lustre. But probably here it means gold chased, or that in which precious stones are set; burnished gold.
4. פז Paz, from פז paz, to consolidate, joined here with כלי keley, vessels, ornaments, instruments, etc.: hammered or wrought gold; gold in the finest forms, and most elegant utensils. This metal is at once the brightest, most solid, and most precious, of all the metals yet discovered, of which we have no less than forty in our catalogues. In these verses there are also seven kinds of precious stones, etc., mentioned: onyx, sapphire, crystal, coral, pearls, rubies, and topaz.

These I shall also consider in the order of their occurrence. Job 28:16

1. שׁהם shoham, the Onyx, from ονυξ, a man's nail, hoof of a horse, because in color it resembles both. This stone is a species of chalcedony; and consists of alternate layers of white and brown chalcedony, under which it generally ranges. In the Vulgate it is called sardonyx, compounded of sard and onyx. Sard is also a variety of chalcedony, of a deep reddish-brown color, of which, and alternate layers of milk-white chalcedony, the sardonyx consists. A most beautiful block of this mineral sardonyx, from Iceland, now lies before me.

2. ספיר sappir, the Sapphire stone, From ספר saphar, to count, number; probably from the number of golden spots with which it is said the sapphire of the ancients abounded. Pliny says, Hist. Nat. lib. xxxvii., cap. 8: Sapphirus aureis punctis collucet: coeruleae et sapphiri, raraque cum purpura: optimae apud Medos, nusquam tame perlucidae. "The sapphire glitters with golden spots. Sapphires are sometimes of an azure, never of a purple color. Those of Media are the best, but there are none transparent." This may mean the blood stones; but see below. What we call the sapphire is a variety of the perfect corundum; it is in hardness inferior only to the diamond. It is of several colors, and from them it has obtained several names.

1. The transparent or translucent is called the white sapphire.
2. The blue is called the oriental sapphire.
3. The violet blue, the oriental amethyst.
4. The yellow, the oriental topaz.
5. The green, the oriental emerald.
6. That with pearly reflections, the opalescent sapphire.
7. When transparent, with a pale, reddish, or bluish reflection, it is called the girasol sapphire.
8. A variety which, when polished, shows a silvered star of six rays in a direction perpendicular to the axis, is called asteria.

When the meaning of the Hebrew word is collated with the description given by Pliny, it must be evident that a spotted opaque stone is meant, and consequently not what is now known by the name sapphire. I conjecture, therefore, that lapis lazuli, which is of a blue color, with golden-like spots, formed by pyrites of iron, must be intended.

The lapis lazuli is that from which the beautiful and unfading color called ultramarine is obtained. Job 28:17

3. זכוכית zechuchith, Crystal, or glass, from זכה zachah, to be pure, clear, transparent. Crystal or crystal of quartz is a six-sided prism, terminated by six-sided pyramids. It belongs to the siliceous class of minerals: it is exceedingly clear and brilliant, insomuch that this property of it has become proverbial, as clear as crystal. Job 28:18

4. ראמות ramoth, Coral, from ראם raam, to be exalted or elevated; probably from this remarkable property of coral, "it always grows from the tops of marine rocky caverns with the head downwards." Red coral is found in the Mediterranean, about the isles of Majorca and Minorca, on the African coast, and in the Ethiopic ocean.

5. גביש gabish, Pearls, from גבש gabash, in Arabic, to be smooth, to shave off the hair; and hence גביש gabish, the pearl, the smooth round substance; and also hail or hailstones, because of their resemblance to pearls. The pearl is the production of a shell-fish of the oyster kind, found chiefly in the East Indies, and called berberi; but pearls are occasionally found in the common oyster, as I have myself observed, and in the muscle also. They are of a brilliant sparkling white, perfectly round in general, and formed of coats in the manner of an onion. Out of one oyster I once took six pearls. When large, fine, and without spots, they are valuable. I have seen one that formed the whole body of a Hindoo idol, Creeshna, more than an inch in length, and valued at 300 guineas.



6. פנינים peninim, Rubies, from פנה panah, he turned, looked, beheld. The oriental ruby is blood-red, rose-red, or with a tinge of violet. It has occasionally a mixture of blue, and is generally in the form of six-sided prisms. It is a species of the sapphire, and is sometimes chatoyant in its appearance, i.e., has a curious kind of reflection, similar to the cat's eye: and as this is particularly striking, and changes as you turn the stone, hence probably the name peninim, which you derive from פנה panah, to turn, look, behold, etc. But some learned men are of opinion that the magnet or loadstone is meant, and it is thus called because of the remarkable property it has of turning north and south. And this notion is rendered the more likely, because it agrees with another word in this verse, expressive of a different property of the magnet, viz., its attractive influence: for the Hebrew words מפנינים ממשך חכמה meshech chochmah mippeninim, which we render, The price of wisdom is above rubies, is literally, The Attraction of wisdom is beyond the peninim, the loadstone; for all the gold, silver, and precious stones, have strong influence on the human heart, attracting all its passions strongly; yet the attraction of wisdom - that which insures a man's happiness in both worlds - is more powerful and influential, when understood, than all of these, and even than the loadstone, for that can only attract iron; but, through desire of the other, a man, having separated himself from all those earthly entanglements, seeketh and intermeddleth with All Wisdom. The attractive property of the loadstone must have been observed from its first discovery; and there is every reason to believe that the magnet and its virtues were known in the East long before they were discovered in Europe.

7. פטדה pitdah, the Topaz. This word occurs only in Exo 28:17; Exo 39:10; Eze 28:13, and in the present place; in all of which, except that of Ezekiel, where the Septuagint is all confusion, the Septuagint and Vulgate render the word always τριάζιον, topazius, the Topaz. This stone is generally found in a prismatic form, sometimes limpid and nearly transparent, or of various shades of yellow, green, blue, lilac, and red. I have thus given the best account I can of the stones here mentioned, allowing that they answer to the names by which we translate them. But on this point there is great uncertainty, as I have already had occasion to observe in other parts of this work. Beasts, birds, plants, metals, precious stones, unguents, different kinds of grain, etc., are certainly mentioned in the sacred writings; but whether we know what the different Hebrew terms signify, is more than we can certainly affirm. Of some there is little room to doubt; of others conjecture must in the present state of our knowledge, supply the place of certainty. See Philip's Elementary Introduction to Mineralogy; an accurate work, which I feel pleasure in recommending to all students in the science.

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JOB 28: 17 Gold and glass can't equal it, neither shall it be exchanged for jewels of fine gold.

JOB 28: 18 No mention shall be made of coral or of crystal. Yes, the price of wisdom is above rubies.

JOB 28: 19 The topaz of Ethiopia shall not equal it, Neither shall it be valued with pure gold.

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#### Verse 19

The topaz of Ethiopia - The country called Cush, which we call Ethiopia, is supposed to be that which extends from the eastern coast of the Red Sea, and stretches towards Lower Egypt. Diodorus Siculus says that the topaz was found in great abundance, as his description intimates, in an island in the Red Sea called Ophiodes, or the isle of serpents, Hist. lib. iii., p. 121. His account is curious, but I greatly doubt its correctness; it seems too much in the form of a legend: yet the reader may consult the place. See also Clarke on Job 28:16 (note).

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JOB 28: 20 Where then does wisdom come from? Where is the place of understanding?

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Verse 20

Whence then cometh wisdom? - Nearly the same words as in Job 28:12 (note), where see the note.

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JOB 28: 21 Seeing it is hidden from the eyes of all living, and kept close from the birds of the sky.

JOB 28: 22 Destruction and Death say, 'We have heard a rumor of it with our ears.'

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Verse 22

Destruction and death say, We have heard the fame thereof - אַבְדּוֹן וּמוֹת Abaddon vamaeveth, the destroyer, and his offspring death. This is the very name that is given to the devil in Greek letters Αβαδδων, Rev 9:11, and is rendered by the Greek word Απολλυω γ , Apollyon, a word exactly of the same meaning. No wonder death and the devil are brought in here as saying they had heard the fame of wisdom, seeing Job 28:28 defines it to be the fear of the Lord, and a departure from evil; things point blank contrary to the interests of Satan, and the extension of the empire of death.

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JOB 28: 23 "God understands its way, and he knows its place.

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Verse 23

God understandeth the way thereof - It can only be taught by a revelation from himself. Instead of הִבִּין hebin, understandeth, six MSS. have הִכִּין hechin, disposed or established. This reading is also supported by the Septuagint; ὁ Θεὸς εὖ συνεστήσεν αὐτῆς ὁδόν, "God hath well established her way:" falsely rendered bene cognovit, hath well known, in the Latin version of the Septuagint in the London Polyglot; but bene constituit, hath well established, in the Complutensian, Antwerp, and Paris Polyglots.

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JOB 28: 24 For he looks to the ends of the earth, and sees under the whole sky.

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Verse 24

For he looketh to the ends of the earth - His knowledge is unlimited, and his power infinite.

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JOB 28: 25 He establishes the force of the wind. Yes, he measures out the waters by measure.

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## Verse 25

To make the weight for the winds - God has given an atmosphere to the earth, which, possessing a certain degree of gravity perfectly suited to the necessities of all animals, plants, vegetables, and fluids, is the cause in his hand of preserving animal and vegetative life through the creation; for by it the blood circulates in the veins of animals, and the juices in the tubes of vegetables. Without this pressure of the atmosphere, there could be no respiration; and the elasticity of the particles of air included in animal and vegetable bodies, without this superincumbent pressure, would rupture the vessels in which they are contained, and destroy both kinds of life. So exactly is this weight of the winds or atmospheric air proportioned to the necessities of the globe, that we find it in the mean neither too light to prevent the undue expansion of animal and vegetable tubes, nor too heavy to compress them so as to prevent due circulation. See at the end of the chapter, Job 28:28 (note).

And he weigheth the waters by measure - He has exactly proportioned the aqueous surface of the earth to the terrene parts, so that there shall be an adequate surface to produce, by evaporation, moisture sufficient to be treasured up in the atmosphere for the irrigation of the earth, so that it may produce grass for cattle, and corn for the service of man. It has been found, by a pretty exact calculation, that the aqueous surface of the globe is to the terrene parts as three to one; or, that three-fourths of the surface of the globe is water, and about one-fourth earth. And other experiments on evaporation, or the quantity of vapours which arise from a given space in a given time, show that it requires such a proportion of aqueous surface to afford moisture sufficient for the other proportion of dry land. Thus God has given the waters by measure, as he has given the due proportion of weight to the winds.

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JOB 28: 26 When he made a decree for the rain, and a way for the lightning of the thunder;

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## Verse 26

When he made a decree for the rain - When he determined how that should be generated, viz., By the heat of the sun evaporation is produced: the particles of vapor being lighter than the air on the surface, ascend into the atmosphere, till they come to a region where the air is of their own density; there they are formed into thin clouds, and become suspended. When, by the sudden passages of lightning, or by winds strongly agitating these clouds, the particles are driven together and condensed so as to be weightier than the air in which they float, then they fall down in the form of rain; the drops being greater or less according to the force or momentum, or suddenness, of the agitation by which they are driven together as well as to the degree of rarity in the lower regions of the atmosphere through which they fall.

A way for the lightning of the thunder - ודרך לחזיז קולות vederech lachaziz koloth. קול kol signifies voice of any kind; and koloth is the plural and is taken for the frequent claps or rattlings of thunder. רח chaz signifies to notch, indentate, or serrate, as in the edges of the leaves of trees; רחזיז chaziz must refer to the zigzag form which lightning assumes in passing from one cloud into another. We are informed that "this is a frequent occurrence in hot countries." Undoubtedly it is; for it is frequent in cold countries also. I have seen this phenomenon in England in the most distinct manner for hours together, with a few seconds of interval between each flash. Nothing can better express this appearance than the original word.

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JOB 28: 27 then he saw it, and declared it. He established it, yes, and searched it out.

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#### Verse 27

Then did he see it, and declare it - When he had finished all his creative operations, and tried and proved his work, חקרה chakarah, investigated and found it to be very good; then he gave the needful revelation to man; for,

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JOB 28: 28 To man he said, 'Behold, the fear of the Lord, that is wisdom. To depart from evil is understanding.'"

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#### Verse 28

Unto man he said - לאדם laadam, unto man, he said: This probably refers to the revelation of his will which God gave to Adam after his fall. He had before sought for wisdom in a forbidden way. When he and Eve saw that the tree was pleasant to the eyes, and a tree to be desired to make one wise, they took and did eat, Gen 3:6. Thus they lost all the wisdom that they had, by not setting the fear of the Lord before their eyes; and became foolish, wicked, and miserable. Hear, then, what God prescribes as a proper remedy for this dire disease: The fear of the Lord, that is wisdom; it is thy only wisdom now to set God always before thy eyes, that thou mayest not again transgress.

Depart from evil is understanding - Depart from the evil within thee, and the evil without thee; for thy own evil, and the evil that is now, through thee, brought into the world, will conspire together to sink thee into ruin and destruction. Therefore, let it be thy constant employment to shun and avoid that evil which is everywhere diffused through the whole moral world by thy offense; and labor to be reconciled to him by the righteousness and true holiness, that thou mayest escape the bitter pains of an eternal death. See the note on Job 28:12. From what has been observed on Job 28:25, Job 28:26, and from the doctrine of the atmosphere in general, I can safely draw the following conclusions: -

1. From the gravity and elasticity of the air, we learn that it closely invests the earth, and all bodies upon it, and binds them down with a force equal to 2160 pounds on every square foot. Hence it may properly be termed the belt or girdle of the globe.
2. It prevents the arterial system of animals and plants from being too much distended by the impetus of the circulating juices, or by the elastic power of the air so plenteously contained in the blood, and in the different vessels both of plants and animals.
3. By its gravity it prevents the blood and juices from oozing through the pores of the vessels in which they are contained; which, were it not for this circumstance, would infallibly take place. Persons who ascend high mountains, through want of a sufficiency of pressure in the atmosphere, become relaxed, and spit blood. Animals, under an exhausted receiver, swell, vomit, and discharge their faeces.
4. It promotes the mixture of contiguous fluids; for when the air is extracted from certain mixtures, a separation takes place, by which their properties, when in combination, are essentially changed.

5. To this principle we owe winds in general, so essential to navigation, and so necessary to the purification of the atmosphere. The air is put into motion by any alteration of its equilibrium.
6. Vegetation depends entirely gravity and elasticity of the air. Various experiments amply prove that plants in vacuo never grow.
7. Without air there could be no evaporation from the sea and rivers; and, consequently, no rain; nor could the clouds be suspended, so necessary to accumulate and preserve, and afterwards to distil, these vapours, in the form of dew, rain, snow, and hail, upon the earth.
8. Without air, all the charms of vocal and instrumental sounds would become extinct; and even language itself would cease.
9. Without it heat could not be evolved, nor could fire exist; hence a universal rigour would invest the whole compass of created nature.
10. Without air, animal life could never have had a being; hence God created the firmament or atmosphere before any animal was produced. And without its continual influence animal life cannot be preserved; for it would require only a few moments of a total privation of the benefits of the atmosphere to destroy every living creature under the whole heaven.
11. It has been found, by repeated experiments, that a column or rod of quicksilver, about twenty-nine inches and a half high, and one inch in diameter, weighs about fifteen pounds; and such a column is suspended in an exhausted tube by the weight of the atmosphere; hence it necessarily follows, that a column of air, one square inch in diameter, and as high as the atmosphere, weighs about fifteen pounds at a medium. Thus it is evident that the atmosphere presses with the weight of fifteen pounds on every square inch; and, as a square foot contains one hundred and forty-four square inches, every such foot must sustain a weight of incumbent atmospheric air equal to two thousand one hundred and sixty pounds, as has been before stated. And from this it will follow, that a middle-sized man, whose surface is about fifteen square feet, constantly sustains a load of air equal to thirty-two thousand four hundred pounds! But this is so completely counterbalanced by the air pressing equally in all directions, and by the elasticity of the air included in the various cavities of the body, that no person in a pure and healthy state of the atmosphere feels any inconvenience from it; so accurately has God fitted the weight to the winds. It has been suggested that my computation of 15 square feet for the surface of a middle-sized man, is too much; I will, therefore, take it at 14 square feet. From this computation, which is within the measure, it is evident that every such person sustains a weight of air equal, at a medium, to about 30,240 lbs. troy, or 24,882 1/2 lbs. avoirdupois, which make 1,777 stone, 4 lbs. equal to eleven Tons, two Hundred and eighteen pounds and a half.
12. Though it may appear more curious than useful, yet from the simple fact which I have completely demonstrated myself by experiment, that the atmosphere presses with the weight or fifteen pounds on every square inch, we can tell the quantum of pressure on the whole globe, and weigh the whole atmosphere to a pound! The polar and equatorial circumference of the earth is well known. Without, therefore, entering too much into detail, I may state that the surface of the terraqueous globe is known to contain about five thousand, five hundred, and seventy-five Billions of square Feet; hence, allowing fifteen pounds to each square inch, and two thousand one hundred and sixty pounds to each square foot, the whole surface must sustain a pressure from the atmosphere equal to twelve Trillions and forty-two thousand billions of Pounds! or six thousand and twenty-one Billions of Tons! And this weight is the weight of the whole atmosphere from its contact with every part of the earth's surface to its utmost highest extent! Experiments also prove that the

air presses equally in all directions, whether upwards, downwards, or laterally; hence the earth is not incommoded with this enormous weight, because its zenith and nadir, north and south pressure, being perfectly equal, counterbalance each other! This is also the case with respect to the human body, and to all bodies on the earth's surface. To make the foregoing calculations more satisfactory, it may be necessary to add the following observations: - A bulk of atmospheric air, equal to one quart, when taken near the level of the sea, at a temperature of 50 Fahrenheit, weighs about 16 grains, and the same bulk of rain water, taken at the same temperature, weighs about 14,621 grains: hence rain water is about 914 times specifically heavier than air. I have already shown that the pressure of the atmosphere is equal to about 15 lbs. troy on every square inch; and that this pressure is the same in all directions; and thence shown that on this datum the whole weight of the atmosphere may be computed. I shall re-state this from a computation of the earth's surface in square miles, which is recommended to me as peculiarly accurate. A square mile contains 27,878,400 square feet. The earth's surface, in round numbers, is 200,000,000, or two hundred millions, of square miles. Now, as from the preceding data it appears that there is a pressure of 19,440 lbs. troy on every square yard, the pressure or weight of the whole atmosphere, circumfused round the whole surface of the earth, amounts to 12,043,468,800,000,000, or, twelve Trillions forty-three thousand four hundred and sixty-eight Billions, eight hundred thousand Millions of pounds. Though we cannot tell to what height the atmosphere extends, the air growing more and more rare as we ascend in it; yet we can ascertain, as above, the quantum of weight in the whole of this atmosphere, which the terraqueous globe sustains equally diffused over its surface, as well as over the surfaces of all bodies existing on it. At first view, however, it is difficult for minds not exercised in matters of philosophy to conceive how such an immense pressure can be borne by animal beings. Though this has been already explained, let the reader farther consider that, as fishes are surrounded by water, and live and move in it, which is a much denser medium than our atmosphere; so all human beings and all other animals are surrounded by air, and live and move in it. A fish taken out of the water will die in a very short time: a human being, or any other animal, taken out of the air, or put in a place whence the air is extracted, will die in a much shorter time. Water gravitates towards the center of the earth, and so does air. Hence, as a fish is pressed on every side by that fluid, so are all animals on the earth's surface by atmospheric air. And the pressure in both cases, on a given surface, is as has been stated above; the air contained in the vessels and cells of animal bodies being a sufficient counterpoise to the air without. Having said thus much on the pressure of the atmosphere, as intimated by Job, the reader will permit me to make the following general reflections on the subject, of which he may make what use he may judge best. It is generally supposed that former times were full of barbaric ignorance; and that the system of philosophy which is at present in repute, and is established by experiments, is quite a modern discovery. But nothing can be more false than this; as the Bible plainly discovers to an attentive reader that the doctrine of statics, the circulation of the blood, the rotundity of the earth, the motions of the celestial bodies, the process of generation, etc., were all known long before Pythagoras, Archimedes, Copernicus, or Newton were born. It is very reasonable to suppose that God implanted the first principles of every science in the mind of his first creature; that Adam taught them to his posterity, and that tradition continued them for many generations with their proper improvements. But many of them were lost in consequence of wars, captivities, etc. Latter ages have re-discovered many of them, principally by the direct or indirect aid of the Holy Scriptures; and others of them continue hidden, notwithstanding the accurate and persevering researches of the moderns.