



THE  
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TO THE EDITOR OF THE YOUTH'S INSTRUCTOR.

On the Origin of Knowledge.

THERE is little actual knowledge in the earth, but what owes its origin one way or other to revelation. Clemens Alexandrinus, Justin Martyr, Augustine, and most of the christian fathers, believed the heathens derived their proper sentiments from the oracles of God; and Celsus, the heathen philosopher, acknowledges the similarity of Plato to Moses and the Prophets. Nothing is more plain than that the nations which have had no access to revelation, are almost similar to brutes in ignorance and barbarity. Let the south of Africa, the east of Tartary, and various parts of (this hemisphere) America, bear witness. It is easy to trace their access to revelation wherever any sensible philosophy, especially respecting morals and worship, was found, and may the obscure writer of this, expect that no apology is necessary for him to make to the Youth's Instructor for quoting some plain reasons for this. "Might not a deal of traditional knowledge be derived from Noah? Who knows how little real wisdom the Egyptians might have, except what they owed to Joseph, Moses, Solomon

or other Hebrews, they were conversant with, and highly regarded? What hindered the Chaldeans, to learn not a little from Abraham, their countryman; or from Jewish captives carried thither by the Assyrians or Nebuchadnezzar; or from their countrymen the most ancient Samaritans? What do we know, but any thing sensible in the ancient Persian religion, is owing to Zoroaster, who had access to learn it from the Jews, if he was not (as there is reason to think) a renegade one himself? It is certain, that neither the ancient Chinese philosophy of Confucius, nor their modern had half the sensibleness that some pretend; but though it had, how easy to derive it from revelation? If Noah went thither and settled their constitutions, they must have been originally good. Probably thousands of Jews removed eastward when Oguz-kan the Tartar made his irruption into Western Asia; and about the same time founded a kingdom on the north-west of China; and from their apprehensions of the incarnation of God, and other things, we cannot but think, that some such thing happened.

There is no evidence of any sensible learning in the East-Indies till after the time in which it is said Nebuchadnezzar transported thither a colony of Jews: Nay, nor till after they had access to converse with Jews in the Empire of Darius, the husband of Esther; and of whom Mordecai, a Jew, was for a while chief minister of state; and till after almost all the east sounded with the wisdom of Daniel the Jew.

To turn our eyes towards Europe, where was the the learning of Greece, before Cadmus, a fugitive from the land of Israel, carried *letters* (alphabetical characters) thither? How probable that Orpheus, the reformer of their religion, for his father was a Phe-

nician, and his mother Calliope, a Jewish minstrel, was carried northward by the conquering Shishak, king of Egypt? What know I, but the Colchians on the east of the Luxine Sea, with whom the Greeks had the earliest intercourse, and who used circumcision, and had a language not a little similar to the Hebrew, were a colony of Jews and Egyptians left there by Shishak, as he hastened home to check his rebellious brother? Who has not heard of the early intercourse between Egypt and Greece? Who knows not that the Phenicians, who in a manner lived among the Hebrews, or at their side, by their extensive sea-trade and numerous Colonies, might propagate hints borrowed from revelation, far and wide, even to the Celtæ of Britain? Who may not observe in the Etruscan *lucumonies* of Italy, not a little resemblance to the early order of the Hebrew tribes? Were not Pherecydes the Syrian, and Thales the Milesian, the most ancient Philosophers of the Greeks? and were they not born, especially the first, at no great distance from Israel? Did not Pythagoras, Solon, Plato and other renowned philosophers, travel into Egypt and Chaldea to collect wisdom? and could they do so, without visiting the Jewish valley of vision, which lay in their way from the one to the other? did not the Romans derive their learning from the Greeks? and had they not plenty of access to revelation or the oracles of God in the Grecian language? Since it is so extremely plain that almost every thing sensible in the Pagan learning derives its original from revelation, how superlatively base and unmanly must it be for our modern infidels, to boast of their own or the Heathen science, in opposition to the Gospel of Christ?

Let us have a sensible system of natural religion



philosophy, which directs men to act to a right end, and in a right manner, as rational beings subject to God. Solomon indeed was the greatest philosopher that ever existed: but his works of that kind are long ago lost. The most ancient philosophers of the Greeks, called their science, *Sophia*, Wisdom. Pythagoras was more modest, and would have his only called *philosophia*, desire of wisdom. The Greek philosophers partly through ignorance, and partly through vanity, soon divided into a vast number of sects, of which the Epicureans, Stoics and Academics, were the most noted, and to which the Jewish sects of Sadducees, Pharisees, and Essenes, were somewhat similar. Till within these 200 years past, that men have more attended to experience and common sense, most of the philosophy that was for many ages in vogue, was but unmeaning jargon and nonsense. Then it was imagined, almost every thing was understood: now repeated discoveries manifest the wonderful and unsearchable nature of the works of God; and how much more of himself!

That the works of Creation and Providence, really manifest the being and part of the perfections of God, and of our duty to him, or to one another, or that the human mind, abstractly considered, is capable of apprehending these matters, cannot justly be denied. But it is no less evident, that through the prevalence of men's lusts over their reason, there is little actual knowledge in the earth, but what owes its origin one way or other to revelation as aforesaid.

\* M. G.

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TO THE EDITOR OF THE YOUTH'S INSTRUCTOR,  
SIR—

The copy of the following Anecdote was found

among the manuscripts of the Rev. WILLIAM LAW, of King's Clife, and which I am persuaded you will not think unworthy of a place in your monthly publication—the authenticity of which you may rely upon. I am, dear sir, your affectionate servant,

\***SOLON.**

*RESOLUTIONS FOR MY FUTURE CONDUCT.*

By WILLIAM LAW.

1st. To pass my time as little as possible among such as cannot benefit me, or I them.

2d. To think nothing great or desirable because the world thinks it so; but to form all my judgments of things from the infallible "*Word of God*," and direct my views accordingly.

3d. To avoid all concerns with the world or the ways of it, but where religion or charity obliges me to it.

4th. To remember frequently and impress it deeply on my mind, that no condition of this life is for enjoyment, but for trial; and that every power, ability, and advantage we have, are so many talents to be accounted for to the great Judge of the world.

5th. That the greatness of human nature consists in nothing else but in imitating the divine nature; that all the greatness in this world, which is not in good actions, is nothing to the purpose.

6th. To read and think often of the "*Life of Christ*," and propose it as a pattern to myself.

7th. To remember often and seriously how much of my time is inevitably thrown away, from which I can expect nothing but a charge of guilt, and how little there may be to come on which my eternal happiness depends.

8th. To call to mind the presence of God, whenever I find myself under any temptations to sin, and to have immediate recourse to "*Prayer*."

9th. To think *humbly of myself* and with great *charity of others*, allowing much for the ignorance and sad disadvantages they labour under.

10th. To forbear condemning or speaking evil of any one.

11th. To pray privately three times a day, besides my morning and evening prayers.

12th. To receive all pains of body or mind, as tokens of God's love, and be thankful for them, knowing, that whom God loveth he chasteneth, to draw them nearer to himself.

13th. Not to build my hopes of *Salvation* on my own works or self-righteousness, but on the "*merits of Christ*" and the shedding of his precious "*blood*."

" 'Tis greatly wise to talk with our past hours ;

" And ask them what report they bore to Heaven ;

" And how they might have borne more welcome news."

*Night Thoughts.*

## TO THE EDITOR OF THE YOUTH'S INSTRUCTOR.

" WHEN I behold a genius bright, and base,  
Of tow'ring talents, and terrestrial aims ;  
Methinks I see, as thrown from her high sphere,  
The glorious fragment of a soul immortal,  
With rubbish mixt, and glitt'ring in the dust.  
Struck at the splendid, melancholy sight,  
At once *compassion* soft, and *envy*, rise—  
But wherefore envy? Talents angel-bright,  
If wanting worth, are shining instruments  
In false ambition's hand, to finish faults  
Illustrious, and give infamy renown."

MR. EDITOR—Should the following Eulogium, extracted from the works of J. J. ROUSSEAU, (the



well known enemy to christianity) be deemed worthy of a place in your useful Miscellany, your insertion of it will oblige

\*ENWORD.

I CONFESS to you, the majesty of the Scriptures astonishes me, the holiness of the gospel speaks to my heart. This divine book, the only one necessary to a christian, and the most useful to those even who are not so, needs only be meditated upon, to fill the soul with love to its author, and a willingness to accomplish his precepts. Never was the language of virtue so sweet; never did the most profound wisdom express itself with such energy and simplicity! We cannot leave off reading it, without finding ourselves better than before. See how little are the books of the Philosophers with all their pomp, when compared to the Evangelists! Is it possible that a book, at once so sublime and simple, should be the work of man? Is it possible that HE, whose history it contains, should himself be but man? Is there in HIM the tone of an enthusiast, or an ambitious sectary? What mildness, what purity in his manners; what affecting grace in his instructions? what elevation in his maxims; what profound wisdom in his discourses; what presence of mind, what ingenuity in his answers; what empire over the passions; where is the man, where is the sage, who knows how to act, suffer, and die, without weakness or ostentation? when *Plato* described his imaginary just man, covered with all the *opprobrium of crimes* and worthy of all the honours of virtue, he described JESUS CHRIST feature by feature: the resemblance is so striking, that all the fathers have perceived it was impossible to mistake it—what pre-

judices, what blindness, must they have, who dare to draw a comparison between the son of *Sophroniscus* and the son of *Mary*; what distance is there between the one and the other; as *Socrates* died without pain and without disgrace, he found no difficulty in supporting his character to the end; and, if his easy death had not shed a lustre on his life, we might have doubted whether *Socrates* with all his genius was any thing but a sophist. They say he invented morality. Others before him had practised it: he only said what they had done, he only read lessons on their examples. *Aristides* had been just, before *Socrates* explained the nature of justness; *Leonidas* had died for his country, before *Socrates* made it the duty of men to love their country; *Sparta* had been temperate, before *Socrates* praised temperance; Greece had abounded in virtuous men, before he defined virtue. But where could *JESUS* have taken among his countrymen that elevated and pure morality, of which he alone furnished both the precepts and the examples? The most lofty wisdom was heard from the bosom of the most furious fanaticism; and the simplicity of the most heroic virtues honoured the vilest of all people.

The death of *Socrates*, serenely philosophising with his friends, is the most gentle that one can desire; that of *JESUS* expiring in torments, injured, derided, reviled by a whole people, is the most horrible that one can fear. When *Socrates* takes the *poisoned cup*, he blesses him who presents it, and who at the same time *weeps*: *JESUS* in the midst of a horrid punishment prays for his executioners.—Yes: if the life and death of *JESUS CHRIST* are those of a God: shall we say that the history of the gospel is invented at pleasure? My friends, it

is not thus that men invent; and the actions of *Socrates*, concerning which no one doubts, are less attested than those of *JESUS CHRIST*. After all, this is shifting the difficulty instead of solving it; for it would be more inconceivable that a number of men should forge this book in concert, than that one should furnish the subject of it. Jewish authors would never have devised such a manner and such morality, and the gospel has characters of truth so great, so striking, so perfectly inimitable, that its inventor would be still more astonishing than its hero.

#### HISTORY OF ACRE, FORMERLY PTOLEMAIS.

*(From the Encyclopædia Metropolitana.)*

**T**HE history of this town may be traced to a distant period; and in modern times it has acquired celebrity by being the theatre of some considerable transactions. Josephus considers it as belonging to the tribe of Asher, and relates, that after being held by Demetrius, the son of Saleucus, it came by treachery into the possession of Antiochus Epiphanes; after which it was captured by the Hebrew Alexander, ceded to Ptolemy; from whom it passed to Cleopatra. It was also conquered by the Persians, and subsequently becoming a Roman colony, then under the dominion of the Moors, it sustained many sieges both by the Christians and Saracens, in the period of the crusades: the former expelled the latter from it in 1104, but in 1187 it was taken by Saladin, king of Egypt. Soon afterwards, being invested by the combined forces of all the Christians

in Palestine, after a vigorous defence of more than two years, it yielded to the arms of Philip Augustus of France, and Richard I. of England, on the 12th of July 1191. The conquest, however, was dearly acquired by the loss of 100,000 Christians, besides great numbers who perished by shipwreck and disease. It was now occupied for nearly a century, in some sense, by all the European and Asiatic powers; for there were no less than nineteen of them exercising an independent authority here, among which we find—the kings of Jerusalem and Naples; the Princes of Antioch, Jaffa, Tripoli, Galilee, Tarentum, and Armenia; the pope's legate; the duke of Athens; the commanders of the English, Genoese, Florentine, and Pisan armies; the Teutonic and Lazarene knights, and the Knights Templars—specified; and during this period it was a place of great resort and large extent. In 1291, it was again besieged, and taken by the Saracens, and sixty thousand Christians consigned to death or slavery, in retaliation for at least equal barbarities exercised on the infidels by the besieged. On this occasion, the nuns gave an almost unparalleled specimen of fortitude, by mangling themselves in a dreadful manner in the face, for the purpose of exciting the aversion of the victors, of whom they had otherwise just reason to apprehend a violation of their chastity: the Saracens, in revenge, slew them all. From this period, Acre remained in a state of magnificent decay, and almost total desertion; till in the seventeenth century, Faccardin, prince of the Druses, attempted its restoration: but notwithstanding his choking up the harbour to defend himself from the Turks, they regained it, and the pasha of Saide appointed an annual governor; till at length Daher, an Arabian Sheik, who obtained the name

of Saint John of Acre carried it by assault in 1748, and having appeased the Porte, assumed the government of the city. Here he not only maintained his independence, but by his judicious regulations, raised it from meanness to dignity; but in 1775, at the time he was attacked by a Turkish fleet, aided by the Moors, he was betrayed and assassinated at the age of nearly ninety years. His successor was Ahmed Pasha, a Bosnian, who was surnamed Djezzar, or butcher. The baron De Tott's Memoirs first brought the name of this wretched prince into Europe, as having in his time (1785,) entombed alive, a number of Greeks whose heads were then to be seen. "His mere name," observes Dr. Clarke, "carried terror with it over all the Holy Land; the most lawless tribes of Arabs expressing their awe and obeisance whensoever it was uttered. His appellation, Dejezzar, as explained by himself, signified butcher; but of this name, notwithstanding its avowed allusion to slaughters committed by him, he was evidently vain. He was his own minister, chancellor, treasurer, and secretary; often his own cook and gardener; and not unfrequently both judge and executioner in the same instant. Yet there were persons who had acted, and still occasionally officiated, in these several capacities, standing by the door of his apartment; some without a nose, others without an arm, with one ear only, or one eye, 'marked men,' as he termed them, persons 'bearing signs' of their having been instructed to serve their master with fidelity." During the misrule of this arbitrary monster, Buonaparte landed in Egypt, and proposed an alliance, which was refused; upon which, after victoriously traversing Syria, with an army of more than twelve thousand men, the French conqueror began the

siege of Acre, on the 18th of March, 1799. The pasha, who had already evacuated Caffa, conceiving that the fortifications were in too miserable a state to avail him, was preparing to retreat, when Sir Sydney Smith anchored with his squadron in the roads of Caffa, and reinspired the inhabitants, by making every preparation for a vigorous defence. Buonaparte having invested the place, and being enabled to carry his trenches close to the ditch, a breach was effected in ten days, when he endeavoured to carry it by assault, but was repulsed with a heavy loss. Within two days, another assault was made, and with a similar result. Eight different attempts were made of the same kind, by which multitudes of the French perished on the occasion, and in the sorties by which they were followed. On the fifty-second day, two last and desperate efforts were made; the Turkish fire, even when aided by the opportune approach of the British seamen, was for some time ineffectual, owing to the numbers of the enemy, which perpetually renewed the ranks of the slain. At length, however, the French were repulsed; but as a breach had been made practicable for fifty men abreast, the French entered in the evening; a dreadful carnage ensued, Djezzar was every where animating his troops, and the foe was utterly vanquished. After these disastrous struggles, during which Buonaparte lost his battering pieces and stores, and was ultimately compelled to throw his heavy cannon into the sea; on the 20th of May, at the expiration of sixty-one days, he raised the siege, and boldly announced in Egypt, in a public manifesto, that Acre was reduced to a heap of ruins, and posterity would ask where the city had stood. After this period, the fortifications were considerably enlarged. At the time of Dr. Clarke's

visit they were proceeding with great rapidity, to whom Djazzar made this sage and characteristic remark, upon the entrance of the engineer into his presence: "Some persons have a head for these matters" (putting his finger to his forehead,) "and some have not. Let us see whether or not Buona-partè will make a breach there again. A breach is a breach, and a wall is a wall!" Djazzar pasha adorned Acre, however, with several magnificent public works, in which he is said to have been his own engineer and artist. He built the principal bazaar, the mosque, and the very elegant public fountain. After the death of Djazzar, Ishmael pasha usurped the government; but he was displaced and slain by one of Djazzar's slaves named Sulliman, a man generally of a mild and pacific character, on whom the Porte conferred the pachalic. Acre is about 27 miles south of Tyre, and 70 north of Jerusalem. N. lat, 32°, 40' E. lon. 39°, 25'.

## THE ELEMENTS.

IT is for our comfort to find (observes the acute and judicious Paley) that a knowledge of the constitution of the elements is not necessary to us. For instance, as Addison has well remarked, "We know *water* sufficiently when we know how to boil, how to freeze, how to evaporate, how to make it fresh, how to make it run or spout out in what quantity and direction we please, without knowing what water is." The observation of this excellent writer has more propriety in it now than it had at the time it was made: for the constitution and the constituent parts of water seem in some measure to have

been lately discovered; yet it does not appear, I think, that we can make any better or greater use of water since the discovery than we did before.

We can never think of the elements, without reflecting upon the number of distinct uses which are consolidated in the same substance. The *air* supplies the lungs, supports fire, conveys sound, reflects light, diffuses smells, gives rain, wafts ships, bears up birds. *Water*, besides maintaining its own inhabitants, is the universal nourisher of plants, and through them of terrestrial animals: it is the basis of their juices and fluids, dilutes their food, quenches their thirst, floats their burdens. *Fire* warms, dissolves, enlightens; it is the great promoter of vegetation and life, if not necessary to the support of both.

We might enlarge, to almost any length we pleased, upon each of these uses; but it appears to me almost sufficient to state them. The few remarks which I judge it necessary to add, are as follow.

I. AIR is essentially different from earth. There appears to be no necessity for an atmosphere's investing our globe; yet it does invest it, and we see how many, how various, and how important are the purposes which it answers to every order of animated, not to say organized beings, which are placed upon the terrestrial surface. I think that every one of these uses will be understood upon the first mention of them, except it be that of *reflecting* light, which may be explained thus:—If I had the power of seeing only by means of rays coming directly from the sun, whenever I turned my back upon this luminary, I should find myself in darkness. If I had the power of seeing by reflected light, yet by means only of light reflected from solid masses, these masses would shine indeed and glisten, but it



would be in the dark. The hemisphere, the sky, the world, could only be *illuminated* as it is illuminated, by the light of the sun being from all sides and in every direction reflected to the eye, by particles as numerous, as thickly scattered, and as widely diffused, as are those of the air.

Another general quality of the atmosphere is the power of evaporating fluids. The adjustment of this quality to our use is seen in its action upon the sea. In the sea, water and salt are mixed together most intimately; yet the atmosphere raises the water, and leaves the salt. Pure and fresh as drops of rain descend, they are collected from brine. If evaporation be solution, (which seems to be probable,) then the air dissolves the water and not the salt. Upon whatever it be founded, the distinction is critical; so much so, that when we attempt to imitate the process by art, we must regulate our distillation with great care and nicety, or, together with the water, we get the bitterness, or at least the distastefulness, of the marine substance: and, after all, it is owing to this original elective power in the air, that we can effect the separation which we wish, by any act or means whatever.

By evaporation, water is carried up into the air: by the converse of evaporation, it falls down upon the earth. And how does it fall? Not by the clouds being all at once reconverted into water and descending like a sheet; not in rushing down in columns from a spout; but in moderate drops as from a colander. Our watering-pots are made to imitate showers of rain. Yet *a priori*, I should have thought either of the two former methods more likely to have taken place than the last.

By respiration, flame, putrefaction, air is rendered unfit for the support of animal life. By the con-

stant operation of these corrupting principles, the whole atmosphere, if there were no restoring causes, would come at length to be deprived of its necessary degree of purity. Some of these causes seem to have been discovered, and their efficacy ascertained by experiment. And so far as the discovery has proceeded, it opens to us a beautiful and wonderful economy. *Vegetation* proves to be one of them. A sprig of mint corked up with a small portion of foul air, placed in the light, renders it again capable of supporting life or flame. Here, therefore, is a constant circulation of benefits maintained between the two great provinces of organized nature. The plant purifies what the animal has poisoned: in return, the contaminated air is more than ordinarily nutritious to the plant. *Agitation with water* turns out to be another of these restoratives. The foulest air shaken in a bottle with water for a sufficient length of time, recovers a great degree of its purity. Here then again, allowing for the scale upon which nature works, we see the salutary effects of *storms* and *tempests*. The yesty waves, which confound the heaven and the sea, are doing the very thing which was done in the bottle. Nothing can be of greater importance to the living creation than the salubrity of their atmosphere. It ought to reconcile us therefore to these agitations of the elements, of which we sometimes deplore the consequences, to know, that they tend powerfully to restore to the air that purity which so many causes are constantly impairing.

II. In WATER, what ought not a little to be admired are those negative qualities which constitute its purity. Had it been vinous, or oleaginous, or acid; had the sea been filled or the rivers flowed with wine or milk; fish, constituted as they are,

must have died; plants constituted as they are, must have withered; the lives of animals which feed upon plants must have perished. Its very *insipidity*, which is one of those negative qualities, renders it the best of all menstrua. Having no taste of its own, it becomes the sincere vehicle of every other. Had there been a taste in water, be it what it might, it would have infected every thing we ate or drank with an unfortunate repetition of the same flavour.

Another thing in this element, not less to be admired, is the constant *round* which it travels; and by which, without suffering either adulteration or waste, it is continually offering itself to the wants of the habitable globe. From the sea are exhaled those vapours which form the clouds; these clouds descend in showers, which, penetrating into the crevices of the hills, supply springs; which springs flow in little streams into the valleys, and there uniting, become rivers; which rivers, in return, feed the ocean. So there is an incessant circulation of the same fluid; and not one drop, probably, more or less now, than there was at the creation. A particle of water takes its departure from the surface of the sea in order to fulfil certain important offices to the earth, and having executed the service which was assigned to it, returns to the bosom which it left.

Some have thought that we have too much water upon the globe, the sea occupying above three quarters of its whole surface. But the expanse of the ocean, immense as it is, may be no more than sufficient to fertilize the earth.

III. OF FIRE, we have said that it dissolves. The only idea, probably, which this term raised in the reader's mind was that of fire melting metals, resins, and some other substances; fluxing ores,

running glass, and assisting us in many of our operations, chemical or culinary. Now these are uses only of an occasional kind, and give us a very imperfect notion of what fire does for us. The grand importance of this dissolving power, the great office indeed of fire in the economy of nature, is keeping things in a state of solution, that is to say, in a state of fluidity. Were it not for the presence of heat, or of a certain degree of it, all fluids would be frozen. The ocean itself would be a quarry of ice; universal nature stiff and dead.

IV. Of LIGHT (whether we regard it as of the same substance with fire, or as a different substance) it is altogether superfluous to expatiate upon the use. No man disputes it. The observations, therefore, which I shall offer, respect that little which we seem to know of its constitution.

Light travels from the sun at the rate of twelve millions of miles in a minute. Urged by such a velocity, with what force must its particles drive against (I will not say the eye, the tenderest of animal substances, but) every substance, animate or inanimate, which stands in its way! It might seem to be a force sufficient to shatter to atoms the hardest bodies. How then is this effect, the consequence of such prodigious velocity, guarded against? By a proportionable *minuteness* of the particles of which light is composed. It is impossible for the human mind to imagine to itself any thing so small as a particle of light. But this extreme exility though difficult to conceive, it is easy to prove. A drop of tallow, expended in the wick of a farthing candle, shall send forth rays sufficient to fill a hemisphere of a mile diameter, and to fill it so full of these rays that an aperture not larger than the pupil of an eye, wherever it is placed within the hemisphere shall

be seen to receive some of them. What floods of light are continually poured from the sun, we cannot estimate; but the immensity of the sphere which is filled with particles, even if it reached no further than the orbit of the earth, we can in some sort compute; and we have reason to believe that throughout this whole region, the particles of light lie, in latitude at least, near to one another. The spissitude of the sun's rays at the earth is such, that the number which falls upon a burning-glass of an inch diameter is sufficient, when concentrated, to set wood on fire.

The tenuity and velocity of particles of light, as ascertained by separate observations, may be said to be proportioned to each other; both surpassing our utmost stretch of comprehension; but proportioned. And it is this proportion alone which converts a tremendous element into a welcome visitor.

It has been observed to me by a learned friend, as having often struck his mind, that if light had been made by a common artist it would have been of one uniform *colour*; whereas, by its present composition we have that variety of colour which is of such infinite use to us for the distinguishing of objects; which adds so much to the beauty of the earth, and augments the stock of our innocent pleasures.

With which maybe joined another reflection, viz. That considering light as compounded of rays of seven different colours, (of which there can be no doubt, because it can be resolved into these rays by simply passing it through a prism,) the constituent parts must be well mixed and blended together, to produce a fluid so clear and colourless as a beam of light is when received from the sun.

## NATURAL HISTORY.

“DEAR papa! you have made me anxious to know something of animals, or animated nature, as you termed it; will you tell me where I can read of birds, beasts, and fishes? for I should like to be acquainted with them all.”

To rouse dormant curiosity, and then to gratify it, was one part of the father's plan of education. He eagerly embraced the opportunity which he wished to find.

“You must know, my love,” said he, “that animals in their general definition, possess sensation, and spontaneous locomotion, exclusive of a vegetative and a generative power, which they have in common with vegetables. This distinction may be sufficient for use. You will wonder, indeed, that I should think it necessary to explain what an animal is; but an acquaintance with nature will convince you, that it is not always an easy matter to tell where animal life begins, and vegetable ends.

“The sensitive plant, *mimosa pudica*, seems to have as much perception as the polypus; except that the latter has a loco-motive power. But vegetables are always confined to one spot; they can neither shun danger, nor seek for nourishment, after the animal plan. Hence an obvious and infallible distinction is established.

“Human industry, from the earliest ages, has been employed in diminishing the number of noxious or useless creatures, and in reclaiming for use such as are beneficial; and though it is probable that few species of animal life are entirely extinct, yet where man has long been undisputed sovereign, he has either exterminated his annoyers, or driven them to haunts less frequented.

“Still, however, an immense variety of existences is diffused over the most cultivated spots: the earth, the water, and the air, teem with life. And in contemplating this exuberance of nature, indolence might naturally be tempted to pronounce that absolutely indeterminable, which cannot be particularized without so much application. But the active and inquisitive mind, instead of reposing in hopeless ignorance, or in a very limited degree of knowledge, has contrived means of numbering, grouping and classing all the various animals that people creation.

“Among those systematic naturalists whose indefatigable exertions have contributed to our knowledge, or to the facility of acquiring it, none have gained such deserved reputation as ARISTOTLE, RAY, KLEIN, LINNÆUS, and PENNANT. Why cannot we particularize BUFFON too, the philosophic painter of nature? He indeed rejected the trammels of system, as useless incumbrances, while he indulged in hypotheses as more congenial to his exuberant fancy; but his works on natural history will delight and improve, while the charms of language are capable of affecting the mind, and while diligent investigation deserves praise. His theories will amuse, while the solidity of his remarks instructs.

“That illustrious father of science, Linnæus, whose eye pervaded animal and vegetable nature to their most secret recesses, with a studied brevity of expression, and an unrivalled precision, comprehends the greatest variety in the narrowest limits; and hence gives the clearest views, with the least burden to the memory. According to this great naturalist the internal structure furnishes the first grand distinction of animals. Thus he finds, that quadrupeds and birds have two ventricles to the heart, and hot

red blood—the quadrupeds being viviparous, and the birds oviparous. Amphibia and fishes have the heart with only one ventricle, and cold, red blood—the <sup>amphibia</sup> being furnished with lungs, and the fishes with gills. While, on the other hand, insects and worms have only one ventricle in the heart, and cold white serum instead of blood—the insects being provided with feelers, and the worms with holders.”

Animated nature in general, is thus divided into six classes—quadrupeds, birds, amphibia, fishes, insects, and worms. These, at first view, appear pretty distinct from each other; yet when we come to a minute investigation, Nature is varied by such imperceptible gradations, that no precise line can be drawn between any two classes of her productions, nor any definitions framed that will embrace them all.

“In such a wide field as animated nature comprehends, it is impossible, within the limits I prescribe to myself, to do justice to the whole, or even to particular parts. I shall endeavour, however, at intervals, to give you some idea of the six great classes of which I have just told you it is composed. The authors I have enumerated in this pleasing branch of science, will fill up the outline which I mean to draw, not to satisfy, but to encourage you in deeper researches.

“When it appears you comprehend the distinctions I have laid down, and can give me a proper account of them, I will with pleasure introduce you to a general acquaintance with quadrupeds, and so on, in order. To make your ground sure as you proceed, is the only effectual method of reaping improvement from all studies; more particularly where the objects are so multifarious as in natural history.”



TO THE EDITOR OF THE YOUTH'S INSTRUCTOR,

SIR—

If the following Answers to the Arithmetical Puzzles and Questions are correct, you will oblige me by inserting them.

Your's, &c.

\* ARITHMETICUS.

ANSWERS TO THE PUZZLES.

1. MILLIO.

2. 99.9-9.

3. From  $\left\{ \begin{array}{l} \text{SIX} \\ \text{IX} \\ \text{XL} \end{array} \right\}$  take  $\left\{ \begin{array}{l} \text{IX} \\ \text{X} \\ \text{L} \end{array} \right\}$  then  $\left\{ \begin{array}{l} \text{S} \\ \text{I} \\ \text{X} \end{array} \right\}$  will remain.

ANSWERS TO THE QUESTIONS.

1.  $\frac{1}{2}$  of 2d =  $\frac{2}{3}$  of 1d = 2-9 of 3d.

2. As 7:5-2::11:55-14 of 1; which = 55-126 of 9.

3. Suppose the expense and the profit to be the same, and each = 2; then double the expense = 4, and half the profit = 1, and therefore the difference is 3, and the rate of the former to the latter is as 4 to 1.

I now propose the following Puzzle and Question for the consideration of your readers, and would be glad to see them answered in your next number.

*Puzzle.*—In an Arabian manuscript was found this remarkable decision of a dispute. Two Arabians sat down to dinner; one had five loaves and the other three. A stranger passing by, desired permission to eat with them; to which they agreed. The stranger dined, laid down 8 pieces of money and departed. The proprietor of the 5 loaves took up 5 pieces, and left three for the other, who objected, and insisted for one half. The cause came before Ali, the Magistrate, who gave the following judgment: "Let the owner of the 5 loaves have 7 pieces of money; and the owner of the 3 loaves 1." Quere, the justice of this sentence?

*Question.*—An Indian Gardener being desirous of presenting a basket of oranges to his Navah, had seven gates to pass before he could reach the audience chamber; at the first of which he was obliged to give half the number he had to the porter; at the second half what remained; and so on; when at length coming into the presence of the Prince, he found he had only one orange left. How many had he at first?