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The Open Court

A MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea

Founded by EDWARD C. HEGELER.

ROCK CARVING AT BOGHAZ-KÖI.
(See page 219.)

The Open Court Publishing Company

CHICAGO

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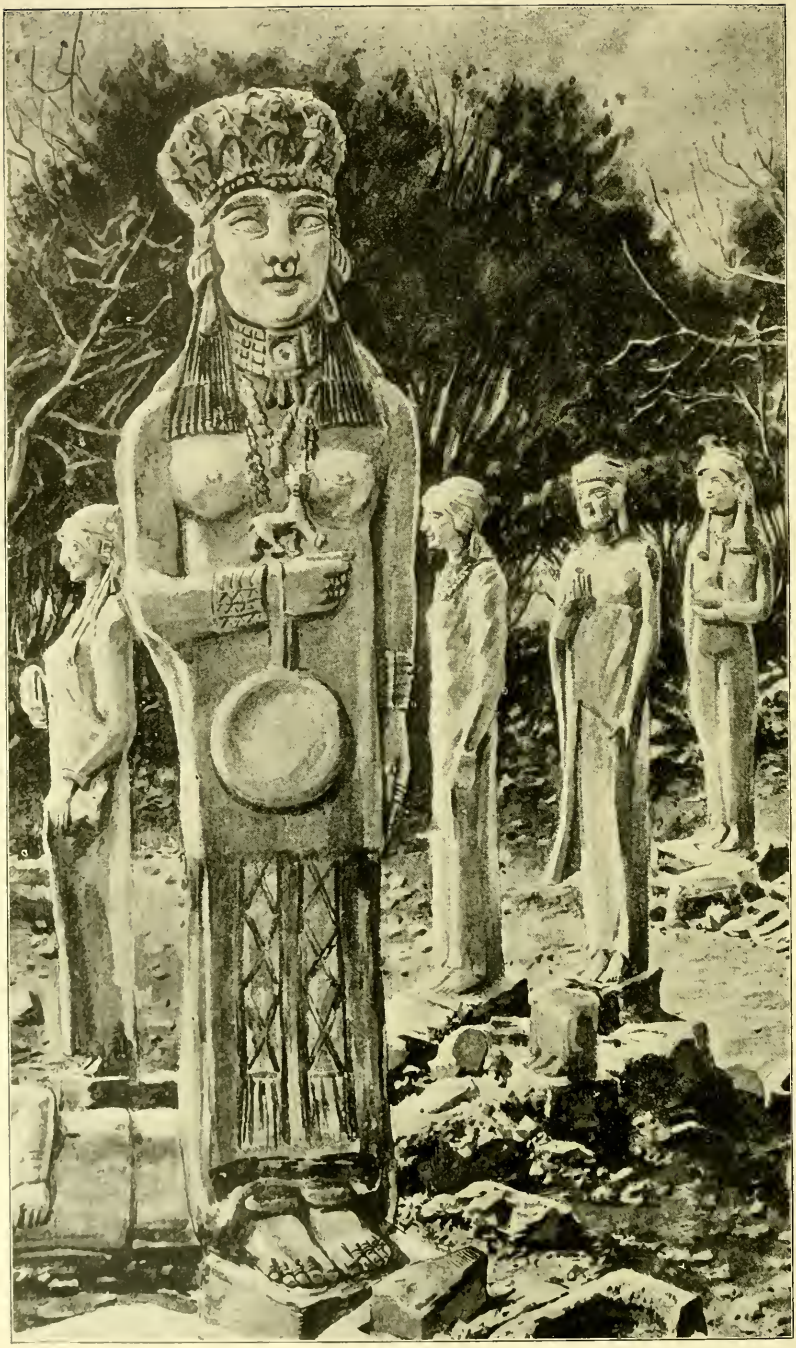

ISTAR IMAGE OF CYPRUS.

From Ohnefalsch-Richter, *Kypros,* Plate LVI. (See page 215.)

Frontispiece to The Open Court.

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THE CHILDHOOD AND YOUTH OF ST. PAUL.

BY CHARLES JOHNSTON.

"When I was a child...."

THE religions of the Orient give us a wide view of life and its progression, drawing back the veil from the upward stairway of consciousness, and showing us how in the fulness of time we may ascend to a far summit of power and wisdom.

Jesus, on the other hand, gives the impression of one who, seeing the long upward pathway of life ascending through the ages, had by a supreme effort of will outstripped time, through intense faith and devotion passing at once to the great consummation. This is, perhaps, the meaning of his words: "The kingdom of heaven suffereth violence."[1]

His life challenges us to a like effort. He touches the will, enkindling it with intense power, urging us also to transcend time, to reach at once through fierce and fiery will the consummation ages might have brought. Such an inspiration works miracles. It invites violent reactions, as shown in the cataclysmic history of Christendom.

A striking example of the direct power of Jesus upon the will is the life of Paul the Pharisee, one of the violent who take the kingdom of heaven by force. Here is Paul's own summing up of his life:

"We are troubled on every side, yet not distressed; perplexed, but not in despair; persecuted, but not forsaken; cast down, but not destroyed....in much patience, in afflictions, in necessities, in distresses, in stripes, in imprisonments, in tumults, in labors, in watch-

[1] Matt. xi. 12, A. V.

ings, in fastings....by honor and dishonor, by evil report and good report: as deceivers, and yet true; as unknown and yet well known; as dying, and behold we live; as sorrowful, yet alway rejoicing; as poor, yet making many rich; as having nothing and yet possessing all things."[2]

Paul's genius makes for vivid flashes of self-revelation, impressions keenly felt, and recorded in bursts of eloquence. His whole pathway is lit by these lightning-flashes of impression and feeling. There are memories of infancy: of that mother from whose womb God separated him;[3] perhaps of his father in such a sentence as this: "The heir, as long as he is a child, differeth nothing from a servant, but is under tutors and governors until the time appointed of the father. Even so we, when we were children, were in bondage;"[4] or again: "One that ruleth well his own house, having his children in subjection with all gravity."[5] And how many impressions of childhood are gathered in the sentence: "When I was a child, I spake as a child, I understood as a child, I thought as a child...."[6]

His friend and fellow-traveler records a sentence that bridges the next few years: "My manner of life from my youth up, which was from the beginning among mine own nation, and at Jerusalem, know all the Jews; having knowledge of me from the first, if they be willing to testify, how that after the straitest sect of our religion I lived a Pharisee. And now I stand here to be judged...."[7]

We have a gloss on the words "my youth, which was from the beginning among mine own nation" in the earlier sentence: "I am a Jew, of Tarsus in Cilicia, a citizen of no mean city;"[8] and again, "I am a Roman born."[9]

If Paul was "a Roman born," his father was a Roman citizen before him, perhaps his grandfather also. And Roman citizenship in Cilician Tarsus probably depended on the personal favor of the Cæsars, whether of Augustus, whose tutor was a Tarsian, or of great Julius Cæsar himself, who passed through Tarsus from Alexandria, where he had met Cleopatra and buried Pompey, on his

[2] 2 Cor. iv. 8, 9; vi. 4-10.

[3] Gal. i. 15.

[4] Gal. iv. 1-3.

[5] 1 Tim. iii. 4.

[6] 1 Cor. xiii. 11.

[7] Acts xxvi. 4-6. (The reading followed by the Revised Version is most valuable, as implying that a considerable part of Paul's youth was spent at Tarsus.)

[8] Acts xxi. 39.

[9] Acts xxii. 28, R. V.

way to fight the king of Pontus in that swift campaign which begot the epigram: "I came, I saw, I conquered."

Paul's family, and Paul himself from childhood, must have been very familiar with the fortunes of the Cæsars. Paul's friend and fellow-traveler mentions by name Augustus, Tiberius and Claudius; and Paul must have known their history as well as he knew the legal rights of Roman citizenship, in its relation to the Cæsars. We may be quite certain that in the familiar talk in his father's house Paul heard as a commonplace of conversation the story of the great doings of the Cæsars: the passage of Julius Cæsar through Tarsus, his death at the hands of Brutus and the rest, the harsh punishment which Cassius visited on Tarsus for its love for Cæsar, the coming of Mark Antony and his fall, and the triumph and favor of Augustus.

Paul must have heard among the tales of his childhood the marvelous coming of Cleopatra to his own Tarsus:

> "When she first met Mark Antony
> ....upon the river of Cydnus."

The old men and women of the city must have told him that story of the serpent of old Nile that Enobarbus told Agrippa:

> "The barge she sat in, like a burnish'd throne,
> Burn'd on the water: the poop was beaten gold;
> Purple the sails, and so perfumèd that
> The winds were love-sick with them; the oars were silver,
> Which to the tune of flutes kept stroke, and made
> The water which they beat to follow faster,
> As amorous of their strokes. For her own person,
> It beggar'd all description: she did lie
> In her pavillion—cloth-of-gold of tissue—
> O'er-picturing that Venus where we see
> The fancy outwork nature; on each side her
> Stood pretty dimpled boys, like smiling Cupids,
> With divers-color'd fans, whose wind did seem
> To glow the delicate cheeks which they did cool,
> And what they did undid.....
> From the barge
> A strange invisible perfume hits the sense
> Of the adjacent wharfs. The city cast
> Her people out upon her; and Antony,
> Enthron'd i' the market-place, did sit alone,
> Whistling to the air....."

One may wonder whether some reminiscence of that early tale may have added color to the words: "In like manner, that women adorn themselves in modest apparel, with shamefastness and sobri-

ety; not with braided hair, and gold or pearls or costly raiment; but (which becometh women professing godliness) with good works."[10]

Paul must have played as a boy in the market-place where Mark Antony sat, and wandered along the wharfs where the crowds gathered to see Cleopatra. He must have known very familiarly the hot, damp plain around Tarsus, overshadowed by the foothills and snow-fringed ridges of Taurus, shaggy with dark cedars, their evergreen dales adorned with glades of saffron. The whole region was set in an atmosphere of romance and legend and tradition, and we may be certain that Paul in his early years breathed this atmosphere. To the traveler through Cilicia and the countries westward toward the Ægean, there were on all hands memories of Homer. Tarsus, says Strabo, was founded by Argives who accompanied Triptolemus in his search after Io. The Cydnus flows through the middle of it, close by the gymnasium of the young men.[11] One may surmise that Paul, the son of a citizen, that is, one of the aristocracy of Tarsus, was not shut out from this gymnasium close by the icy Cyndus. This may be the origin of such phrases as: "Bodily exercise (*somatikē gumnasia*) is profitable for a little;"[12] or "if also a man contend in the games, he is not crowned, except he have contended lawfully;"[13] or "Know ye not that they which run in a race run all, but one receiveth the prize? Even so run, that ye may attain. And every man that striveth in the games is temperate in all things. Now they do it to receive a corruptible crown; but we an incorruptible. I therefore so run, as not uncertainly; so fight I, as not beating the air."[14] Our version, which has filtered through the Latin, obscures the Greek words, like gymnasia, athletics, stadion, and so forth. If we kept them in our translations, it would become far clearer that Paul was using the familiar speech of the gymnasium, in speaking of the conditions of training, of boxing, of foot races, and of fair play in athletic contests. There is no violence in the suggestion that all these phrases may be memories of boyhood, words first picked up in the gymnasium of his native Tarsus.

Strabo tells a quaint tale of this gymnasium, which was doubtless current in Paul's day. Mark Antony, he tells us, had promised the people of Tarsus to establish a gymnasium; he appointed Boëthus

[10] 1 Tim. ii. 9, 10, R. V.

[11] Strabo, XIV, v, 12. Falconer and Hamilton, Vol. III, p. 57.

[12] 1 Tim. iv. 8.

[13] 2 Tim. ii. 5, R. V.

[14] 1 Cor. ix. 24-26.

chief director of it, and entrusted to him the expenditure of the funds. He was detected in secreting, among other things, even the oil, and when charged with this offence by his accusers in the presence of Antony, he deprecated his anger by this among other remarks in his speech, that "as Homer sang the praises of Achilles, Agamemnon, and Ulysses, so have I sung yours. I therefore ought not to be brought before you on such a charge." The accuser answered, "Homer did not steal oil from Agamemnon; but you have stolen it from the gymnasium, and therefore you shall be punished." Yet he contrived to avert the displeasure of Antony by courteous offices, and continued to plunder the city until the death of his protector.[15]

Here again we come across Homeric memories as part of the commonplace of Tarsian conversation; and Dion Chrysostom, who was a young man of sixteen or eighteen at the time of Paul's death, constantly assumes in his Tarsian auditors a familiarity with the great story that formed the background of all Hellenic culture.

Strabo also tells us that the inhabitants of Tarsus applied themselves to the study of philosophy and to the whole encyclical compass of learning with so much ardor that they surpassed Athens, Alexandria and every other place where there were schools and lectures of philosophers. The Stoics were strongly represented. Among them were Antipater, Archedemus and Nestor; Athenodorus who lived with Marcus Cato, and died at his house; and the other Athenodorus, the son of Sandon, who was the tutor of Augustus Cæsar. To him in his old age Augustus entrusted the government of Tarsus. On the other hand, Nestor, who was tutor to Augustus's nephew Marcellus, was a follower of Plato, and he too governed Tarsus, succeeding Athenodorus.

The distinguished author of *The Cities of Saint Paul* well suggests that "Saint Paul may have seen and listened to Nestor;" and this becomes the more probable, when we remember that much of this philosophic culture found its expression out of doors, after the manner made immortal by Socrates. Strabo tells us that the Tarsian philosopher Diogenes went about from city to city, instituting schools of philosophy, and that, as if inspired by Apollo, he composed and rehearsed poems on any subject that was proposed. Further he tells us that Athenodorus in part owed his influence to his gift for extemporaneous speaking, a power that was very general among the inhabitants of Tarsus. There is no improbability in the conjecture that Paul may have owed much of his skill in speaking to the example of the Tarsian orators to whom he listened in

[15] Strabo, XIV, v, 14.

his boyhood; he may have gained from them something of that feeling for antithesis, for vivid imagery, for climax, which so heightens the beauty of his words.

In Paul's family life at Tarsus, therefore, there must have been an entire familiarity with the history of the Cæsars, of Antony and Cleopatra; and a feeling of loyal attachment to the imperial house, which would have made it impossible for Paul to ask, "Is it lawful to pay tribute to Cæsar?" Besides this strong influence of Roman imperialism, there must have been, with the Greek tongue, an infusion of Hellenic culture, perhaps as great a familiarity with Greek authors as Philo had in Paul's earlier years, or as Josephus had, when Paul was an old man. Paul must have been well acquainted with the story of Alexander of Macedon, whose conquests had so profoundly changed the whole world of Paul's experience, from Athens to Alexandria. He certainly read the outline at least of Alexander's history, in the story of the Maccabees: "It came to pass, after that Alexander the Macedonian, the son of Philip, who came out of the land of Chittim, and smote Darius king of the Persians and Medes, after he had smitten him, reigned in his stead, in former times, over the Greek empire." He doubtless knew that Alexander had passed through his own Tarsus, and had caught a chill from bathing in the Cydnus. So we may assume in Paul, as the background of his thought and imagination, a considerable element of Latin and Hellenic culture, though it was afterwords overlaid by other influences.

There was also a tinge of Orientalism. Dion Chrysostom, who was a boy when Paul wrote his earlier letters, speaks of the Oriental spirit of Tarsus, of its Assyrian cult, and the supremacy of Phoenician music. He records another touch of the Orient: the Tarsian women veiled their faces. May we not find, in Paul's early familiarity with this custom, the source of that famous injunction: "If a woman be not veiled, let her also be shorn; but if it be a shame to a woman to be shorn or shaven, let her be veiled."[16]

There is a story of another great Oriental, recorded by Strabo, which Paul may well have known. It concerns Anchiale, close to the mouth of the river Cydnus, where the tomb of Sardanapalus was reputed to be. On the tomb was a stone figure of Sardanapalus, snapping his fingers, with an inscription in Assyrian letters: "Sardanapalus, the son of Anacyndaraxes, built Anchiale and Tarsus in one day. Eat, drink, be merry; everything else is not worth a snap of the fingers." Paul may well have had this in mind, as well as the

[16] 1 Cor. xi. 6, R. V.

words of the Hebrew prophet, when he wrote: "If the dead be not raised, let us eat and drink, for to-morrow we die."[17]

The verse which follows is of high interest, for it contains the famous iambic:

φθείρουσιν ἤθη χρῆσθ' ὁμιλίαι κακαί.

"Evil communications corrupt good manners." This line, assigned by tradition to one of the lost comedies of Menander, is one of three quotations in Greek verse in Paul's letters and speeches. The earliest in point of time he used, speaking to the Stoics and Epicureans, under the shadow of the Acropolis: "God, who made the universe and all things therein, the Master of heaven and earth, who dwells not in temples made with hands, giving to all life and breath and all things, made of one every race of men to dwell on the whole face of the earth, to seek God, if haply they might feel after him and find him, and in truth he is not far from each one of us; for in him we live and move and are, as some of your poets have said:

"...For his offspring we are."

Being, then, the offspring of God, we should not think that the Divine is like gold or silver or stone, a carving of human art and imagination...."[18]

The quotation, part of an iambic, *Τοῦ γὰρ καὶ γένος ἐσμέν*, is assigned by tradition to the *Phaenomena* of Aratus. And here we have an interesting point. For Strabo, speaking of Soli, not far from Paul's own Tarsus, tells us that Chrysippus the Stoic, the son of an inhabitant of Tarsus, who left it to live at Soli, Philemon the comic poet, and Aratus, who composed a poem called the *Phaenomena*, were among the illustrious natives of that place.

It is very likely that Paul may have known something of this illustrious Cilician, and may have picked up this fragment of his verses either from reading or from some public recitation, or, perhaps, from a temple service, for the same words are said to occur in a hymn to Zeus.

The indefiniteness of the formula of quotation, *ὡς καί τινες τῶν καθ' ὑμᾶς ποιητῶν εἰρήκασιν*, was quite in the spirit of the time, and by no means implies that Paul did not know the author's name. For the writer of the Epistle to the Hebrews, quoting, and quoting accurately, two verses of the eighth psalm, introduces them with the words: *διεμαρτύρατο δέ πού τις λέγων*,[19] "Some one has borne witness somewhere"; though he must have known perfectly the source of

[17] 1 Cor. xv. 32.
[18] Acts xvii. 24-29.
[19] Heb. ii. 6.

his quotation. In the same way Philo Judaeus, quoting from the Timaeus, says: ὅπερ καὶ τῶν ἀρχαίων εἴπέ τις,[20] "as one of the ancients has said." But Philo is thoroughly familiar with Plato, whom he cites by name shortly after: "the mouth through which, as Plato says, mortal things find their entrance, and immortal things their exit."[21]

This quotation, like the other, is from the Timaeus. So that we may contrast Philo's "as one of the ancients has said" with his "as Plato said"; just as we may contrast the "someone has testified somewhere" of the Epistle to the Hebrews with the precision of Paul's speech at Antioch in Pisidia: "as it is also written in the second psalm."[22] In neither case is the indefiniteness of the formula of quotation a proof of vagueness of knowledge. It is quite probable that in the speech at Athens, Paul was knowingly quoting from the *Phaenomena* of his fellow-Cilician, Aratus of Soli.

Paul makes one more Greek verse quotation; this time it is a hexameter. It is the famous epigram in the letter to Titus:[23]

Κρῆτες ἀεὶ ψεῦσται, κακὰ θηρία γαστέρες ἀργαί,

"The Cretans are alway liars, evil beasts, slow bellies." Paul this time introduces his quotation with the words: εἶπέν τις ἐξ αὐτῶν ἴδιος αὐτῶν προφήτης, "One of themselves, a prophet of their own, said;" and, he adds drily, "this testimony is true."

This hexameter condemning the Cretans is attributed to Epimenides. Diogenes Laertius, writing in the generation after Paul, shows at least what was the common report of him at that time. A miraculous trance of many years' duration had caused him to be esteemed the beloved of the gods. Solon invited him to Athens to assist in purifying the city before the promulgation of his laws, and after the lustration Epimenides refused all rewards, taking only a branch of the sacred olive, and departed to Crete. He was believed to be the author of several poems, one recording the expedition of the Argonauts.[24] Some such story may well have been in Paul's mind, and may be the reason why he speaks of the author of this verse as a prophet, rather than a poet.

Paul does not mention by name either Aratus, Menander or Epimenides, but this by no means proves that he did not know their names. Silence of this kind is habitual with him. We saw that his

[20] Philo, *De Opificio Mundi*, 5.

[21] *Ibid.*, 40: "ὡς ἔφη Πλάτων."

[22] Acts xiii. 33.

[23] Titus, i. 12.

[24] Diogenes Laertius, I, 12.

friend and fellow-traveler mentions by name Augustus Cæsar, Tiberius Cæsar and Claudius Cæsar. He likewise speaks of the talks of Paul with the Stoics and Epicureans,[25] and, as he was apparently not at Athens on that occasion, he must have had the facts from Paul himself. Luke in like manner speaks of Zeus, Hermes and Artemis.[26] Here again, he probably got the names from Paul. But Paul himself names neither gods nor sects nor Cæsars. His silence, therefore, is quite consonant with the probability that he was familiar with the history of the Roman emperors, the thought of the Greek philosophers, the legends of the Homeric gods. It might well be said of him, as a critic has said of Philo, that he is *"ennemi des désignations précises et des noms propres."*[27]

We may, therefore, say that in the atmosphere of Paul's boyhood, in the every-day thought of his famed birthplace Tarsus, there was a background of Assyrian and Persian and Homeric legend. There was the authentic memory of the presence of Xenophon, of Alexander, of Julius Cæsar, Cassius, Antony and Cleopatra. There was also the active life of the gymnasium, mentioned by Strabo and Dion Chrysostom, in which Paul, as a youth, may well have had a part. There were the famous schools of the Stoa and the Academe. May we not admit that this long tradition, the wisdom of Greece and the splendor of Rome, may have helped to color Paul's thought and imagination, thus giving a new meaning to his words: "I am a debtor to the Greeks"?

This brings us to the close of that period of Paul's boyhood which was in all probability passed in his native city Tarsus, to which he later returned for a space of four or five years.[28] From Tarsus, as Paul himself tells us, in the words recorded by his fellow-traveler, he went to Jerusalem, and sat at the feet of the distinguished and enlightened Gamaliel,[29] who seems to have dominated the intellectual life of Jerusalem during Paul's youth.[30]

In going to Jerusalem, Paul by no means passed out of the reach of Greek influence. A movement had been in progress for some time whereby the thought of the Hebrews was profoundly influenced by the mind of Hellas, and especially of the Stoics and Plato, just as, a dozen centuries later, Jewish thought was colored by the method

[25] Acts xvii. 18.

[26] Acts xiv. 12; xix. 24.

[27] Massebieau, *Revue de l'histoire des religions,* LIII, p. 27. Paris, 1906.

[28] Acts ix. 30; xi. 25. Paul was probably at Tarsus A. D. 38-43.

[29] Acts xxii. 3.

[30] See *Jewish Encyclopedia,* art. "Gamaliel."

and ideas of Aristotle. To the influence of Hellenic thought on the Hebraism of the period of Paul's boyhood, certain of the Apocrypha bear eloquent witness, and especially the Book of Wisdom. But we see the same forces at work in a far deeper and more lasting way in the philosophical system of a man who is one of the greatest spirits the Hebrew race ever produced, Philo the Jew of Alexandria.

So important is a knowledge of Philo for a true understanding of St. Paul, and especially of the intellectual influences of Paul's early manhood, that we shall be well advised at this point to try to state in their order the leading principles of Philo's philosophy, first considering his world-concept, and then his method of studying and interpreting the Hebrew scriptures.

Philo conceives God exactly as do the Upanishads, as "One, without distinctive quality, uncreated, imperishable, unchangeable;"[31] *δεῖ γὰρ ἡγεῖσθαι καὶ ἄποιον αὐτὸν καὶ ἕνα καὶ ἄφθαρτον καὶ ἄτρεπτον.* He speaks of God as "the Father," "to whom all things are possible;"[32] as "the Saviour and Benefactor;"[33] "the great King;"[34] "the elder, ruler and lord of the universe;"[35] as "dwelling in pure light;"[36] and "invisible." We are strongly reminded of this general conception by such a sentence as that in the first letter to Timothy: "The blessed and only Potentate, the King of kings, and Lord of lords, who alone hath immortality, dwelling in the light which no man can approach unto."[37]

Of this uncreate, immutable God, the universe is shadow.[38] But God did not create the universe directly, out of nothing. Here we come to Philo's greatest contribution to the thought of the world. God, in Philo's view, created first an idea of the universe; or, we might say, an idea of the universe arose in the Divine Mind, as the idea of a city may arise in the mind of a "wise architect." This idea of the universe, this archetypal model, is invisible, subjective, noumenal, perceptible only to the intellect. This archetype of the universe is the Thought or Reason, or "Logos of God."[39]

The Logos is "a divine image" of God.[40] All things were cre-

[31] Philo, *Legum Alleg. lib.* I, 15; ed. L. Cohn, Berlin, 1896, Vol. I, pp. 73-4.
[32] *De Opific. Mundi,* 18; Cohn I, p. 18, l. 21.
[33] *Legum Alleg.* II; Cohn I, p. 101, l. 18.
[34] *De Opific. Mundi,* 23; Cohn I, p. 24, l. 5.
[35] *De Opific. Mundi,* 23; Cohn I, p. 24, l. 5.
[36] Philo. *Quod Deus sit immutabilis,* 6; Cohn II, p. 62, l. 14.
[37] 1 Tim. vi. 15-16.
[38] *Legum Alleg.* III, 33; Cohn I, p. 135, l. 17.
[39] *De Opific. Mundi,* 6; Cohn I, p. 8, ll. 2-4.
[40] *Ibid.*

ated through the Logos.[41] "Behold the mightiest dwelling and city, this universe itself. For thou shalt find the cause of it to be God, by whom it came into being; the matter of it, the four elements out of which it was composed; the instrument, the Logos of God, by means of whom it was made."[42]

It would seem that we find an equivalent idea in Paul, who also thinks of God as having created first an invisible, noumenal universe and then a visible, phenomenal universe: "The invisible things of him from the creation of the world are clearly seen, being understood by the things that are made, even his eternal power and Godhead."[43] And the relation between the two is summed up in the words: "The visible things are temporal, the invisible things are eternal."[44] So Paul also has the idea of the invisible archetype of the universe, to be known by its shadow or expression, the visible world.

He also thinks of this divine manifestation as "the image of God;"[45] "the image of the invisible God;"[46] and of man as "the image and glory of God."[47]

Through the Logos, or through the power of the Logos, according to Philo, the soul and body of man are made. Nothing in Philo is more characteristic of him than his teaching of the dual nature of man: "Dual is the race of men. For one is the heavenly man, and the other is the earthly man. Now the heavenly man, as being born in the image of God, is wholly without part in corruptible and earthly being. But the earthly man is made of matter, which he calls dust."[48] This is almost identical with the wonderful passage of Paul: "The first man is of the earth, earthy; the second man is the Lord from heaven. As is the earthy, such are they also that are earthy; and as is the heavenly, such are they also that are heavenly."[49]

For Philo, this heavenly man, this divine image, the soul, is, as it were, dead and buried in the body: "Now, when we are alive, we are as though our soul were dead and buried in our body, as if in a tomb. But if we were to die, our soul would live according to

[41] *Legum Alleg.* I, 9; Cohn I, p. 66, l. 15.

[42] *De Cherubim,* 35; Cohn I, p. 200, ll. 7-10.

[43] Rom. i. 20.

[44] 2 Cor. iv. 18.

[45] 2. Cor. iv. 4.

[46] Col. i. 15.

[47] 1 Cor. xi. 7.

[48] *Legum Alleg.* I, 12; Cohn I, p. 69, ll. 1-4.

[49] 1 Cor. xv. 47-48.

its proper life, being released from the evil and dead body to which it is bound."[50] Or again: "He is speaking not of common death, but of that death *par excellence,* which is the death of the soul, entombed in passions and all kinds of evil."[51] Paul also speaks of being "dead in trespasses and sins."[52] Addressing another group of learners, he writes: "You, being dead in your sins;"[53] and we find him using of himself, the striking image already quoted from Philo: "O wretched man that I am! who shall deliver me from the body of this death?"[54]

The impulses of the earthly man, Philo calls "the flesh." "There is nothing," he tells us, "which is so great a hindrance to the growth of the soul as the fleshly nature;"[55] "The greatest cause of our ignorance is the flesh, and our inseparable connection with the flesh."[56] And the flesh wars against the spirit: "The indulgences of intemperance and gluttony, and whatever other vices the immoderate and insatiable pleasures, when completely filled with an abundance of all external things, produce and bring forth, do not allow the soul to proceed onwards by the plain and straight road, but compel it to fall into ravines and gulfs, until they utterly destroy it; but those practices which adhere to patience, endurance and moderation, and all other virtues, keep the soul in the straight road, leaving no stumbling-block in the way, against which it can stumble and fall."[57]

Philo enumerates the fruits of the flesh: "gluttony, lasciviousness, ambition, the love of money, fear, folly, cowardice, injustice."[58] He likewise records the fruits of the spirit, "prudence, courage, temperance, justice," which "spring from the Logos as from one root, which he compares to a river, on account of the unceasing and everlasting flow of salutary words and doctrines, by which it increases and nourishes the souls that love God."[59] This is a fair parallel to Paul's famous lists, as, for instance in the fifth chapter of the letter to the Galatians: "Now the works of the flesh are

[50] *Legum Alleg.* I, 33; Cohn I, p. 89, l. 8.

[51] *Ibid.,* I, p. 99, l. 23.

[52] Eph. ii. 1.

[53] Col. ii. 13.

[54] Rom. vii. 24.

[55] *De Gigantibus,* 7; Cohn II, p. 48, l. 1.

[56] *Ibid.,* p. 47, l. 18.

[57] *De Agricultura,* 22; Cohn II, p. 115, l. 19.

[58] *De Opific. Mundi,* 26.

[59] *De Posteritate Caini,* 37; Cohn II, p. 28, l. 16.

manifest, which are these;" with the picture of ceaseless warring of flesh against spirit, and of spirit against flesh.

Human life, indeed, as Philo understands it, is simply the battle-ground of these two forces, the flesh and the spirit. But in this war, man is not helpless, because the soul, made in the image of the Logos, is in essence one with the Logos. "Every man in regard to his intelligence is connected with the divine Logos, being an impression, or a fragment, or a ray of that blessed nature."[60] Therefore man is "an abode or sacred temple for a reasonable soul, the image of which he carries in his heart, the most godlike of images."[61] "Since, therefore, God invisibly enters into this region of the soul, let us prepare that place in the best way the case admits of, to be an abode worthy of God; for if we do not, he, without our being aware of it, will leave us and migrate to some other habitation, which shall appear to him to be more excellently provided. For if, when we are about to receive kings, we prepare our houses to wear a more magnificent appearance, what sort of habitation ought we to prepare for the King of kings, for God the ruler of the whole universe, condescending in his mercy and lovingkindness for man, to visit the beings whom he has created, and to come down from the borders of heaven to the lowest regions of the earth, for the purpose of benefiting our race? Shall we prepare him a house of stone or of wood?....No, a pious soul is his fitting abode. If therefore we call the invisible soul the terrestrial habitation of the invisible God, we shall be speaking justly."[62] Compare this with Paul: "Know ye not that ye are the temple of God, and that the spirit of God dwelleth in you?"[63]...."The temple of God is holy, which temple ye are."[64] "Know ye not that your body is the temple of the holy Spirit, which is in you, which ye have of God, and ye are not your own?"[65]

Since it is the spirit, the light of the Logos in the soul, the divine ray, which wars in us for virtue and immortality, Philo speaks of the Logos as the Saviour, the Mediator: "The Father who created the universe has given to his archangelic and most ancient Logos a preeminent gift, to stand on the confines of both, and separate the created from the Creator. This same Logos is

[60] *De Opific. Mundi*, 51; Cohn I, p. 51, l. 6.

[61] *Ibid.*, 47; I, p. 48, 4.

[62] *De Cherubim*, 29, 30; Cohn I, p. 194.

[63] 1 Cor. iii. 16.

[64] 1 Cor. iii. 17.

[65] 1 Cor. vi. 19.

continually a suppliant to the immortal God on behalf of the mortal race, which is exposed to affliction and misery, and also an ambassador sent by the Ruler of all to the subject race. And the Logos rejoices in the gift."[66] Philo develops this idea of ambassadorship still further: "Why do we wonder if God assumes the likeness of angels, as he sometimes assumes even that of men, in order to help those who address their prayers to him?....Those who are unable to bear the sight of God, look upon his image, his angel (or messenger), the Logos."[67] In exactly the same way Paul holds that "there is one God, and one Mediator between God and men."[68]

Therefore we must "believe firmly in God our Saviour," says Philo, and "take refuge in him."[69] We must "press forward, putting aside slow and hesitating fear."[70] We must "rest upon the divine Logos, placing the whole of our lives as the lightest burden on him."[71] In the same way Paul says: "even we have believed;"[72] he bids us "press toward the mark;"[73] he tells us that our "life is hid with Christ in God."[74]

We must pass, says Philo, through "a dying as to the life of the body, in order that we may obtain an inheritance of the bodiless and imperishable life which is to be enjoyed in the presence of the uncreate and everlasting God."[75] We must "lay a firm foundation, and build the house of the soul."[76] Is not this the *nekrosis*, of which Paul says: "I die daily"? Is not this the *oikodomia,* or "edification" whereby we build the house "not made with hands"?

What is the result? According to Philo, we reach the state of "the perfect man, who has rooted out anger from his heart, and is gentle to every one in word and deed."[77] With the perfect man, Philo contrasts the man who is still advancing toward perfection, who has not yet wholly rooted out passion, but has gained the vir-

[66] *Quis div. rer. Haeres,* 42.
[67] *De Somniis,* I, 41.
[68] 1 Tim. ii. 5.
[69] *De sac. Ab. et C.* 19.
[70] *De Somniis,* I, 26.
[71] *Ibid.* 21.
[72] Gal. ii. 16.
[73] Phil. iii. 14.
[74] Col. iii. 3.
[75] *De Gigant.* 3.
[76] *De Cherubim,* 30.
[77] *Legum Alleg.* III, 47.

tues, perspicuity and truth. This irresistibly suggests two sentences of Paul's: "Till we all come in the unity of the faith, and of the knowledge of the Son of God, unto a perfect man, unto the measure of the stature of the fulness of Christ;"[78] "Not as though I had already attained, either were already perfect; but I follow after."[79] For Philo, as for Paul, the end is a glorious immortality.

Two more passages in Philo seem to call for special notice. First, in the tract on the "Confusion of Tongues," we have this sentence, applied to "that incorporeal being who in no respect differs from the divine image," that is, the Logos: "The Father of the universe has caused him to spring up as the eldest son, whom, elsewhere, he calls his firstborn."[80] Secondly, we have in Philo such a sentence as this: "When God, being attended by two of the heavenly powers as guards, to wit, by Authority and Goodness, he himself, the one God being between them, presented an appearance of Three Figures to the visual soul, each of which figures was not measured in any respect; for God cannot be circumscribed, nor are his powers capable of being defined by lines, but he himself measures everything. His Goodness therefore is the measure of all good things, and his Authority is the measure of things in subjection, and the Governor of the universe himself is the measure of all things corporeal and incorporeal."[81]

These two passages seem to me to suggest that we may find in the thought of Philo the first outline of two doctrines, that of the Trinity, Three Persons in one God, and that of the Logos as "the firstborn Son."

The passages I have quoted are very far from illustrating fully the manifold relations between Philo and Paul. But they do, I think, fairly indicate the great outlines of Philo's world-concept. And I think they show that Paul's world-concept is closer to Philo's than it is to any other philosophic or religious cosmogony of which we have any knowledge. I am inclined to think that the closeness amounts to identity.

What conclusions are we to draw? It has, of course, been suggested that Philo is a debtor to Paul and the other writers of the New Testament. But this seems quite untenable, if we consider the dates. The most definite evidence as to the age of Philo is the sentence at the beginning of his account of the embassy to Rome, where

[78] Eph. iv. 13.

[79] Phil. iii. 12.

[80] *De Conf. Ling.* 14; Cohn II, 241, l. 19.

[81] *De Sacrif. Ab. et C.* 15; Cohn I, 225, 18.

he suffered many slights at the hands of Caligula. Philo writes: "How long shall we, who are aged men, still be like children, being indeed as to our bodies gray-headed through the length of time that we have lived, but as to our souls utterly infantine through our want of sense and sensibility, looking upon fortune, the most unstable of all things, as most invariable, and on nature, the most steadfast, as utterly untrustworthy?"

The embassy took place in the year 40 A. D. Philo apparently wrote his account of it soon after, and was then an aged man, gray haired. From this it is surmised that he was born between the years 20 and 10 B. C. The two scholars who have recently given the subject the most thorough study are Leopold Cohn and Massebieau. The former suggests the dates just given for the limits between which Philo's birth must be placed: "*So fällt seine Geburt etwa* 20-10 *v. Chr.*"[82] Massebieau thinks that the treatise from which we have most largely quoted, *De Opificio Mundi,* and the series of works flowing out of it, up to and including *De Specialibus Legibus,* II, were finished by the year A. D. 14, Philo being then under forty.[83]

We may take it as quite certain, therefore, that Philo's system was completely worked out, and his greatest works, those which embody that system most perfectly, were written while Paul was still a child; some of them, very probably, before Paul was born. Paul was a young man at the time of Stephen's martyrdom. If we take this to mean that he was then twenty-four or twenty-five, we should have to put the year of his birth about 10 A. D., which may well be close to the truth.

Philo's reputation stood high in Alexandria, and his fame must soon have spread throughout the empire, and the whole Jewish world, which was then nearly co-extensive with the empire. Philo himself gives us a bird's-eye view of the Jewish settlements of his day, in a passage quoted from a letter of Agrippa, in which he speaks of Jerusalem: "Concerning the holy city, I must now say what is necessary. As I have already stated, it is my native country, and the metropolis, not only of the one country of Judea, but also of many, by reason of the colonies which it has sent out from time to time into the bordering districts of Egypt, Phœnicia, Syria in

[82] *Philologus,* Supplementband VII, Leipsic, 1899; Leopold Cohn, "Einteilung und Chronologie der Schriften Philo's," p. 426, note 47. This very conservative scholar attributes to Philo's first period the works on "Creation" and the early part of the "Allegories of the Sacred Laws."

[83] *Revue de l'histoire des religions,* LIII, Paris, 1906. Massebieau, "Chronologie de la vie et des œuvres de Philon," p. 37.

general, and especially that part of it which is called Coelo-Syria, and also those more distant regions of Pamphylia, Cilicia, the greater part of Asia Minor as far as Bithynia, and the furthermost corners of Pontus. And in the same manner into Europe, into Thessaly, and Boeotia, and Macedonia, and Aetolia, and Attica, and Argos, and Corinth and all the most fertile and wealthiest districts of Peloponnesus. And not only are the continents full of Jewish colonies, but also all the most celebrated islands are so too; such as Euboea, and Cyprus, and Crete. I say nothing of the countries beyond the Euphrates, for all of them except a very small portion, and Babylon, and all the satrapies around, which have any advantages whatever of soil or climate, have Jews settled in them."[84] This may serve as an admirable summary of the Jewish world, as it must have presented itself in the imagination of St. Paul. "If my native land," continues the writer, "is, as it may reasonably be, looked upon as entitled to a share of your favor, it is not one city only that would be benefited by you, but ten thousand of them in every region of the habitable world, in Europe, in Asia and in Africa, on the continent, in the islands, on the coasts, and in the inland parts."

Throughout the whole of this Jewish world, there were, on the one hand, groups of studious scholars, and on the other a ceaseless going and coming, whether of devotees going up to the feasts at Jerusalem, or of merchants, or of travelers. The intercourse of thought and knowledge must have been rapid and extensive, much more extensive than we readily imagine, if our view be formed from the narrowly concentrated events of the four Gospels. Paul's own view was far wider. His knowledge of geography was considerable, and he covered, in his journeys, a large part of the territory sketched above by Agrippa.

The Alexandrian grain ships often sailed north along the Syrian coast as far as Tarsus, and then turned westward toward Rome. It was only a few days' sail from Alexandria to Tarsus. We may, therefore, well believe that there would be nothing improbable in the supposition that Philo's works might be read in Tarsus very soon after they were given out in Alexandria. So that the chief works of Philo, the "Creation," and the "Allegories of the Sacred Laws," may easily have reached Paul's household, while he himself was still a child, under the rather strict rule of his father. From his father, he may easily have learned the idealistic world-concept of

[84] *Legatio ad Gaium*, ch. 36. See Philo, C. D. Yonge, vol. IV, p. 61. The passage quoted is from the letter of Agrippa to Caligula.

Philo, and the method of allegorical interpretation which Paul also probably owes to Philo's teaching.

Or we may suppose that Philo's method and view had found their way to Jerusalem, and had gained the adherence of Gamaliel, before Paul went to the sacred city to sit at the great Rabbi's feet. One is inclined to think that both these suggestions may be true. So thoroughly is Paul saturated with the world-view and the allegorical method of Philo, that his mind and thought must have been formed on them from the beginning.

One interesting point arises. Philo and Paul follow the same lines of thought in the world-concept which we have outlined. But they very often use different words, where one would expect the words used to be the same. Thus, in the passages we have quoted, they use different words for earthly or earthy, for the temple of the spirit, for the mediator. I believe the explanation of this is, that Paul became familiar with Philo's thought at a very early period, so that this thought became a part of his own mental furniture, looked on as his own, and therefore expressed in his own words. This seems more probable than that Paul came across Philo's works comparatively late in life, for then he would have borrowed more unevenly, and would have quoted more accurately. He may well have re-read Philo later in life, perhaps at Cæsarea between 60 and 62 A. D., or at Rome after 63. There are indications in some of the later epistles that he did re-read Philo, or that he had become familiar with Philo's later works. But I wish to leave the question somewhat incomplete at present, keeping for a future time the detailed examination of the relation between separate works of Philo and separate epistles.

The relation itself seems to me certain. One may form some estimate of its depth and extent, by comparing, let us say, the world-concept and theology of the Gospel according to St. Mark with the highly defined world-concept and theology of Paul's letters and speeches. Jesus seems to have refrained of deliberate intent from raising any cosmological or metaphysical questions, not because he did not value cosmology or metaphysics, but, perhaps, because his purpose was to train, not the intellect, but the will; to awaken the spiritual will, and put it in command; holding that only after this had taken place, could any true view of the world and of life be gained.

Paul, on the contrary, came to manhood with defined cosmological and metaphysical views, views derived, as I believe, from Philo; and he interpreted his spiritual experience in the light of these

views, and read in the same light what he learned from the elder disciples, of the life and teachings of Jesus. Christendom has largely adopted and followed the thought of Paul, and therefore of Philo; and I am inclined to think that to this cause we must attribute the formulation of the Doctrine of the Trinity, and of the Word as the firstborn, and, later, the only begotten Son of the Father.

I believe Paul's view of the Old Testament was not less profoundly colored by his studies in Philo, and that we must consider in this light what he has to say of Adam and Eve. This is of the highest importance; for from what Paul says of Adam had been developed the Doctrine of the Fall, as the cornerstone of "the plan of salvation." I think it can be shown that Paul was very far from believing, on this subject, what he is generally supposed to have believed; but I must postpone the consideration of this deeply interesting question for another occasion.

FISH AND DOVE.

BY THE EDITOR.

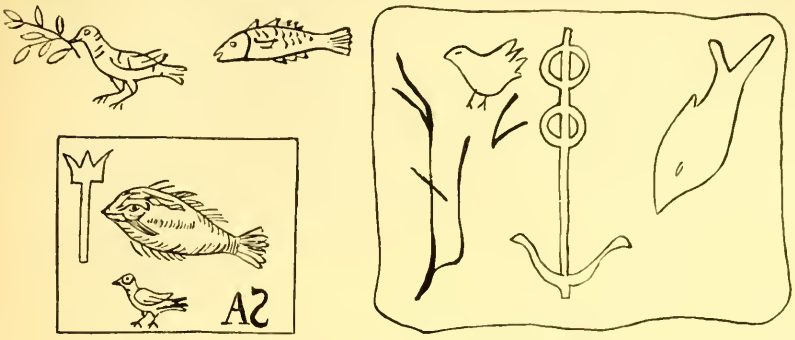
AT the beginning of the Christian era, Hither Asia and Egypt, known as the Levant or the Orient, exercised a most enduring and decisive influence upon the development of mankind. Rome had conquered the Orient by force of arms, but the Orient conquered Rome by force of her older civilization; for Rome adopted eastern institutions, eastern beliefs, and eastern forms of worship. Western democracy was supplanted by an eastern autocracy, and long before Christianity took root in Rome, eastern religions were introduced from Egypt and Babylon and Syria, in spite of senatorial prohibitions and severe persecutions. It is therefore not improbable that the many similarities that obtain between Roman Christianity and Oriental modes of belief are not purely accidental but indicate an historical connection. If they were accidental they would be extremely curious and we would have to confess that the coincidences would be the more remarkable. At any rate a knowledge of Oriental religions is an indispensable factor for a comprehension of Christian symbolism and Christian modes of worship.

We will here consider the fish and the dove, the sacred animals of Astarte, which reappear during the third and fourth centuries A. D. as important Christian symbols.

We possess a curious book on the goddess of Syria, written by Lucian, a native Assyrian who saw the places he describes and is a reliable authority. From this book we learn many details concerning the worship of the Syrian goddess in her holy city, Hierapolis.

Hierapolis in Syria, a few miles west of the upper Euphrates on the road toward Antioch, was the center of a popular cult devoted to Istar, the great mother-goddess and Queen of Heaven. Lucian calls her the Syrian Hera (or Juno) and claims that there is no more venerable, "nor any holier place in the world" than Hierapolis. It is remarkable that both the pigeon and the fish sacred to Istar of Hierapolis reappear in the same close union in the Christian catacombs.

Lucian describes the Hera of Hierapolis as holding a scepter in one hand and a spindle in the other. She wears a crown in the form of a turret and her head is surrounded by a halo. Her belt



FISH AND DOVE IN THE CATACOMBS.*

CHRISTOGRAM WITH DOVE AND FISH.

This combination is typical for many graves in the catacombs. The present instance is taken from a tomb in the cemetery of Priscilla according to Boldetti, p. 371. It covered the tomb of a boy Priscinus.

THE TOMBSTONE OF REDEMPTA WITH URN, DOVE AND FISH.
Formerly in the Kircher Museum, now lost. (See Lupi, *Ep. Sev. M.*, p. 185.)

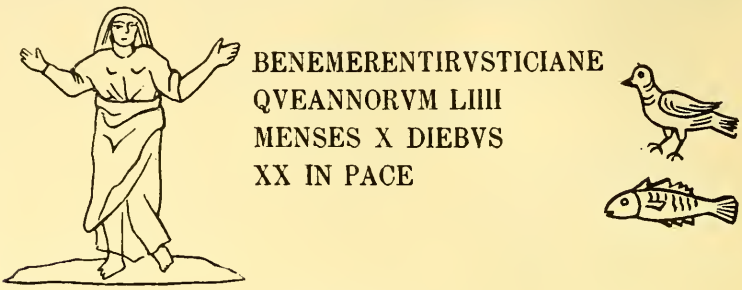
is the same as that of Venus Urania, which implies that it is ornamented with stars. Above her forehead she wears a gem which is called "the lamp" for at night it emits such a brilliant light that the

* In the left upper corner we see a dove with olive branch and a fish, without any inscription. It was discovered in the cemetery of Priscilla. De Rossi proves (*Bul. di arch. cr.*, 1864, p. 9 f.) that it belongs to the third century. Underneath we see a trident and a bird accompanied by the letters AS. It is recorded by Boseo in *Roma Sotterranea*, p. 210; and Aringhi (Vol. II, p. 522) states that it was found in the cemetery of Nereo and Achilleo. The trident renders it doubtful whether it is Christian or pagan. The third stone contains besides a bird and a fish an anchor and a scrawl of unknown significance without inscription. It comes from the cemetery of Cyriacae (cf. d'Agincourt, *Sculpture*, VII, n. 21, and de Rossi, n. 68.)

temple is lit as by lamps; though the light is somewhat weaker than daylight it always remains luminous.

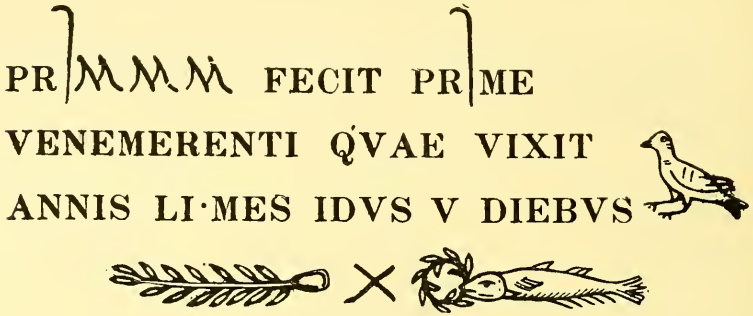
The context suggests that the gem on the head of the Syrian goddess must have been a real lamp covered by colored glass.

Lucian also mentions as a special peculiarity of the Syrian



THE EPITAPH OF RUSTICANA IN THE CATACOMBS.

The epitaph is framed in by a praying woman on one side and a dove and fish on the other. The deceased lived to the age of 54 years, 10 months and 20 days. She was buried in the cemetery of Priscilla, the picture being reproduced from Lupi, *Ep. Sev. M.*, p. 118; Marini, *Papiri diplomatici*, p. 355 et al.



PRIMA'S TOMBSTONE IN THE CATACOMBS.

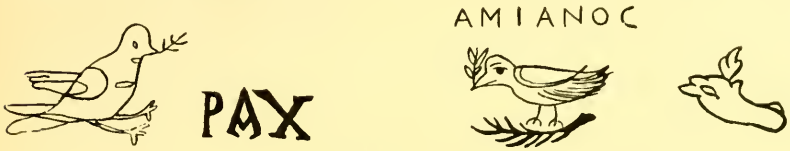
The Christian character of this sarcophagus is assured by the ☧ placed between a palm branch and a fish with a laurel wreath in its mouth. The dove stands to the right of the inscription in which PRIMMM apparently stands for *Primus maritus, Prime* for *Primae, mesidus* for *mensibus* and *venemerenti* for *benemerenti*. It means that her "husband Primus made the tomb for Prima the well deserving, who lived fifty-one years, five months and some days."

goddess that she always looks the worshiper straight in the face. If a man turns to the right she follows him with her eyes; while at the same time a man may pass to the left and she will do the same. This peculiarity seems to suggest that the image in question, unlike the artistic sculpture of Greece, was either a bas relief or a comparatively

flat statue, for the trick of making pictures always look at the spectator is nothing remarkable, and has been from time immemorial quite well known to the profession of painters, but it can scarcely be imitated in plastic statuary. There have been found, however, statues in high relief of the corresponding Phenician goddess which are sufficiently flat to render such a trick possible.

Our frontispiece represents a statue in high relief of the mother-goddess of Cyprus. It has apparently served as an altar piece in an Istar temple in the same way as the statues of the Syrian Juno that Lucian describes.

In another place Lucian speaks of the goddess as being seated



DOVES IN THE CATACOMBS.

The dove followed by the word PAX is an epitaph which has been published by Marini in his *Atti de' fratelli Arvali*, p. 266; the group to the right is recorded by Boseo *R. S.*, p. 564, and is simply marked with the name Ammianus. It is difficult to decide whether the figure behind the dove is a fish or a lamp or a flower.

THE TOMB OF VLPIUS.

Of the two illustrations of this epitaph the bird with the bunch of grapes stands above, and the hooked fish below the inscription, which reads in poor Latin *Vlpius restitutu*[*s*] *dormiente in pace.*

in a chariot, drawn by lions, not unlike the goddess Rhea, a drum in her hand and a turret crown on her head. In the interior of the temple, presumably the Holy of Holies, Lucian relates there was a statue of Hera enthroned on lions, and one of Zeus standing on a bull, both made of gold, and between the two golden statues stood another golden symbol which was quite different from any other statue. He says that it had no definite shape but contained all divine forms. The Assyrians simply called it the sign,[1] but no one could give any information concerning its origin or its shape. On the summit of it rested a golden dove, the representative bird of Istar. We need not hesitate to assume that this so-called sign was simply a

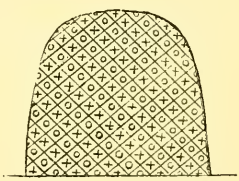
[1] σημεῖον.

pillar, a mazzeba,[2] such as commonly served to indicate the divine presence in the primitive days of stone worship,[3] when it was called by the Jews as well as the Phenicians "house of God," or Bethel.[4]

ISTAR.*

ISTAR.†

We have innumerable instances of such pillars representing Istar or Diana on coins and medals. Sometimes the sacred symbols of the deity to whom the pillar is dedicated are carved into it.



ASSYRIAN MATZZEBA COVERED WITH SOLAR DISCS AND CROSSES.
From Ohnefalsch-Richter, *Kypros,* Plate LXXXIII, 2.

Incidentally we call attention to the trinity of the cult at Hierapolis. There were three emblems, the statues of Zeus and Hera and a pillar with a dove perched upon it, symbolizing the divine

[2] מַצֵּבָה

[3] See the author's article on "Stone Worship," *Open Court,* XVIII, 45, 661.

[4] בֵּיתאֵל. Or transcribed into Greek *βαιθέλλιον.*

* From a rock carving at Boghaz-Köi in Asia Minor.

† The similarity to Christianity becomes more apparent when we consider that the Holy Ghost, which the dove there represents, was for a time and in certain places regarded as feminine and the mother of Christ.

Father, the divine Mother, and an impersonal Bethel represented in the shape of a dove. We know that almost every temple of the Orient exhibited in the Holy of Holies a trinity of some kind—in Egypt mostly Osiris, Isis and Hor, and the persistence of tradition

A CHRISTIAN CARNELIAN IN THE KIRCHER MUSEUM.

This shows the Good Shepherd, a ship, an anchor, a dove on a T cross and a fish on each side of the anchor. Through these symbols are scattered the letters IXΘTΣ.

CHRISTIAN SYMBOLS.

Among them the dove on the ark and underneath Jonah's whale; on the left of the Good Shepherd Jonah under the gourd, and underneath seven sheep.

appears from the fact that all over China both the Buddhists and the Taoists have trinities in their shrines. The Buddhists call their trinity the triple gem and the Taoists "the three Holy Ones." When we would ask why there are three Holy Ones, not two, nor four,

THE TOMBSTONE OF EUTROPUS.

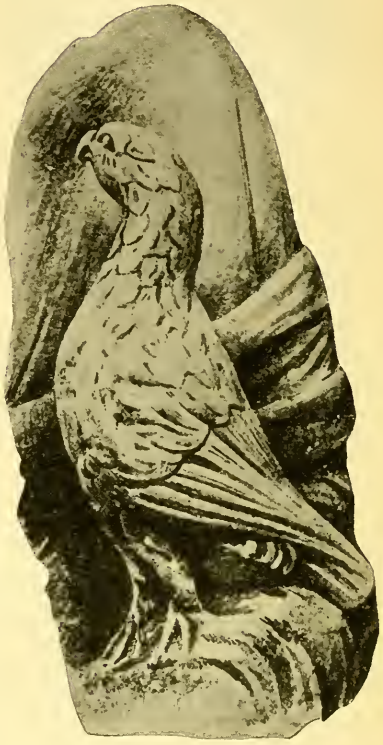
The occupant of this tomb was a sarcophagus maker. The inscription reads, "The Saintly and God Fearing Eutropus in peace. His son made it" (i. e., the tombstone). On the right hand is shown the coffin ornamented with four dolphins. Above it hovers a dove with an olive branch in his mouth.

no one can give us an authoritative answer, for the books of Taoism contain no information on the subject.

Concerning the animals held sacred by the worshipers of the Syrian goddess Lucian says: "Among the birds the dove was in their

opinion most holy. Even to touch it was deemed sin, and if this should happen unintentionally to any one he would be impure for a whole day. The doves make much use of their immunity, so much so that they live there and enter freely into the living rooms searching for food without fear."

ISTAR WITH DOVE.



ISTAR'S DOVE (DETAIL).

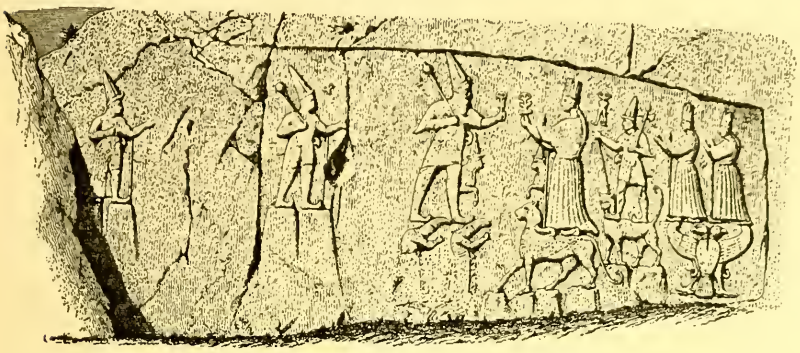
During the Hellenistic period.

Concerning the holy fish in Hierapolis Lucian says:

"Not far from the temple is a lake in which there are a great many holy fishes of different kinds; some of them are extraordinarily large and have names of their own. They come when called. While I watched them I found one among them who had an ornament of golden flowers on his fins. I saw him repeatedly and always with

wreaths and exhaling the odor of incense. Daily many people swim to it in order to pray there and deck it with fresh flowers."

One of the greatest festivals which attracts great crowds is what is called "the procession to the lake," because, as Lucian tells us, "on this day all the statues of the gods descend to the lake, among them Juno first, for the sake of the fish, lest Zeus see them before the same decoration. The pond is said to be very deep. I have not sounded it but it is said to be about 200 yards. In the middle of the pond stands a stone altar which at first sight seems to swim and move upon the water, and this is believed by many people, but it seems to me to rest on a high column. This altar is always covered her, for if that should happen, it is said that the fish in the lake



ROCK CARVING AT BOGHAZ-KÖI.
Bas-relief in the British Museum.

would die. Now he comes indeed to see them but the goddess prevents him, keeps him back, and does not cease urging him to return."

The custom of bathing the statues of the gods was quite a common practice, and, like baptism, is a ceremony based on the notion of the sanctity of water as the substance of life. We meet with the same custom even among the Teutons, of whom Tacitus gives us a vivid description saying that a goddess was ceremoniously bathed in a sacred lake of an island, and some archeologists believe they have discovered this locality in the now so-called Hertha lake on the Island of Rügen.

Wieland, the German translator of Lucian's complete works, makes this comment on the Syrian goddess (First edition, Vol. V, pp. 347-348):

"Since Lucian often leaves our curiosity unsatisfied in this rather desultory account of the Syrian goddess, it may not be unwelcome

to many readers if I endeavor to throw further light upon this mysterious goddess, her temple and some of its peculiarities, so far as I have the means at hand. Larcher, in his essay *Memoire sur Venus* (p. 16 f.), says: 'The Syrian goddess was regarded as a Venus, and it is the more probable that she was a Venus since she was thought of as nature itself, or at least as the first cause which brought forth from moisture the beginnings and seeds of all created things. Hyginus likewise asserts that this goddess was Venus. He says that "an egg of extraordinary size fell into the Euphrates from heaven; the fishes rolled it to the bank; the doves hatched it and Venus came out of the shell and was henceforth called the Syrian goddess. At her request Jupiter, wishing to do honor to her virtues, transferred the fishes to a place among the stars, and because of this the Syrians include the fishes and doves among the gods, and do not eat them." According to Strabo the goddess was called Atergatis, and according to Eratosthenes, Derketo. He says that she fell at night into a lake near Bambyce (which according to Ælianus and Appianus is Heliopolis) and was saved by the great fish.'

"So far Mr. Larcher. This last legend, as may be assumed of all fabulous traditions of the ancient world, had an historical foundation according to the geographer Mnaseas as cited by Athenæus. Mnases said that Atergatis was a Syrian queen and had been so fond of fish that she forbade her subjects to eat fish under the heaviest penalties, but on the other hand commanded them to deliver all they caught to her own kitchen. This in his opinion is the origin of the abstinence from fish which became an article of religion with the Syrians, and also the origin of the custom to worship silver or gold fishes of Atergatis, deified by later generations, when they had some important request to make of her. He also states as a positive fact (although Lucian makes no mention of it) that real boiled and baked fishes were placed daily before the goddess and were afterwards eaten by the priests as her representatives in her name, a circumstance to which I would have been willing to swear even before I knew of this passage in Athenæus; for it is absolutely incredible that some hundreds of priests (whose maintenance demanded a great amount and variety of provisions) would have left unused a lake full of the finest fish and would not have been crafty enough to have combined the sanctity of these fishes (by which they were merely secured against the profane palates of the laity) with the interest of their own fastidious tastes."

Wieland's utilitarian explanation of the sacramental eating of

the fish by the priests is beside the mark, for it substitutes a modern culinary motive and underrates the power of religious tradition.

For the sake of completeness we will quote what Prof. W. R. Smith has to say on the dove:

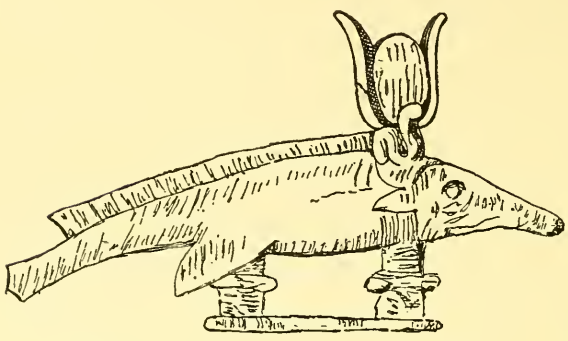
"The dove, which the Semites would neither eat nor touch, was sacrificed by the Romans to Venus; and as the Roman Venus-worship of later times was largely derived from the Phenician sanctuary of Eryx, where the dove had peculiar honor as the companion of Astarte, it is very possible that this was a Semitic rite, though I have not found any conclusive evidence that it was so. It must certainly have been a very rare sacrifice; for the dove among the Semites had a quite peculiar sanctity, and Al-Nadim says expressly that it was not sacrificed by the Harranians. It was, however, offered by the Hebrews, in sacrifices which we shall by and by see reason to regard as closely analogous to mystical rites; and in Juvenal, VI, 459 ff., the superstitious matrons of Rome are represented as calling in an Armenian or Syrian (Commagenian) haruspex to perform the sacrifice of a dove, a chicken, a dog, or even a child. In this association an exceptional and mystic sacrifice is necessarily implied.

"When an unclean animal is sacrificed it is also a sacred animal. If the deity to which it is devoted is named, it is the deity which ordinarily protects the sanctity of the victim, and, in some cases, the worshipers either in words or by symbolic disguise claim kinship with the victim and the god. Further, the sacrifice is generally limited to certain solemn occasions, usually annual, and so has the character of a public celebration. In several cases the worshipers partake of the sacred flesh, which at other times it would be impious to touch. All this is exactly what we find among totem peoples. Here also the sacred animal is forbidden food, it is akin to the men who acknowledge its sanctity, and if there is a god it is akin to the god. And, finally, the totem is sometimes sacrificed at an annual feast, with special and solemn ritual. In such cases the flesh may be buried or cast into a river, as the horses of the sun were cast into the sea, but at other times it is eaten as a mystic sacrament. These points of contact with the most primitive superstition cannot be accidental; they show that the mystical sacrifices, as Julian calls them, the sacrifices of animals not ordinarily eaten, are not the invention of later times, but have preserved with great accuracy the features of a sacrificial ritual of extreme antiquity."

We notice here that the dove is sacred, but that the mere touch of it renders people impure because things sacred are what anthropologists now are in the habit of calling "tabu." In the same way

the same animal which serves as the emblem of the deity and is eaten sacramentally, will otherwise not be eaten, and its very touch renders unclean. This is specially true of the boar, the animal sacred to Adonis, and when among the Israelites the old Adonis cult had been abrogated the pig continued to remain tabu, only henceforth it was regarded as impure and its pristine sacred character was entirely lost sight of.

The Syrians are Semites kin in race to the Hebrews, and so it is but natural that some of their institutions should be similar to those. Lucian says of the Hierapolitans that they sacrificed bulls and cows, also goats and sheep; but that only the swine are neither offered nor eaten, since they look on them as an abomination, and



THE OXYRHYNCHOUS WITH SOLAR DISK.
From a bronze in the Louvre.

ISIS AND THE FISH.

some believe that this did not happen on account of disgust, but because this animal was originally holy.

The pig was deemed a most effective offering not only among the Semites but also in Greece where we find it used as an expiatory sacrifice in the Eleusinian mysteries.

The sacredness of the dove and the fish were not limited to Hierapolis. The dove was the bird of both Venus and Diana all over the lands of classical antiquity, and the fish was the emblem of the second person of the old Babylonian Trinity since its Sumerian and its remotest prehistoric ages, and this fish deity was a mediator between God and man. To him was attributed in Babylonia all knowledge, all civilization, all religion, all morality, as much as in

Egypt to Osiris. Folklorists assume that this fish was the sun who was regarded as rising from the waters in the east and sinking back into the waters in the west, and that during the night he lived in the depths of the ocean. Some features of Oannes reappear in Ea, the god of the ocean and of water.

Similar ideas in which the fish is regarded as sacred, have prevailed in many other countries. We know that in some provinces of Egypt certain fish were sacred, and among them we especially know the large Oxyrhynchous, which was distinguished among the scaled creatures by its extreme fertility. It was represented in Egypt as carrying the solar disk on top of its head, which indicates its connection with sun worship. Isis herself was represented as the fish goddess, bearing on her head the emblem of a fish.

ON THE FOUNDATION AND TECHNIC OF ARITHMETIC.*

BY GEORGE BRUCE HALSTED.

Decimals.

IT is the characteristic of our positional notation for number that shifting a digit one place to the left multiplies it by the base of the system. The zero enables us to indicate such shifting. Thus since our base is ten, 1 shifted one place to the left, 10, becomes ten; two shifted two places to the left, 200, becomes two hundred.

Inversely, shifting a digit one place to the right divides it by the base of the system. Thus 3 in the thousands place, 3000, shifted one place to the right becomes 300.

We now create that this shifting to the right may go on beyond the units place with no change of meaning or effect.

In order to write this, we use a device, a notation to mark or point out the units place, a point immediately to its right called the decimal point or unital point. The decimal point appears first in 1617 on page 21 of Napier's *Rabdologiae.* Thus 4 shifted one place to the right becomes 0.4 and of course means a number which multiplied by the base gives 4. Such numbers have been called decimals. Their theory is independent of the base, which might be say 12 or 2, in which case the word decimals would be a distinct misnomer.

If however the base be ten, then shifting a digit one place to the left multiplies it by ten. But this is accomplished for every digit in the number simply by shifting the point one place to the right. Thus.05 is tenfold .005. If our unit is a dollar, $1, then the first place to the right will be dimes. Thus $0.6 means six dimes. The next place to the right of dimes means cents. Thus $.07 means seven cents. The next place to the right of cents means mills. Thus $.008 means eight mills.

* Continuation of an article appearing in the February and March numbers.

Ten mills make a cent. Ten cents make a dime. Ten dimes make a dollar.

In general we name these basal subunitals so as to indicate by symmetry their place with reference to the units column. As the first column to the left of units is tens, so the first column to the right of units is called tenths. As the second column to the left of the units column is called hundreds, so the second column to the right of the units' column is called hundredths. As the third column to the left of the units column is called thousands, so the third column to the right of the units column is called thousandths.

But these names need not be used in reading a subunital. Thus 0.987 may be read: Point, nine, eight, seven.

One-tenth is a number ten of which are together equal to a unit.

The word "and" connecting the different parts of a number is generally dropped; in English, however, it is retained after the hundreds (Homersham Cox, *Arithmetic,* p. 9).

If an integer be read by merely pronouncing in succession the names of its digits, as in reading 7689 as seven, six, eight, nine, we do not know the rank and so all the value of any figure read until after all have been read.

Hence the advantage of reading 7689 seven thousand six hundred and eighty-nine. But in reading the decimal .7689 as "point, seven, six, eight, nine" we know every thing about each figure as it is read, which on the contrary we do not know if it be read seven thousand six hundred and eighty-nine ten-thousandths.

Moreover such a habit of reading decimals detracts from our confident certainty of understanding integers step by step as read. There may be coming at the end a wretched subunital designation like this "ten-thousandths" to metamorphose everything read.

So always read decimals by pronouncing the word *point* and the names of the separate single digits.

Read 7000.008 seven thousand, point, nought, nought, eight. Read .708 point, seven, nought, eight.

Sum and Difference.

To add decimals, write the terms so that the decimal points fall precisely under one another, in a vertical column. Then proceed just as with integers, the point in the sum falling under those of the terms.

Just so it is with subtraction.

Product.

In multiplying decimals remember we are dealing simply with a symmetrical completion, extension of positional notation to the *right* from units' place. Realize the perfect balance resting on the units' column. 4321.234.

A shift of the decimal point changes the rank of each of the digits. So to multiply or divide by any power of ten is accomplished by a simple shift of the point.

Thus 98.76×10 is 987.6. Just so 98.76/10 is 9.876, and is identical with 98.76×0.1. Twice this is 98.76×0.1×2 or 98.76×0.2 = 19.752.

So to multiply by a decimal is to multiply by an integer and shift the point.

Hence the rule, useful for check, that the number of decimal places in the product is the sum of the places in the factors. There is no need for thinking of tenths as fractions to realize that two-tenths of a number is twice one-tenth of it.

In multiplying decimals, write the multiplier so that its point comes precisely under the point in the multiplicand, and in vertical column with these put the point in each partial product. The figure obtained from multiplying the *units* figure of the multiplicand must come precisely under the figure by which we are multiplying.

```
1293.015
  132.02
-------
129301.5
 38790.45
  2586.030
   25.86030
-------
170703.8403
```

Here, beginning to multiply by the 1, think five while writing it two places to the left of the figure multiplied because the 1 is two places to the left of the units column. Proceed to multiply by the 3, thinking fif*teen*; 3, four; nought; nine; *twenty*-seven; etc.

Rule: Multiplying shifts as many places right or left as the multiplier is from the units column.

```
41.27
  .03
-----
 1.2381
```

Here think *twenty*-one while writing the 1 two places more to the right than the 7 because the 3 is two places to the right of the units column.

Quotient.

In division of decimals place the decimal point of the quotient precisely over the decimal point of the dividend and, when the divisor is an integer, the first figure of the quotient over the last figure of the first partial dividend.

Rule: The first figure of the quotient stands as many places to the left of the last figure of the first partial dividend as there are decimal places in the divisor.

```
  638
.021)13.4
     8
     17
      2
```

Here the quotient 638 is an integer.

The sign + at the end of a number means there is a remainder, or that the number to which it is attached falls short of completely, exactly expressing all it represents, though increasing the last figure by unity would overpass exactitude and so should be followed by the sign − (minus).

```
    6+
2.1).0134
      8
```

Thus $\pi = 3.14+$ and

$\pi = 3.1416-$

When there is a remainder we may get additional places in the quotient by annexing ciphers to the dividend and continuing the division.

```
  63
.21)13.4
     8
     17
```

The phrase "true to 2 (or 3, etc.) places of decimals" means that a closer approximation can not be written without using more places.

Thus as a value for π, 3.14 is true or "correct" to two places of decimals, since $\pi = 3.14159+$; while 3.1416 is true to four places.

As an approximation to 1.235 we may say either 1.23 or 1.24 is true to two places of decimals.

FRACTIONS.

Principle of Permanence:

For the new numbers hold the old laws.

1st. Every number combination which gives no already existing number, is to be given such an interpretation that the combination can be handled according to the same rules as the previously existing numbers.

2d. Such combination is to be defined as a number, thus enlarging the number idea.

3d. Then the usual laws (freedoms) are to be proved to hold for it.

4th. Equal, greater, less are to be defined in the enlarged domain.

This was first given by Hankel as generalization of a principle

given by G. Peacock, British Association, III, London, 1834, p. 195. *Symbolic Algebra,* Cambridge, 1830, p. 105; 2d ed., 1845, p. 59.

Fractions.

If unity in pure number be considered as indivisible, fractions may be introduced by conventions. Take two integers in a given order and regard them as forming a couple; create that this couple shall be a number of a new kind, and define the equality, addition, and multiplication of such numbers by the conventions,

$$a/b = c/d \text{ if } ad = bc;$$
$$a/b + c/d = (ad + bc)/bd;$$
$$(a/b)(c/d) = (ac)/(bd).$$

The preceding number is called the *numerator* of the fraction: the succeeding number, the *denominator.*

Fractions have application only to objects capable of partition into portions equal in number to the denominator. No fraction is applicable to a person.

In accordance with the principle of permanence, we create that the compound symbol of the form a/b, two natural numbers separated by the slant, shall designate a number. Either the symbol or the number may be called a *fraction.* The slant is to stand for the division of a by b, of the preceding by the succeeding number, where this is possible. When a is exactly divisible by b, that is, without remainder, the fraction designates a natural number.

When a is a multiple of b, and a' of b', the equality $ab' = a'b$ is the necessary and sufficient condition for the symbols a/b, a'/b' to represent the same number. By this same condition we define the equality of the new numbers, the fractions.

A fraction is *irreducible* when its numerator and denominator contain no common factor other than 1.

To compare two fractions, reduce them to a common denominator, then that which has the greater numerator is called the greater.

A *proper* fraction is a fraction with numerator less than denominator. It is less than 1.

Subtraction is given by the equality $a/b - a'/b' = (ab' - a'b')/bb'$.

The *multiplication* of fractions is covered by the statement: A product is the number related to the multiplicand as unity to the multiplier. $(a/b)\ (a'/b') = aa'/bb'$.

Thus $(5/7)\times(2/3)$ means trisect, then double, giving 10/21.

So $(a/b)\times(b/a) = 1$. Two numbers whose product is unity are called *reciprocal.*

Division is taken as the inverse of multiplication, hence $(c/d)/(a/b)$ means to find a number whose product with (a/b) is (c/d). Such is $(c/d)(b/a)$.

So $(c/d)/(a/b) = (c/d)(b/a) = bc/ad$.

1°. This last expression may be considered simply a more compact form of the first, obtained by reducing to a common denominator and cancelling this denominator. This compact form can be obtained by a procedure sometimes called the rule for division by a fraction: *Invert the divisor and multiply.*

2°. If we interchange numerator and denominator of a fraction we get its *inverse* or *reciprocal.* So the inverse of a is $1/a$.

$(a/b)\ (b/a) = 1$.

Now $(x/y)/(a/b)$ means to find a number which multiplied by a/b gives x/y and so the answer is $(x/y)\ (b/a)$. Hence: *To divide by a fraction, multiply by its reciprocal.*

3°. Again to find $(a/b)/(c/d)$, note that c/d is contained in $1\ d/c$ times, and hence in a/b it is contained $(a/b)\ (d/c)$ times.

Fractions Ordered.

A *reduced* fraction is one whose numerator and denominator contain no common factor.

The fractions arranged according to size are an ordered set, but not well ordered; for no fraction has a determinate next greater fraction, since between any two numbers, however near in size, lie always innumerable others.

But all reduced fractions can be arranged in a well-ordered set arranged according to groups in which the sum of numerator and denominator is the same:

1/1, 1/2, 2/1, 1/3, 3/1, 1/4, 2/3, 3/2, 4/1, 1/5, 5/1, 1/6, 2/5, 3/4, 4/3, 5/2, 6/1,. . . .

Thus they make a simply infinite series equivalent to the number series.

Proper fractions can be arranged by denominators:

$$\tfrac{1}{2},\ \tfrac{1}{3},\ \tfrac{2}{3},\ \tfrac{1}{4},\ \tfrac{3}{4},\ \tfrac{1}{5},\ \tfrac{2}{5},\ \tfrac{3}{5},\ldots.$$

To turn a fraction a/b into a decimal $c/10^k$ must give $a10^k = bc$, where c is a whole number. Since a/b is in reduced form, therefore a and b have no common factor. So 10^k must be exactly divisible by b. Thus only fractions with denominator of the form $2^n 5^m$ can be turned exactly into decimals.

Fractions may be thought of as like decimals in being also subunitals. The unit operated with in a fraction, the fractional unit, is a subunit, and the *denominator* is to tell us just what subunit,

just what certain part of the whole or original or primal unit is taken as this subunit; while the *numerator* is the number of these subunits. Thus 3/10 is a three of subunits ten of which make a unit. Thus, like an integer, a fraction is a unity of units (or one unit), but these are subunits. Different subunits may be very simply related, as are 1/2, 1/4, 1/8.

To add 3/4 and 1/2 we first make their subunits the same by bisecting the subunit of 1/2, which thus becomes 2/4. Then 3/4 and 2/4 may be counted together to give 5/4.

Fractions having the same subunit are added by adding their numerators, the same denominator being retained since the subunit is unchanged. The like is true of subtraction.

To add unlike fractions change to one same subunit. The technical expression for this is "reduce to a common denominator."

Since we already know that to be counted together the things must be taken as indistinguishably equivalent, the procedure of changing to one same subunit is crystal clear.

To change a half to twelfths is simply to split up the one-half, the first subunit, into subunits twelve of which make the whole or original unit.

Thus, operatively, to express a fraction in terms of some other subunit, the procedure is simply to multiply (or divide) numerator and denominator by the same number.

Thus $1/2 = (1\times6)/(2\times6) = 6/12$. So $6/12 = (6/3)/(12/3) = 2/4$. This principle in the form: "The value of a fraction is unaltered by dividing both numerator and denominator by the same number," is freely applied in what is technically called "reducing fractions to their lowest terms."

It should be applied just as freely and directly in the form: "The value of a fraction is unaltered by multiplying both numerator and denominator by the same number." Thus the complex fraction $(2+2/3)/(3+2/9)$, multiplying both terms by 9, gives at once 24/29. Again (3 feet 5 inches)/(2 feet 7 inches), multiplying both terms by 12, gives 41/31.

$13\frac{1}{4}$ To subtract $7+3/4$ from $13+1/4$, that is to evaluate
$7\frac{3}{4}$ $13\frac{1}{4}-7\frac{3}{4}$, think 3/4 and two-fourths make 5/4, carry 1;
$5\frac{2}{4}$ 8 and five make thirteen.

Division of a Fraction by an Integer.

The 1 in $1/n$ is the subunit, the n specifying what particular subunit. In division of a fraction by an integer we meet the same limitation which theoretically led to the creation of fractions; namely

2/5 is no more divisible by three than any other two. But here we can easily transform our fraction into an equivalent divisible by 3. Just trisect the subunit. Thus 2/5 becomes 6/15, which is divisible by 3 giving 2/15.

Such result is always at once attained simply by multiplying the given denominator by the given integral divisor. Hence the rule: To divide a fraction by an integer, multiply its denominator by the integer.

RELATION OF DECIMALS TO FRACTIONS.

6.214
3⅓
18.642
2.071⅓
20.713⅓

Fractions may be freely combined with decimals. Thus 1/24 = .04⅙.

1 meter = 39.37 inches = 3 feet 3⅜ inches.

In finding the product of a decimal and a fraction use the fraction as multiplier.

1st. *Conversion of Decimals Into Fractions.*

By our positional notation, 0.1 means one subunit such that ten of them make the unit. But just this same thing is meant by 1/10. Therefore any decimal may be instantly written as a fraction; e. g., 0.234 = 2/10+3/100+4/1000 = 234/1000.

2d. *Conversion of Fractions Into Decimals.*

First Method.

Any fraction equals the quotient of its numerator divided by its denominator. Consider the fraction, then, simply as indicating an example in division of decimals, and proceed to find the quotient.

Thus for 1/2 we have:

$$2)1.0 \quad .5$$

So 1/2 = 0.5.

For 3/4 we have:

$$4)3.00 \quad .75$$

So 3/4 = 0.75.

For 7/8 we have:

$$8)7.000 \quad .875$$

So 7/8 = 0.875.

Second Method.

Apply the principle: The value of a fraction is unaltered by multiplying both numerator and denominator by the same number.

Thus $7/8 = 7/(2\times2\times2)$
$= (7\times5\times5\times5)/(2\times5\times2\times5\times2\times5)$
$= 875/1000 = 0.875.$

Considering the application of this second method to 1/3, we see there is no multiplier which will convert 3 into a power of 10, since 10 contains no factors but 2 and 5. Ten does not contain 3 as a factor, so we cannot convert 1/3 into an ordinary decimal. We cannot, as an example in division of decimals, divide 1 by 3 *without remainder.* But we can freely apply remainder-division, at any length. Thus

.333
3)1.
.1
.01
.001

The procedure is recurrent, and if continued the 3 would simply recur.

.142857
7)1.
.3
2
6
4
5
1

In division by n, not more then $n-1$ different remainders can occur. But as soon as a preceding dividend thus recurs, the procedure begins to repeat itself. Here then this division by 7 must begin to repeat, and the figures in the quotient must begin to recur.

If the recurring cycle begins at once, immediately after the decimal point, the decimal is called a pure recurring decimal. As notation for a pure recurring decimal, we write the recurring period, the repetend, dotting its first and last figures; thus $1/11 = .\dot{0}\dot{9}$; $1/9 = .\dot{1}$.

Every fraction is a product of a decimal by a pure recurring decimal. Thus $1/6 = (1/2)(1/3) = 0.5\times.\dot{3}$.

To convert recurring decimals into fractions:

$.\dot{1}\dot{2}\times 100 = 12.\dot{1}\dot{2}$
$.\dot{1}\dot{2}\times 1 = .\dot{1}\dot{2}$ Therefore subtracting,
$.\dot{1}\dot{2}\times 99 = 12$
$.\dot{1}\dot{2} = 12/99 = 4/33$

Rule: Any pure recurring decimal equals the fraction with the repeating period for a numerator, and that many nines for denominator.

Base.

The base of a number system is the number which indicates how many units are to be taken together into a composite unit, to be named, and then to be used in the count instead of the units composing it, this first composite unit to be counted until, upon reaching

as many of them as units in the base, this set of composite units is taken together to make a complex unit, to be named, and in turn to be used in the count, and enumerated until again the basal number of these complex units be reached, which manifold is again to be made a new unit, named, etc.

Thus twenty-five, twain ten + five, uses ten as base. Using twelve as base, it would be two dozen and one. Using twenty, it would be a score and five. In positional notation for number, a digit in the units' place means so many units, but in the first place to the left of units' place it means so many times the base, while in the first place to the right of the units' place it means so many subunits each of which multiplied by the base gives the unit. And so on, for the second, etc., place to the left of the units' column, and for the second, etc., place to the right of the units' column.

It is the systematic use of a base in connection with the significant use of position, which constitutes the formal perfection of our Hindu notation for number. The actual base itself, ten, is a concession to our fingers.

Compare these subunital expressions for the fundamental fractions, to base ten, to base twelve, to base two.

DECIMALLY.	DUODECIMALLY.	DUALLY. [IN THE BINARY NOTATION.]
$1/2=0\cdot5$	$1/2=0\cdot6$	$1/2=1/10 \quad =0\cdot1$
$1/3=\ \cdot\dot{3}$	$1/3=0\cdot4$	$1/3=1/11 \quad =\ \cdot\dot{0}\dot{1}$
$1/4=0\cdot25$	$1/4=0\cdot3$	$1/4=1/100 \quad =\ \cdot01$
$1/6=0\cdot1\dot{6}$	$1/6=0\cdot2$	$1/6=1/110 \quad =\ \cdot0\dot{0}\dot{1}$
$1/8=0\cdot125$	$1/8=0\cdot16$	$1/8=1/\dot{1}000= \cdot001$
$1/9=\ \cdot\dot{1}$	$1/9=0\cdot14$	$1/9=1/1001= \cdot\dot{0}0011\dot{1}$

MEASUREMENT.

Says Dr. E. W. Hobson: "It is a very significant fact that the operation of counting, in connection with which numbers, integral and fractional, have their origin, is the one and only absolutely exact operation of a mathematical character which we are able to undertake upon the objects which we perceive. On the other hand, all operations of the nature of measurement which we can perform in connection with the objects of perception contain an essential element of inexactness. The theory of exact measurement in the domain of the ideal objects of abstract geometry is not immediately derivable from intuition."

Arithmetic is a fundamental engine for our creative construction of the world in the interests of our dominance over it. The

world so conceived bends to our will and purpose most completely. No rival construct now exists. There is no rival way of looking at the world's discrete constituents. One of the most far-reaching achievements of constructive human thinking is the arithmetization of that world handed down to us by the thinking of our animal predecessors.

Why Count?

In regard to an aggregate of things, why do we care to inquire "how many"? Why do we count an assemblage of things? Why not be satisfied to look upon it as an animal would? How does the cardinal number of it help?

First of all it serves the various uses of identification. Then the inexhaustible wealth of properties individual and conjoined of exact science is through number assimilated and attached to the studied set, and its numeric potential revealed. Mathematical knowledge is made applicable and its transmission possible.

Thus the number is basal for effective domination of the world social as well as natural.

Number arises from a creative act whose aim and purpose is to differentiate and dominate more perfectly than do animals the perceived material, primarily when perceived as made of individuals. Not merely must the material be made of individuals, but primarily it must be made of individuals in a way amenable to treatment of this particular kind by our finite powers. Powers which suffice to make specific a clutch of eggs, say a dozen, may be transcended by the stars in the sky.

Number is the outcome of an aggressive operation of mind in making and distinguishing certain multiplex objects, certain manifolds. We substitute for the things of nature the things born of man's mind and more obedient, more docile. They, responsive to our needs, give us the result we are after, while economising our output of effort, our life. The number series, the ordered denumerable discrete infinity is the prolific source of arithmetic progress. Who attempts to visualize 90 as a group of objects? It is nine tens. Then the fingers tell us what it is, no graphic group visualization. First comes the creation of artificial individuals having numeric quality. The cardinal number of a group is a selective representation of it which takes or pictures only one quality of the group but takes that all at once. This selective picture process only applies primarily to those particular artificial wholes which may be called discrete aggregates. But these are of inestimable importance for human life.

The Measure Device.

The overwhelming advantages of the number picture led, after centuries, to a human invention as clearly a device of man for himself as the telephone. This was a device for making a primitive individual thinkable as a recognizable and recoverable artificial individual of the kind having the numeric quality, having a number picture. This is the recondite device called measurement.

Measurement is an artifice for making a primitive individual conceivable as an artificial individual of the group kind with previously known elements, conventionally fixed elements, and so having a significant number-picture by which knowledge of it may be transmitted, to any one knowing the conventionally chosen standard unit, in terms of this previously known standard unit and an ascertained number.

From the number and the standard unit for measure the measured thing can be approximately reproduced and so known and recovered. No knowledge of the thing measured must be requisite for knowledge of the standard unit for the measurement. This standard unit of measure must have been familiar from previous direct perception. So the picturing of an individual as three-thirds of itself is not measurement.

All measurement is essentially inexact. No exact measurement is ever possible.

Counting Prior to Measuring.

Counting is essentially prior to measuring. The savage, making the first faltering steps, furnished number, an indispensable prerequisite for measurement, long ages before measurement was ever thought of. The primitive function of number was to serve the purposes of identification. Counting, consisting in associating with each primitive individual in an artificial individual a distinct primitive individual in a familiar artificial individual, is thus itself essentially the identification, by a one-to-one correspondence, of an unfamiliar with a familiar thing. Thus primitive counting decides which of the familiar groups of fingers is to have its numeric quality attached to the group counted. To attempt to found the notion of number upon measurement is a complete blunder. No measurement can be made exact, while number is perfectly exact.

Counting implies first a known ordinal series or a known series of groups; secondly an unfamiliar group; thirdly the identification of the unfamiliar group by its one-to-one correspondence with a

familiar group of the known series. Absolutely no idea of measurement, of standard unit of measure, of value is necessarily involved or indeed ordinarily used in counting. We count when we wish to find out whether the same group of horses has been driven back at night that was taken out in the morning. Here counting is a process of identification, not connected fundamentally with any idea of a standard measurement-unit-of-reference, or any idea of some value to be ascertained. We may say with perfect certainty that there is no implicit presence of the measurement idea in primitive number. The number system is not in any way based upon geometric congruence or measurement of any sort or kind.

The numerical measurement of an extensive quantity consists in approximately making of it, by use of a well-known extensive quantity used as a standard unit, a collection of approximately equal, quantitatively equal, quantities, and then counting these approximately equal quantities. The single extensive quantity is said to be numerically measured in terms of the convened standard quantitative extensive unit.

New Assumptions.

For measurement, assumptions are necessary which are not needed for counting or number. Spatial measurement depends upon the assumption that there is available a standard body which may be transferred from place to place without undergoing any other change. Therein lies not only an assumption about the nature of space but also about the nature of space-occupying bodies. Kindred assumptions are necessary for the measuring of time and of mass.

Now in reality none of these assumptions requisite for measurement are exactly fulfilled. How fortunate then that number involves no measurement idea!

But still other assumptions are made in measurement. After this device for making counting apply to something all in one piece has marked off the parts which are to be assumed as each equal to the standard, their order is unessential to their cardinal number. But it is also assumed that such pieces may be marked out beginning anywhere, then again anywhere in what remains, without affecting the final remainder or the whole count. Moreover measurement, even the very simplest, must face at once incommensurability. Whatever you take as standard for length, neither it nor any part of it is exactly contained in the diagonal of the square on it. This is proven. But the great probabilities are that your standard is not exactly contained in anything you may wish to measure. There is a re-

mainder large or small, perceptible or imperceptible. Measurement then can only be a way of pretending that a thing is a discrete aggregate of parts equal to the standard, or an aliquot part of it. We must neglect the remainder. If we do it unconsciously, so much the worse for us.

No way has been discovered of describing an object exactly by counting and words and a standard. Any man can count exactly. No man can measure exactly.

Arithmetic applies to our representation of the world, to the constructed phenomena the mind has created to help, to explain, its own perceptions. This representation of things lends itself to the application of arithmetic. Arithmetic is a most powerful instrument for that ordering and simplification of perception which is fundamental for dominance over so-called nature.

Measurement may be analysed into three primary procedures: 1°. The conventional acceptance or determination of a standard object, the unit of measure. 2°. The breaking up of the object to be measured into pieces each congruent to the standard object. 3° The counting of these pieces.

(TO BE CONTINUED.)

THE UNIVERSITY AS A POLITICAL FACTOR.

BY HOWARD T. LEWIS.

A CERTAIN eminent politician, upon being asked what influence the average college undergradute in this country exerts upon politics, answered shortly, "None." Then he went on to say, "The intelligent college graduate, after he has been out in the world for a time usually comes to exert an influence second only to the daily newspaper. But so far as the undergraduate is concerned, his influence is *nil,* save, of course, in those small towns where the voting strength of the undergraduates is sufficient to materially influence the outcome of the local elections."

There can be but little doubt but that the sentiment of the general public is very largely in accord with that expressed by this gentleman. In fact, many people go farther than this, and believe that not only is the actual influence of the undergraduate a negligible quantity, but that he is not even interested in political matters of any sort. The latter view, however, will scarcely be held by any one conversant with the actual situation. But to the thinking man, who is always apt to compare American conditions with those elsewhere, it would nevertheless seem to be a fact that the average American undergraduate does not exert the influence on or manifest the same interest in the political affairs of the nation as does his European cousin.

We are all willing to grant that at the time of those great crises of our history—the Revolution and the Civil War—students left the college halls by hundreds and volunteered to serve in the defense of what they believed to be right. We are forced to admit as a matter of history that the great majority of our real statesmen have been college graduates. Yet it seems peculiar that in a land where political affairs have been so much a matter of public opinion, and where questions of such tremendous import are left to the decision of the general public, that, for some reason or other, the college

men actually enrolled as undergraduates have not taken a more active part in the affairs of the day.

We read with intense interest of the student insurrections of 1848 in Germany and Austria. Even in our own day the Italian, Russian, French, and German student riots form seemingly conclusive proof of the superior influence of and interest among the students of those countries over their American counterpart. We may, indeed, believe that these insurrections are merely the expression of popular sentiment, that the students lead them only because of their exuberance of spirit and usual fearlessness of consequences. Be that as it may, the fact remains that the students do lead the demonstrations. Sometimes they have been aided by the populace, it is true, but in more cases than one they have actually achieved momentous results through their own efforts. Naturally, aside from the lawlessness of the affair, such a comparison tends to throw discredit upon the American undergraduate, and most of us are prone to believe that in this respect, at least, he is not equal to the European student.

It would hardly seem to be out of place, therefore, at a time when the colleges and universities are attracting so much attention, to inquire what the reason for this seeming apathy can be, and we believe that before we are through, three facts will stand out preeminently. First, the difference between the American and European students in this respect is due to entirely different circumstances; second, the apathy in America is only on the surface, and beneath it lies a keen interest and an unquestionable influence; and third, the indications for the future point to an increasing interest and influence.

Since the comparison is most commonly drawn with the German universities, it would be well to investigate the problem by selecting these as typical for our purposes. It is essential to understand at the very beginning that the students as such have never been the primary instigators of the student riots of central Europe. They have been merely the outward manifestations of a deeper power lying behind them, namely, the professors in the universities. Investigation reveals that they, and not the students themselves, were usually the promulgators of reform and of opposition to established institutions. As an educated man, a specialist in his line, and usually a liberal in his political beliefs whatever his religious convictions may have been, the university professor could, with a comparative degree of safety, teach doctrines under the guise of ordinary instruction which might well have cost another man his

life. The fact has been frequently commented upon that doctrines have been taught at the University of Berlin which, if carried into effect, would mean the destruction of the Imperial Palace just across the street. Consider the effect of this sort of thing upon the average college student who is plastic in mind, yet earnest and enthusiastic. More or less unconsciously, he formed deep-rooted convictions which later became fruitful sources of unrest, dissatisfaction, and intense activity.

Another thing to be considered is that the origin of the universities in Germany had much to do with the interest manifested by the students in political affairs. There the higher schools were founded by the government and were patronized, even to the present day, chiefly by the upper classes who are always leaders in political life and the ones most interested in it. Hence it is but natural that the advanced thinker, whether student or teacher, should belong to the class accustomed to political influence and most vitally interested in reform. Is it to be wondered at, therefore, that these men should become somewhat impatient if checked in the carrying out of their convictions? The realization of their strength, the memory of at least partial success in the past, and last but not least the fact that coeducation was a thing unknown, are inherent factors in the situation in Germany that are not to be forgotten.

Here a vital difference exists between American and German conditions. The universities of this country, with exception of the state universities which are of a distinctly western origin of a later period, have been founded by religious organizations, and nowhere in the world are religion and politics so widely separated as in America. Moreover, education has always been more widely diffused here than in Europe, and reform movements have in consequence been more general.

Again, the educational ideal among the German universities is different from that prevailing in this country. Among them higher education is regarded as synonymous with intense specialization and research far more than in this country. This renders it not unusual or a thing to be severely criticized, as is the case even to-day in our country, if the professor be a staunch advocate of reform in his particular field. Confining his attention to a more or less limited field of investigation, it would indeed be peculiar if with the thorough understanding of his subject in all its bearings and ramifications which years of study would naturally give, he did not see the weaknesses of its present state and persistently teach reform. In America, on the other hand, a college education is made simply the foundation

of a more technical training which is to follow; in other words, it is a liberal education. The American university has ever been, until recent years, an institution primarily of instruction, not of investigation. The university professor, like any other teacher, was supposed to keep to facts as they had been taught in days gone by, not to develop a plan or theory of his own, or indeed even to raise any question which might reflect unfavorably upon the educational orthodoxy of the times. The days when a distinguished college president could say to a newly-elected instructor in history who wished to promulgate original work, "My dear young friend, you have been called here as a teacher of history, not as a revolutionist," have gone, it is true, but not so very long ago after all, and the tendency still lingers. So the American professor, even though he have deep convictions regarding political and social questions, never dared voice them for fear of dismissal by a bigoted board of trustees, or if they failed to note his "heresy," lest either his fellow instructors or the general public would make it too uncomfortable for him to remain.

A third factor which influenced the situation lay in the fact that, contrary to the American custom, the German student did not remain long at one university. It is therefore quite the natural thing to expect that advanced views on contemporary history were not confined to the students of any one particular university, but spread rapidly and were absorbed by the entire student world. Thus in the very nature of the German educational system lay the seed from which dissension and discontent were spread, and as an inevitable result the universities became the very hot-beds of liberalism and reform.

Is it to be wondered at, then, that the German students became impatient, sometimes even blind and desperate through despair of ever effecting their reforms, and that they occasionally rose in open rebellion against what they considered tyranny and stagnant conservatism! Perhaps, indeed, it was the only way by which they could have made themselves heard effectively. Be that as it may, it was such an insurrection that caused the fall of Metternich, and changed the map of Europe.

As a fourth fact enabling us to understand the student riots in Europe, it is well to note that a student insurrection such as the older countries have not infrequently experienced could never have effected reform elsewhere than under a despotic form of government. A democracy would never have been profoundly influenced by disturbances of this kind. Bearing this fact in mind, it will be easier to understand why such methods of reform have not been employed

in America, for let it be remembered that permanent reform can never be secured by attempting to browbeat the chosen representatives of the people, and that it can only be secured by peacefully appealing to the voters at the poles.

Finally, it is only just to remember that in the light of subsequent history the principles for which the European students have stood have generally proven a genuine advance. Moreover, there were always those among the nobility, though not university men themselves, who were liberal minded and sympathetic, ready to accept the new thought. Beneath the student classes lay the peasantry, largely ignorant, it is true, yet not without those who could reason for themselves and appreciate new ideas. Thus the student class formed an entering wedge between the upper and lower classes, and could in time secure an influence over the older nobility above and the peasantry below. Herein lies a fact which cannot be overlooked.

It is therefore apparent, even from this brief survey, that essential differences exist between the relation which the undergraduate bears to politics in the old world and the new. The origin, ideals and nature of the universities themselves, the character of the government under which they operate, and the composition of the student body are so different that no comparison can be drawn between the two. It is therefore both illogical and unfair to rate the American beneath the European merely on the basis of outward manifestations of interest.

But is it true that the American student has neither interest nor influence in politics? Despite these powerful factors favoring the German undergraduate, his American cousin has really done more toward the attainment of political advance than many of us are apt to think. The influence of college graduates lies beyond the pale of this discussion, since we are treating solely of the undergraduate. The fact, for instance, that every chief justice of the Supreme Court (save only John Marshall, who ceased his course at the College of William and Mary at the outbreak of the Revolution) have been college graduates, as were Thomas Jefferson, the draftsman of the Declaration of Independence, and Payton Randolph, the first president of the Continental Congress, although interesting, does not bear upon the subject in hand.

Yet an historian of no mean ability has said that the Revolution would have been postponed half a century had it not been for Harvard College. Political clubs have been in existence in our universities almost continuously from the days of 1875 down to the present

hour, and one can hardly measure their influence, direct and indirect. The American Republican College League of but a few years since was organized by the chairman of the Republican Central Committee, its proceedings sanctioned, and its work aided. Prohibitionists and socialists as well as republicans and democrats, have well-organized clubs in nearly every college and university in the land. That their influence is considerable is well attested by the fact that in probably every college town in America the attempt has at some time or other been made to debar the students from voting in that town. It is not at all uncommon during the various campaigns for the party organizations to send out men from the undergraduate colleges to speak in behalf of their candidates. And so, in spite of declarations that "the college graduate is too much of a gentleman to be a successful politician," or of an equally intelligent critic that "college men are not of a sufficiently practical turn of mind to attract public attention or to deserve public trust," the fact still remains that the college students of America form a political force of actual and potential power that cannot be spoken of lightly.

And what of the future? We can but recognize the tendency to-day through the college world, whatever we may think of the past. Everywhere men are coming to recognize more and more that politics is a profession, not "a job." In Germany this has long been recognized and accepted, and men there study to enter political life even as men here do to enter medicine or the ministry. It is a law of civilization that with greater development comes greater complexity in national institutions. So it comes to be increasingly true that in all government, whether monarchy or democracy, specialists are needed just as truly as in engineering or surgery. It is well that we are fast coming to learn this truth. More and more we are realizing the necessity of putting educated specialists in positions where their education and knowledge will count for the most. Tariff schedules, railroad rates and tax commissions are being made up more and more of men who know, instead of inexperienced legislators. Governor Wilson of New Jersey, Professor Seligman of Columbia, Professors Ely and Meyer of Wisconsin, ex-president Eliot of Harvard are well-known instances illustrative of this tendency. The commission form of government for cities is but another evidence of this fact. So an ever increasing number of men are specially preparing themselves for the various departments of governmental activity—forestry, consular service, and so forth—through the medium of the college course.

Equally important with greater specialization for the political

leaders of the future is a close and strong bond with the people they would lead. More and more will this be true as the American people come to realize to the fullest extent their political responsibility and become more and more sensitive to changes of policy on the part of their representatives. Recognizing this, and seeking to strengthen this bond of union, the universities of to-day are expanding in both directions—toward greater specialization on the one hand, and toward a utilitarian ideal on the other (note in this connection the growth of university extension departments)—so that as time goes on, though there may be fewer people who actively engage in politics, yet will the people as a whole be in closer touch with their representatives and their work.

This then is one of the brightest signs of our modern life: a deep and influential interest on the part of college men in the affairs of government, an interest which is daily growing and making itself felt, and one that can but filter down to those less fortunate people to whom circumstances close the college doors; a recognition of the great truth that politics must become a profession, even as medicine, law and engineering are professions; an ever strengthening bond of sympathy and purpose between the public servant and his constituents. And as a last thought, let us not forget the inestimable value of the small college in this direction, whose growing popularity and increasing power for service prophesies well for the rounded development of the independent leader of the future, who, using the party organization as a means, and the service of his fellowmen as an end, becomes thereby the true patriot and scholar.

THE RUSSIAN FISH-EPIC.

BY THE EDITOR.

THERE is a Russian fairy tale of a hero named Ivan on whom the demand was made to search for the Sultan's lost ring which had fallen into the sea and lay hidden there in a small casket. On his little magic hump-backed horse Ivan arrived in the middle of the ocean, and there he saw a whale that could not move because he had swallowed "a whole navy." A forest had grown upon his back and women were searching in his mustache for mushrooms. Ivan told the whale about his quest, and the whale called a metting of all the fishes, but not one could give any information except the little perch, who as was his wont, happened to be engaged in a fight with some other fish. He discontinued the combat for a moment to hunt for the casket, and was successful in his search but found that he was not strong enough to lift it. Numerous shoals of herrings come to his aid but in vain. At last two dolphins lifted the casket out of the ocean, and Ivan received the desired ring.

With the discovery of the gem the whale's curse came to an end. He vomited up the navy which he had swallowed, whereupon he became able to move again, and the little perch betook himself once more to the pursuit of his enemies.

The fish occupies a more prominent place in Russian folklore than in that of any other country. In fact an animal epic has been worked out in Russia, and in it the little perch plays about the same part as Reynard the fox in the German fable, and Br'r Rabbit in Uncle Remus's negro tales. Though small, the perch is bold and aggressive. On account of his sharp spikes he is feared by the other fish, even the larger ones, and succeeds in banishing them from his empire. On the authority of Angelo de Gubernatis in his *Zoological Mythology* we summarize the story as follows:

This war of the little perch with its adversaries has had in popular Russian tradition its Herodotuses and its Homers who have

celebrated its praises both in prose and verse. In the third book of his stories Afanassieff gives the description of the judgment of the little perch (*jorsh*) before the tribunal of the fishes from a manuscript of the last century. The bream (*leçc*) accused the perch, the wicked warrior, of wounding all the other fishes with his rough bristles, and compelling them to forsake the Lake of Rastoff. The perch defended himself by saying that he was strong in virtue of his native vigor; that he was not a brigand, but a good subject, who was known everywhere and highly prized on the table by great lords who ate him with satisfaction. The bream appealed to the testimony of other fishes, and some of them bore witness against the little perch, who thereupon made complaint that the other fishes in their overweening importance wished to ruin him and his companions, taking advantage of their small size. The judges called also upon the bass, the eel-pout, and the herring to testify. The bass sent the eel-pout, and the eel-pout excused himself for not appearing, pleading that his belly was fat, and he could not move; that his eyes were small, and his vision imperfect; that his lips were thick, and he did not know how to speak before persons of distinction. The herring testified in favor of the bream and against the little perch.

Among the witnesses against the perch the sturgeon also appeared. He maligned the perch, alleging that when he attempted to eat its flesh he was obliged to spit out more than he could swallow. He complained also that one day when they were going by the Volga to Lake Rastoff, the little perch called him brother and deceived him in order to induce him to retire from the lake, saying that he also had once been a large fish, so large that his tail was like the sail of a ship, and that he had only become so small after he had entered Lake Rastoff. The sturgeon went on to say that he had therefore been afraid and had remained in the river where his sons and companions died of hunger, while he himself was reduced to the last extremity. Moreover he adduced another grave accusation against the perch, who compelled him to go ahead in order that he might fall into the fisherman's hands, cunningly hinting that elder brothers should go before the younger ones. The sturgeon confessed that he gave way to this graceful flattery, and entered into a weir made to catch fish, which he found to be similar to the gates of great lords' houses—large when one goes in, but small when one wishes to leave. He fell into the net and the perch saw him and cried out in derision, "Suffer for the love of Christ!"

The deposition of the sturgeon made a great impression upon

the minds of the judges, who gave orders to inflict the knout upon the little perch and to impale him in great heat, as a punishment for cheating. The sentence was sealed by the crayfish with one of his claws, but the perch declared the sentence to be unjust, spit in the eyes of the judges, jumped into the briar brake, and disappeared from the sight of the fishes, who remained lost in shame and mortification.

There is another version of this fish epic which differs considerably in all its details but the characterization of the perch is the same. Gubernatis relates it thus:

The turbulent perch entered Lake Rastoff and took possession of it. Called to judgment by the bream, he answered that from the day of St. Peter to that of St. Elias the whole lake was on fire, and cited in proof of this assertion that the roach's eyes are still red from the effects, that the perch's fins are also still red, that the pike became dark-colored in consequence and the eel-pout black. These fishes when called upon to testify either did not appear, or else denied the truth of these assertions. The perch was arrested and bound, but it began to rain, and the judgment place became muddy. The perch escaped, and swimming from one rivulet to another arrived at the river Kama where he was discovered by the pike and sturgeon who took him back to be executed.

The perch thus arrested and brought to judgment, demanded permission to take a constitutional for only one hour in Lake Rastoff; but after the expiration of the appointed time he neglected to come out of the lake, and annoyed the other fishes in every way, stinging and provoking them. The fishes had recourse for justice to the sturgeon, who sent out the pike in search of the offender. The little perch was finally found among the stones; but he excused himself by saying that it was Saturday, and that there was a festival in his father's house, and so he advised the pike to take a constitutional in the meanwhile and enjoy himself; although the morrow would be Sunday, he promised to present himself then before the judges.

The analogy between the smartness of the perch and of Reynard the Fox is very remarkable.

Meanwhile the perch made his companion drunk and then shut him in a straw stack where the inebriated fish was left to die. On the morrow the bream came to take the little perch from among the stones, and to bring him before the judge. The defendant demanded an ordeal, a judgment of God. He advised his judges to put him in a net and if he stayed in the net, he would be guilty, but

if he came out he would be proved innocent. This they did, and the perch jerked about in the net so much that he escaped. The judges acquitted him, and gave him entire liberty in the lake. The story ended with many incidents of revenge which the perch took upon the other fishes, whereby he continued to prove his astuteness in constant efforts to prey upon them.

MISCELLANEOUS.

DID THE SANHEDRIN EXIST AT THE TIME OF JESUS?

In the article "The Indispensability of Bible Study" in the January *Open Court* the statement is made that the Sanhedrin had been abolished by Herod in 40 B. C. and was only reinstalled by Agrippa I in 42 A. D. Josephus relates (*Ant.* XIV, 9, 4) that when Herod became king he killed all the members of that Sanhedrin before which he had stood on trial for having killed the Jewish robber-chief Hezekiah, except Semeas, who took such a bold stand against Herod on the occasion of the trial. But by this act he did not abolish the institution of the Sanhedrin altogether. This is proved by *Ant.* XV, 6, 2, which tells us that Hyrcanus II was in correspondence with the governor of Arabia, Malchus, in order to find there an asylum for himself in the expectation that Herod would not perhaps receive the kingship the second time from Octavian as he had received it from Cæsar, upon which Hyrcanus would again become king. The passage then further relates that Herod found out the matter and when Hyrcanus denied it, "Herod showed his letter" (the one sent by Hyrcanus to Malchus) so says Josephus, "to the Sanhedrin." This was not the same Sanhedrin Herod had punished. Evidently of course Herod always saw to it that ever afterwards the Sanhedrin was composed of men who were submissive to him, but he did not abolish the institution entirely. I hardly think that Herod, though he did many high-handed things which embittered the Jews, would have dared to abolish entirely the highest religious tribunal of the Jews. Who would have conducted the religious and ordinary civil affairs which were both closely bound together in the Jewish people, if there had not been a Sanhedrin under Herod and, after the Herodian family had lost the kingship till Agrippa I, under the Roman governors? Upon what authority is the assertion based that the Sanhedrin was only reinstalled by Agrippa I?

There is also another statement made which is misleading. Rabbi Drucker refers to Lev. x. 6 and xxi. 10 which say that high priests should not rend their clothes, as was done in the trial of Jesus. But both passages according to the context refer to the rending of clothes as a sign of mourning. The gospels are not the only writings which relate that high priests rent their clothes on other occasions than that of mourning. Josephus relates in *Bell. Jud.* XV, 15, 4 that when the procurator Florus intentionally did everything to inflame the Jews to revolt, the high priests in great agitation with rent clothes begged the people to desist from all rash deeds. In Macc. xi. 71 the high priest Jonathan in a state of great agitation, when he and a few about him are left alone and the rest of his men flee before the enemy, throws dust upon his head, just as the high priests did in the case of Florus, and rends his clothes.

Of course the fact that the Sanhedrin existed at the time of Jesus does not solve the question of the irregularities connected with the trial of Jesus. Still W. Bousset (in *Jesus*) says rightly: "We must not judge the tumultuous proceedings against Jesus according to the regulated way of the Jewish law as we see it in later sources." Josephus relates a very similar trial before the Sanhedrin which was later condemned by the people. It was when the high priest Ananus brought James the brother of Jesus and others before the Sanhedrin and had them stoned. In the heat of passion even high legal courts have not always been entirely regular in their proceedings during the course of human history, especially where the court is accuser and judge at the same time as often happened in ancient times.

Regarding the trial of Jesus I would call attention to the following points. The gospels are evidently striving to put all the blame on the Jews and to exonerate Pilate as much as possible. It is very questionable though whether Pilate did not play a more active rôle in the case of Jesus. Pilate was not the man to care much whether one Jew more or less was sacrificed in his efforts to quell Jewish tumults. When he heard about the enthusiasm for Jesus among the people he may have thought that it would be better to put Jesus out of the way right at the start before the enthusiasm would spread further, just as Herod Antipas did with John the Baptist, as Josephus tells us. In this matter he may have found support from the side of the high-priestly aristocratic party, consisting to a great extent of the Sadducees: that political party among the Jews who since the time of the Maccabees were never so strict about the national law and religion as the Pharisees, and were open to foreign influences and relations if only by this their people would prosper and especially they themselves. To sacrifice the Galilean Jesus, who through the enthusiasm for him among the people might create disturbances to the injury of the Jewish state in its relations to the Roman government, may have seemed to the aristocratic party in Jerusalem a very wise political course. The discussion in the Sanhedrin in John xi, though very probably imaginary, may not be entirely wrong in giving the views of the aristocratic party in regard to Jesus. "It is peculiar," says Bousset, "that in the last days of Jesus his old opponents, the Pharisees and scribes, entirely leave the stage, and their place is taken by the high priest and the sanhedrin." (At least scribes take a subordinate position, perhaps only as legal advisers regarding the claims of Jesus, in the council of the high priests. Only the entirely idealizing Fourth Gospel mentions Pharisees on that occasion.) The high priest at that time was Caiaphas. who according to Josephus held his position, in which he had been placed by Gratus the predecessor of Pilate, very much longer than most of the high priests under Roman dominion . He was first deposed by Vitellius who had also previously deposed Pilate after his governorship of ten years. Caiaphas was probably an astute obsequious high priest under Pilate. All along he yielded submissively to let the Romans have the custody of the high priest's garments which were only given out to him a few days before the great festivals. Vitellius greatly favored the Jews after the deposition of Pilate and Caiaphas by giving them back the old right of taking care of these garments themselves. It is not at all improbable that submissive high priests like Caiaphas in the Sanhedrin, from policy, self-interest, fear of losing their position and hold of power, they being "the party of the rich and not of the multitude," as Josephus says (*Ant.*, XIII, 10), fear of disturbances among the people,

sacrificed the Galilean and even played him into the hands of Pilate. What was the poor Galilean to them, who surely had said many things derogatory to them? And even if we except all motives of self-interest which may have led the aristocratic party, they might easily represent to themselves the delivery of Jesus into the hands of Pilate as a patriotic act, since it did away with a disturbing element among the people who had been in an excited state of mind ready to break loose ever since they had come under the Roman dominion. And who will deny that there was a good reason for the Sadducee idea that the people should be kept in a quiet state of mind? Was it not the Pharisaic party, or at least its ultra elements, which rejected all compromises with foreign ideas, that finally drove the Jewish people to the destruction of its state?

Another point in connection with the trial of Jesus is also this that the Sadducee party was "very rigid in judging offenders above the rest of the Jews," as Josephus says (*Ant.*, XX, 9, 1). All these things may give us something of an insight into the trial of Jesus before the Sanhedrin, though they may not fully explain the matter. The death of Jesus was surely brought about through the instrumentality of only a small though influential circle of men in Jerusalem and partly perhaps, as said, by even well meant and patriotic motives seeking the peace of the state. The release of Barrabas, to the demand of which "the crowd" had been persuaded, as Mark gives it, was perhaps only a sop to the multitude to quiet them. The Galilean evidently seemed to be the more dangerous one to the aristocratic party. The words which the haughty Roman in his contempt of the Jewish people put over the head of Jesus, "The King of the Jews," may have stung the men deeply who had lent a willing hand to the execution of Jesus, but they choked it down, for the fatherland had once more been saved.

A. KAMPMEIER.

ASHVAGHOSHA'S "AWAKENING OF FAITH."

Ten years ago the Open Court Publishing Company published a translation by Teitaro Suzuki of *Ashvaghosha's Discourse on the Awakening of Faith in the Mahayana.* The little treatise was written in its original Sanskrit in the first century of the Christian era and is perhaps the most important post-canonical exposition of the Buddhist faith. It may be compared to Bishop Anselm's *Cur deus homo,* and it is recognized by all Buddhists as an authoritative exposition of their faith; but strange to say it is lost in its original Sanskrit and is preserved only in several Chinese translations. We consider it a strange neglect of European scholars that this book remained untranslated until 1900, but in the meantime two other translations have appeared, one in French, and another English version by a Christian missionary, the Rev. Timothy Richard (Shanghai, 1907). Dr. Richard's translation lies now before us and we learn from the preface that it had been finished before Mr. Suzuki's work appeared in print. Thus we may consider the two translations as independent. Dr. Richard has only made good use of the critical comments and other information contained in Suzuki's preface.

It will be the more interesting to compare the two translations since they have been made by men of different race, different religious convictions and different attitudes. Mr. Suzuki is a Buddhist, while Dr. Richard is a Chris-

tian missionary belonging to the Baptist church. Mr. Suzuki is bent on making known this important book of his faith, while Dr. Richard has been so much pleased with the Christian ideas contained in Ashvaghosha's philosophy that he is inclined to discover Christian influence in its doctrines. Dr. Richard tells how he came to translate the book. He says:

DR. TIMOTHY RICHARD.

"In 1884 I visited Nanking in company with my revered friend, David Hill, to see the Viceroy, and tried to persuade him to interest himself in securing religious freedom for Christians and immunity from persecution. Whilst there, I sought for some Buddhist books which I could not procure in the North of China. I learnt that a Buddhist Book Society had been started

in Nanking, Soochow, and Hangchow, three of the leading cities in Central China, in order to replace those destroyed during the Tai Ping Rebellion. Of the three societies, the most important was that at Nanking, and the prime mover of the whole three societies lived there. His name was Yang Wên Hui. I called on him and found him the most intelligent Buddhist I had ever met. He had been several years in Europe as treasurer to the Chinese Embassy when Marquis Tseng represented China in England and France. Mr. Yang had had interviews with Max Müller and Julien and Bunyiu Nanjio of Tokio, who had studied under Max Müller. Thus, besides being well acquainted with the Buddhist authorities in China, he was personally acquainted with the best authorities in Europe and Japan. Mr. Yang was not a Buddhist priest, but a Confucianist with the B. A. (*siutsai*) degree and was only a lay Buddhist.

"I said to him, 'How is it that you, with a Confucian degree, should have ever become a Buddhist?' His answer was striking: 'I am surprised that you, a missionary, should ask me that question, for you must know that Confucianism shirks some of the most important questions. It only deals with human affairs now, not with the superhuman.' 'But do you mean to say that Buddhism answers those questions?' He said, 'Yes.' 'Where?' I asked again. He answered, 'In a book called the Awakening of Faith. That book converted me from Confucianism to Buddhism.' 'Have you that book for sale here?' I asked. 'Yes,' he replied, and brought the book and laid it in my hands. Finding him to be most thoroughly conversant with the relative value of the various Buddhist books, I asked him to select for me some dozen works which he considered most important. Having paid for them, I returned to my inn. Shortly after, the box containing all my purchases arrived. I looked for the book on the *Awakening of Faith* and began reading it and sat up reading it till the small hours of the morning. I cried to my friend Hill, who was also sitting up late at work, 'This is a Christian book and most interesting.' 'Christian?' my friend cried with great doubt. 'You are reading your own thoughts into the book!' 'Well then,' I said, 'how do you explain these passages?' pointing to some to which there was no ready explanation.

"Three months later I was in a bookseller's shop in Edinburgh, and looking through his new books I came across Beal's little book on Buddhism lately published. Turning up a certain chapter in it, I found that he referred to the Awakening of Faith as a Pseudo-Christian book which it was desirable to have translated.

"Years passed by. In 1891 I was transferred to Shanghai. Shortly after, I met my friend Mr. Yang again, and I told him that I had read the Awakening of Faith with great interest, but that frequently I came across philosophical terms which no existing dictionary explained and which even excellent Chinese scholars could not explain. If he could spare some of his time to come to Shanghai, I would spare some of my time to translate it with his help. He readily agreed and was delighted to have the book made known to those interested in Buddhism in the West. Thus the book was translated into English in 1894. But it was not published then, as I wished to have leisure time to revise it before publication. That time of leisure has never come. Six years later (1900) Suzuki's translation into English was published by the Open Court Co., Chicago. His translation bears the mark of one who has spent much study on the subject. In his introduction, he quotes a large num-

ber of different authorities about Ashvaghosha. But as he approaches the subject frim the non-Christian point of view, the light which comes from a comparison between it and Christianity is denied him. He dwells more on his philosophical 'suchness' or on his psychological theory of 'triple personality' and only on one religious characteristic 'faith,' apparently unconscious of its incalculable importance as a religious eirenicon between the East and the West. Though I have had no time to revise this translation of mine, I publish it because I believe it is capable of producing brotherhood amongst men, and mutual respect among religious teachers, when it is properly interpreted in the light of Christianity."

On a superficial comparison of the two translations we find some passages of Dr. Richard's version, especially the opening and closing hymns, rather freely rendered, and the Buddhist term "Tathagata," a common appellation of the Buddha or the Enlightened One, is translated by "the Incarnate God," while the "abode of Buddha" is rendered the "abode of God." We can not deny that these terms closely correspond to one another in Buddhism and Christianity, although it does not seem advisable to introduce Christian terms into the translation of a Buddhist work.

We do not believe that it is justifiable to consider Ashvaghosha's "Awakening of the Faith" as a pseudo-Christian treatise, but we do believe that the book exhibits in marked features the underlying religious psychology which gave birth to Christianity in the West and to Buddhism in the East. Their similarities need not be explained by historical connection but are founded in the innermost nature of man in his relation to the cosmos.

We learn that Dr. Richard has done much work in China in spreading Christian knowledge among Buddhists and Confucianists. He has founded and upheld with great difficulty under precarious conditions the "Christian Literature Society for China," and his work is distinguished by great breadth of mind, because he does not approach other religionists in a hostile spirit but gladly recognizes in them what is good and true. He has acquired many friends among the native Chinese, especially the Buddhists.

So great an authority as J. Estlin Carpenter writes as follows in a letter to a personal friend of Dr. Richard:

"The views of Dr. Richard and the Rev. A. Lloyd deserve the utmost respect, for they are of course in possession of sources closed to a Western student like myself who has no knowledge of Chinese. But I am not yet convinced of any influence from Christianity in the development of Mahayana Buddhism. The scriptures of the school, such as the 'Lotus of the Good Law,' or Ashvaghosha's own works, seem to me to have been produced at a date too early for any Christian teaching to have made its way so far east. On this head, however, I wait with great interest for the fuller evidence promised by Mr. Lloyd. Did we not know that India had already before our era developed a religion of faith and love, as seen in the oldest parts of the Bhagavad Gita, there might be reason for suspecting the presence of foreign influences. But at present it seems to me that the rise of Theistic Buddhism can be fully explained from the contact with kindred faiths in Brahmanism. The spectacle of different races advancing towards similar ideas, whether independently or by mutual suggestion from East and West, is full of interest and must continue to exercise our thoughts for many a long day. But it is by such work as that of Dr. Richards that the native point of view is supple-

mented; and I must again express my gratitude to you for communicating this book to me."

Dr. Carpenter disclaims to be an authority on account of his lack of Chinese scholarship, but the question of the independent origin of the Mahayana doctrine is to be decided by the facts brought to light through Sanskrit and Pali scholarship in which he excels, and sinology having only second-hand and post-Christian information concerning Buddhism, can throw only a little light of secondary evidence on the subject.

In comparing the two translations, Mr. Suzuki's version is distinguished by scholarship and is more faithful to the original, Dr. Richard's, however, has the advantage of containing the Chinese text which will be welcome to sinologists who wish to fall back on the original. Though we do not recommend the use of Christian equivalents in place of Buddhist terms, still the Christianization of the essay will be helpful to many. At any rate a comparison of the two translations thus made independently of each other will serve to reach a meaning still closer to the original, and the Open Court Publishing Company will be glad to procure copies of both editions for readers interested in such studies.

TRUE AND FALSE FREEDOM.

BY ARTHUR B. FRIZELL.

When a country-bred boy leaves the farm for the city, he rejoices at thought of the freedom which the new life offers. He is to be released from the necessity of early rising, independent of changing weather, free to get rich quick and spend money in agreeable ways. But with larger knowledge of the world comes a change in his thinking. Spending money without restraint means becoming a slave to one's appetites. Getting rich turns out to be a slow process, to which, moreover, many are called but few are chosen. Even a moderate degree of success involves submission to a far more rigid routine than the farmer knows and one which eventually becomes a hundred times more irksome than patient waiting on seasons of sowing and reaping. The successful capitalist is apt to think of the years when the song of the birds at daybreak called him to hard but healthful labor as a period of freedom compared with which those of his financial achievements seem one of gilded bondage, while the multitudes of the unsuccessful feel that they have followed a will-o'-the-wisp, sacrificing true freedom for false.

Few can witness an athletic exhibition without envying the bodily freedom of the performer; the circus rider or tumbler, the baseball pitcher, the ballet dancer seem independent of restraints which untrained muscles impose on our motions. Now if we stop to ask how the athlete's freedom is obtained, we find that it is by patient strenuous exercise. He relinquishes the false freedom of caprice, the liberty to do always what is most pleasant, to attain to a state of real liberty where the muscular activities are obedient to his will.

In the student's life a false view of freedom is sometimes fostered by excessive specialization, the freedom to study those things only which appear easy, interesting or commercially profitable and retain the liberty to think as you please about other questions. One who specializes in this way gains possession of isolated facts or of a microscopic field or a special way of thinking. He loses the wider view of our known universe as a connected whole no part of which is exempt from the constraining power of law.

Now we are not free to regard even the material universe as a product of blind chance. Neither can we justify ourselves in taking such a position with respect to the moral or the spiritual world. In all these fields there are indications of law which we may not ignore without intellectual dishonesty. A scientist feels that he is not dealing honestly with himself if he persists in holding an opinion contrary to the evidence of the facts or without putting it to the test of experiment when this is possible.

In the religious literature of the race is collected a vast mass of undeniable facts of spiritual experience. To ignore these facts is to subject oneself to the most insidious species of tyranny that can be set up in the human mind.

BOOK REVIEWS AND NOTES.

THE CHRIST MYTH. By *Arthur Drews.* Translated by *C. Delisle Burns.* London: T. Fisher Unwin. Pages, 300. Price, 7s. 6d. net.

Arthur Drews has created a stir in Germany by his lectures on the "Christ Myth," a theory mainly based on the speculation of an American scholar, Prof. William Benjamin Smith of Tulane University.

Prof. Smith claims the existence of a pre-Christian Jesus-divinity who was worshiped as a Saviour-God or guardian spirit, but who later on was humanized in the form of Jesus with whom we have become acquainted in the Gospels. Whether or not this latest theory in higher criticism be correct, the book contains an enormous wealth of material with regard to the influence of Persia on the belief of a Messiah, the Hellenic ideal of a mediator as advocated by Philo, the idea of a suffering Messiah, his birth, his self-offering, his being the Lamb, his death on the cross, the significance of the cross and other symbols—all these factors were combined in the Christian Jesus who is known to us in several documents, the Pauline epistles, the synoptic Gospels, and the Johannine Jesus which is nearest to the gnostic Christ-conception. All these items are discussed by Drews who concludes his book with a statement of the religious problems of the present day.

The *Theologische Literaturzeitung,* the leading organ of critical and scientific Protestant theology in Germany, founded by E. Schürer, and continued under the joint editorship of Adolf Harnack of Berlin, Hermann Schuster of Hanover, and Arthur Titius of Göttingen, announces its intention to extend its interest in the future into more varied and comprehensive fields. Besides the historic philological investigations pertaining to the realm of theology it will now devote itself also to the history of religion in general, directing its attention critically and fundamentally to all parts of this wide domain. The relations of religion to modern spiritual life are also to be attentively followed. In accordance with the constant increase of international good feeling, the literature of foreign countries will henceforth be given more consideration than formerly and the work of foreign scholars will be reviewed. Important scientific enterprises of significance for the history of religion will be reported in brief authentic communications and the cooperation of interested scholars of every nationality will always be welcome.

Such communications of a scholarly character and contributed manuscripts should be addressed to Professor D. Titius, Göttingen.

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Edited by

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THE MUTATION THEORY: Experiments and Observations on the Origin of Species in the Vegetable Kingdom.—Vol. II. The Origin of Varieties by Mutation. By Hugo de Vries.

Professor Farmer and his coadjutor Mr. Darbishire are to be congratulated on the completion of their translation of Professor de Vries's "Mutation Theory," the first volume of which was noticed in *The Anthenaeum* of May 7th, 1910. The excellence of the translation referred to then is maintained in the concluding volume, and the English version of this important work will be of great assistance to those biologists who are unable to read the original.

In the present volume the author deals with the origin of varieties, and the explanation of them which the mutation theory affords. Although the facts and experiments recorded are drawn almost entirely from the vegetable kingdom, Professor de Vries believes that the principles upon which they are founded are equally applicable to animal organisms. The keystone of his argument is the contention that the hereditary characters of a species, transmitted from generation to generation, are transmitted, not as a composite whole, but as separable unit-characters, which are liable to change and variation in regard to the appearance or form of the units. It is these partial changes in the new generation which constitute varieties. Professor de Vries represents his idea as a struggle between two antagonistic characters—one being the original or normal character of the species; the other, the new character or anomaly. In such a contest the normal character may be active and the anomaly latent or semi-latent through various grades until the position is reversed, the normal character becoming latent and the anomaly active, thus producing a new variety of the original species which is maintained without further selection. The older or specific character is intensified by unfavorable conditions, while the anomaly or younger character is intensified by favorable ones, and the most susceptible stage seems to be that of the young embryo in the ripening seed.

The author believes that the real difference between the terms "species" and "variety" corresponds to the difference between the formation of a new character and the simple transposition of a pre-existing one. Those forms which arise from the production of a new character he would regard as species; those which depend upon its latency or activity he would term varieties. According to this view, he would look upon Mendelian hybrids as retrogressive or degressive mutations, i e., true varieties, and unisexual hybrids as progressive mutations, or elementary species; this opinion is supported to some extent by the fact that the latter are much less fertile than the former. He claims that the extinction of large groups of species proves that the variability resident in them was insufficient to adapt them to a changing environment, and that ordinary fluctuating variability is linear, oscillating only in a plus or minus direction, whilst adaptations demand a variability in all directions. Natural selection, he says, "is a sieve. . . . How the struggle for existence sifts is one question; how that which is sifted arose is another." Further, the first insignificant beginnings of new characters do not come under the operation of natural selection, since they are of no value in the struggle for existence; hence there is some justification for the conclusion that every organ must have originated from a mutation, and not through fluctuating variations.

It has been impossible to give more than a brief outline of some of the main arguments by which Professor de Vries supports his theory. They have been before the scientific world for some years, and it may be said that, aided by the work of Professor Bateson and the discoveries of the Mendelian school, they have continued to gain adherents. In this volume, in particular, they are supported by an

array of facts and experimental observations which cannot lightly be passed over. The truth of the hypothesis of the existence of unit-characters is now generally conceded, and there is little doubt that the distinction Professor de Vries draws between the value of fluctuating and discontinuous variations in progressive evolution is a real one. On the other hand, some varieties are not constant when expected to be so, and there is always the difficulty of transgressive variability, which produces forms, apparently transitional, whose true nature is only revealed by breeding experiments. Many of these changes, also, appear to depend to a considerable extent on external conditions—cultivation and so forth. The author states: "Fluctuating variability is a phenomenon of nutrition, whereas mutability is the result of hitherto unknown causes." If the causes are unknown, is he certain that he can exclude nutrition? And if cultural conditions cannot be excluded in the observations of mutability so far made, would mutability have occurred under natural conditions?

Sir W. T. Thiselton-Dyer concluded, after observing a number of mutations in cultivated plants, that the specific stability at the beginning of the experiments was such that the changes would not have occurred in nature: in fact, that it was a question of external conditions and environment. It may safely be said that the more the life-habits of a plant are disturbed, the more probably will mutability ensue. Professor de Vries's attempt to locate the unit-characters by his theory of Intracellular Pangenesis is too speculative to be of much use. It is possibly true that the evidence adduced in support of the theory of mutation suggests that some such explanation would fit the facts, but a final judgment must depend not so much upon the applicability of any theory as on proof of its accuracy.

In spite, however, of these criticisms, the book is one to be read, and read again.

SCIENTIFIC AMERICAN
New York.

INTRACELLULAR PANGENESIS: By Hugo de Vries. Translated by C. Stuart-Gager. Chicago: The Open Court Publishing Company, 1910. Pp. 300. Cloth, $3.00.

"Any new book by Hugo de Vries is bound to be read with interest, not only because of the part which the author has played in giving us the mutation theory, but also because it may help to settle some other more doubtful points in that theory. In 1868 Darwin himself wrote to J. D. Hooker: 'I feel sure if Pangenesis is now still-born, it will, thank God! at some future time reappear, begotten by some other father and christened by some other name.' Had Charles Darwin lived, he would have seen how successfully Hugo de Vries revealed the great truth contained in his well-abused *Hypothesis of Pangenesis*. Although it can never be absolutely demonstrated as true, the formulation of the hypothesis of intracellular pangenesis marks the beginning of the greatest and most important forward step made in the study of the origin of species since 1849. Indeed, it led up directly to the conception of mutation as one method of the origin of species, and resulted in permanently removing the entire question of organic evolution from the realm of ineffective speculation and establishing it upon the firm basis of experimentation. The importance of the hypothesis is admirably set forth by Professor Gager in his excellent preface in citing Strasburger's paper on *Typische und allotypische Kerntheilung*.

"Though it attracted little attention at the time of its appearance, an honorable place in the history of our science must be accorded to the paper published by De Vries (1889) under the title *Intracellular Pangenesis*. This essay is remarkable as a clear foreshadowing of that conception of unit-characters which was destined to play so large a part in the development of genetics."—An extract from Mendel's *Principles of Heredity*, by Bateson.

WORKS OF PROFESSOR LAWRENCE H. MILLS

THE YASNA OF THE AVESTA

in continuous treatment upon the plan initiated in the FIVE ZARATHUSHTRIAN GATHAS, by L. H. MILLS, Professor of Zend (Avesta) Philology in the University of Oxford, A STUDY OF YASNA I., with the Avesta, Pahlavi, Sanskrit, and Persian Texts. The Pahlavi is given in the original character and in transliteration, the Pahlavi and Sanskrit being translated into English here, the Avesta in S.B.E., XXXI, 1887; the Persian is itself an interlinear translation of the Pahlavi. The Avesta Text is reconstructional with copious notes. The Pahlavi is re-edited from the *Journal of the German Oriental Society* with all the MSS. collated, Bd. LVII., Heft IV., 1903; the English translation is re-edited from the *Journal of the Royal Asiatic Society* for October, 1904; Neryosangh's Sanskrit is re-edited from Spiegel with the additional collation of five MSS., and for the first time translated. The Persian is from the Munich MSS. already partly edited in the Gāthas. An Appendix contains the accented Sanskrit Equivalents of the Avesta Text by the Author, issued upon the plan adopted by him with Yasna XXVIII in Roth's *Festgruss*, 1894, and with Yasna XLIV in the Acts of the Eleventh Congress of Orientalists held in Paris, 1897. Four photographic plates of MSS., with other illustrative matter are added, pp. 163, to be had of F. A. BROCKHAUS, in Leipsic, 12s. 6d., and of the Open Court Publishing Co., of Chicago; Yasna I. is especially valuable as it deals with the chief important questions of all the non-gathic Yasna. Also a Dictionary of the Gāthic Language of the Zend Avesta, being Vol. III. of the Gāthas, pp. 623-821, Leipsic, 1903, price 12s. 6d., with 120 additional pages soon ready, pp. 622+320, 994+xlvii, 1909. £1. For sale by Open Court Publishing Co., Chicago, $6.00.

A few copies of ZARATHUSHTRA, PHILO, THE ACHÆMENIDS AND ISRAEL, pp. 460+xxx, (Chicago: Open Court Pub. Co., 1906, price $4.00 net), are still to be had of Kegan Paul, Trench, Trübner & Co. and of the leading booksellers in Oxford at 12s. 6d. "He treats his subject thoroughly and exhaustively....deep and patient studies." J. J. Modi, Head Priest of the Parsi Colaba, Bombay, in the *Parsi* of Bombay, 1900. —"A wealth of learning and thought." *Nation*, N. Y., Aug. 30, 1906.

AVESTA ESCHATOLOGY COMPARED WITH DANIEL AND REVELATIONS, by L. H. MILLS, (published by the Open Court Pub. Co., 1908, 50 cents net). SAGGI DI LETTURE, TENUTE ALL' UNIVERSITA DI OXFORD, SULLA RELIGIONE DELL' AVESTA, dal Prof. LORENZO MILLS. Being sections of lectures delivered in the University of Oxford, translated into Italian by an accomplished Italian man of letters upon his own initiative. Torino, 1909. To be had of G. Sacerdote, Turin, Italy. Pp. 75. Price, 2s.

The 31st volume of the *Sacred Books of the East*, the YASNA, VISPARAD, AFRINAGAN AND GAH, pp. 400+xlvii, 1887 (same Author) is still to be had at 12s. 6d.; as is the ANCIENT MANUSCRIPT OF THE YASNA, collotyped in an unsurpassed manner in the actual size and color of the original, 770 photographs with Introductory Note by L. H. Mills, Ten guineas. This is the main document of the above-mentioned works, —for the presence of the original of it in the Bodleian, Mr. Mills is responsible, 1889.

"Professor Mills's name stands foremost in the ranks of those who have explored the field of Avestic literature." The *Rast Goftar*, Bombay, April 18, 1909.—"Beyond question our leading authority now living, on the Gāthas." The *Nation*, N. Y., Aug. 30, 1906.—(Mills (Earlier) of the Gāthas) Das Ergebniss einer erstaunlichen Arbeit sehr mannigfaltiger Art—unser Verständniss der Gāthas mächtig gefördert. *Gött. Gelehr. Anz.* May 13, 1893. "Insbesondere von Mills, der diese schwierigen Gedichte in gründlichster Weise behandelt hat." *Preussisches Jahrbuch*, 1897, Prof. Justi (Lexicographer). "Tous ceux qui s'occupent de l'interprétation des Gāthas rendront hommage a l'immense labeur scientifique de M. Mills...son livre reste un instrument indispensable pour l'étude." Prof. James Darmesteter, *Revue Critique*, September 18, 1893.

"Alles was für die Erklärung der Gāthas nothwendig ist." (So also Dr. West in J.R.A.S.)—"Immer wird es die Grundlage bilden, auf der sich jede weitere Forschung aufbauen muss...einen hervorragenden Dienst." *Zeitschrift der deutschen M. G.*, 1896 (the late) R. Pischel (first Sanskritist of Germany).—A new edition has been inquired for, and a renewed Government subvention is expected from an antiquated engagement.

A few copies are still to be had upon exceptional request, and for libraries, at £3, of BROCKHAUS at LEIPSIC.

NEW YORK TIMES BOOK REVIEW

March 5, 1911.

DEATH AND RESURRECTION: Björklund's theory of a future life as presented in his last book. Pp. 224. Cloth, $1.00.

Mr. J. E. Fries has translated into clear English Johan Gustaf Björklund's last work, "Death and Resurrection, from the Point of View of the Cell Theory," which was written three years before the author's death in 1903. The translator considers this book one of Sweden's most remarkable and interesting contributions to contemporary philosophy.

His theory of death and resurrection is a chain of argument put together by a man of remarkable reasoning powers and keen imagination. It is based partly on this fact: "Science has shown that man's body is renewed several times during life, and that even the bones, placed in the ground, soon 'arise,' through nature's forces themselves, and take part in the universal circulation of matter. In face of all the evidence of this truth, it is impossible to believe in the old doctrine of physical resurrection." He then quotes Granfelt: "The only lasting attribute of the soul during this process is the spiritual body, which assimilates, typically forms, and again secretes the earthly matter. It must be this spiritual body, then, that constitutes the combining element between man's earthly body and his glorified body in the eternal life."

The author's aim now is to show, if possible, that the spiritual body and these living units are necessary for man in a future existence, as here in time. The larger part of the book is given to an instructive and interesting discussion of the scientific grounds upon which materialism and idealism are built. His conclusion is that "life is not a material force, but has a supernatural origin in a higher, immaterial world."

There is a mystical saying: "As in the microcosm, so in the macrocosm." And truly there is a strange analogy between ourselves and the world about us. We seem to be in many ways replicas of our great mother, the universe. Myth-making poets, describing sunrise or sunset, the passing of a Summer storm, or the changing of the seasons, have told, half unconsciously, some of the deepest secrets of the soul. Attempts to force secrets of this kind from nature are apt to reduce themselves to absurdity, but Björklund seems to have come on one of these deeper analogies. That he has developed it to its inevitable conclusion with the exactness of a mathematical problem one may well doubt, but the theory is highly interesting. Men are gradually changing their ideas of life. We recognize death in too many forms nowadays, not to count it as beneficent. Do we not die every day? Are we not compelled to replenish our lives? It is this death that enables men to

> rise on stepping-stones
> Of their dead selves to higher things.

THE INDEPENDENT

New York, Feb., 1911.

DEATH AND RESURRECTION: By Johan Gustaf Björklund. *Open Court,* $1.00.

The translation into English of the views of the Swedish thinker Johan Gustaf Björklund on "Death and Resurrection" will interest many readers because of their basis in the cell-theory; but few will assent to the central and necessary postulate that "biology discovers and proves the existence of that spiritual body which humanity has surmised since prehistoric times."

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The coincidence of the views of Angelus Silesius with those of Kant seems strange but both are apparently based on older traditions. Valentin Weigel propounded the same views before Angelus Silesius, and Swendenborg after him, yet before Kant. How far any one of these men has influenced his successors is a question that has caused much discussion.

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THE BALTIMORE NEWS
Feb. 7, 1911.

THE NAPOLEON MYTH. By Henry Ridgely Evans. With "The Grand Erratum," by J. B. Pérès, and Introduction by Paul Carus. Illustrated. Boards, 75c net. (3s. 6d. net.)

The dominance and persistence of Bonaparte as a subject and the unremitting way in which he haunts literature is at least interesting, and renders peculiarly significant his words, entered in his diary at St. Helena: "They may chop and suppress, but they will have a difficult time making me disappear altogether." A book unique in its way, entitled "The Napoleon Myth," by Henry Ridgely Evans, gives much interesting evidence that the Napoleonic legend and its impression will endure. "Legend makers 1800 years from now," said Mr. Evans, "will perhaps characterize him as a ruthless vandal from a barbarous island called Corsica, who swept over the civilized world carrying death and destruction. Many will express doubt that he ever lived. He will appear in the light of a mythical hero, like King Arthur, and those who believe in the reincarnation of the soul upon earth will perhaps endeavor to show that Napoleon was identical with Rameses II., Alexander the Great and Charlemagne. Mr. Evans is the author of "The Old and the New Magic," "Hours With the Ghosts," etc.

THE DETROIT NEWS
Feb. 12, 1911.

THE FOUNDATION AND TECHNIQUE OF ARITHMETIC: By George Bruce Halsted. The *Open Court*, Chicago.

Students who think they learned everything interesting about arithmetic when they "graduated" from the grades, will be astonished to see how much they overlooked in their training in the subject when they read George Bruce Halsted's treatment of "The Foundation and Technique of Arithmetic. "In arithmetic," says the writer, "a child may taste the joy of the genius, the joy of creative activity," and he proceeds to prove his assertion most conclusively.

THE ROMANCE OF FIGURES

"In the current number of THE OPEN COURT [February, 1911], George Bruce Halsted, writing on the 'Foundation and Technic of Arithmetic,' presents briefly the wonderful story of the cipher. Men struggled through centuries of intelligence with cumbersome number notation. At first five men in a row to count 10,000: ten fingers raised by the first, one by the second; ten raised again by the first, and two by the second; ten raised by the second, then one by the third, and thus to one finger of the fifth man, equaling 10,000.

"Then the abacus with pebbles to represent the fingers and a row of grooves for the row of men. Centuries of intellect using the decimal system, but struggling with it because unable to comprehend the possibility of the cipher to indicate position in the row of men or in the grooves of the abacus; centuries of struggling with other symbols, adopting Hindoo numerals, but failing to find a character which would indicate 'nothing'—to indicate that a position was empty. 'A Hindoo genius' created zero. Hindoo numerals have been traced back to the early part of the third century B.C.

"'But,' writes Mr. Halsted 'a whole millennium was yet to pass before the creation of the most useful symbol in the world, the naught, the zero, a sign for nothing, a mark for the absence of quantity, the cipher whose first known use in a document is in 738 A.D. This little ellipse, picture for airy nothing, is an indispensable cornerstone of modern civilization. It is an Ariel lending magic powers of computation, promoting our kindergarten babies at once to an equality with Cæsar, Plato, or Paul in matters arithmetical. This giving to airy nothing not merely a local habitation and a name, but a picture, a symbol, is characteristic of the Hindoo race whence it sprang. It is like coining Nirvana into dynamos.'

"The Arabs, taking the symbol, called it cifr—'empty.'

"Our moderns are making romance out of arithmetic."—*Chicago Tribune* (Feb. 9, 1911).

DAILY NEWS

Chicago, March 15, 1911.

"TRUTH ON TRIAL: AN EXPOSITION OF THE NATURE OF TRUTH: By Dr. Paul Carus. The Open Court Publishing Company, Chicago; $1.

"Truth on Trial: An Exposition of the Nature of Truth" is a controversial work by Dr. Paul Carus, in which he discusses the question of "Pragmatism" in philosophy and sets himself to refute the theories and arguments of the late Prof. William James. Dr. Carus' work is scholarly, temperate and deeply philosophic, if not convincingly final in his treatment of the subject. The book is dedicated to the memory of Prof. James "in friendly remembrance of courtesies exchanged in spite of radical differences of opinion."

THE ST. LOUIS MIRROR

March 16, 1911

William Marion Reedy, Editor.

A PHILOSOPHIC BOUT: If you want to enjoy the spectacle of one philosopher metaphorically mopping up the floor with another, get the book *Truth on Trial,* by Dr. Paul Carus *(The Open Court Co.,* $1.00*)* and behold William James' Pragmatism reduced to smithereens. Dr. Carus is a monist, and the way he goes for Professor James' pluralism is a delight. There is nothing left of the philosophy that says "whatever will work out for good is right," when Dr. Carus is done with it. And the ordinary reader cannot help but see, when the dust of the melee has blown away, that while *a* truth may thus be determined experimentally, *truth* cannot. You wouldn't think there could be in these days such a ruction over philosophy, but upon examination you will find that if pragmatism were to prevail absolutely in our thinking there would be nothing to oppose to any wrong strong enough to work things around for goodness to itself. Pragmatism is no philosophy at all. It does not and cannot deal with eternalities and essence. It has value only as applied to temporalities and accidents. Dr. Carus deserves much approval for his convincing onslaught upon materialism and expediency in thinking, for pragmatism is the new big name for the general trend of thought that makes the United States people the most dishonest folk the world has known since the Greeks worshiped their own craft and guile in the story of Ulysses. And Dr. Carus writes as lucidly as Professor James himself did; but—well, Dr. Carus has not made out a case as yet for his fervently upheld monism. "What is truth?" asked Pilate, and he has never been answered except by a sort of tragic aposiopesis in the event following the query—the rabble, to whom he surrendered, crucified it.

THE TYLER PUBLISHING CO.

Ann Arbor, Mich., Feb. 20, 1911.

RELIGIOUS SACRIFICES: By James B. Smiley. The *Open Court,* Chicago, Ill.

The *Open Court* magazine for February has two leading articles which will make a strong appeal to every Mason. "Animal Symbolism" by the editor, Dr. Carus, is rich in suggestion of correspondences. While most of the symbolism of Masonry is other than animal, the process by which the author traces the development in this particular field can be applied with profit to our own symbols, the most significant of which has come down from remote times. In "Religious Sacrifices," by James B. Smiley, sacrifices are roughly divided into two groups: those intended to appease the anger or invoke the gratitude of the Gods for the benefit of him who makes the sacrifices; and those intended for the comfort of the departed spirits of the dead. In the latter motive we find an almost universal belief in life of some sort beyond the grave, and the resurrection, not of the substance, but of the essence. With this idea we are in close touch from an allegorical standpoint, so that the article in question may have much significance to the thinking Mason.

BOOKS BY HUGO DE VRIES

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Dr. John M. Coulter of the University of Chicago, Says in the Botanical Gazette

"THE Open Court Publishing Company is to be congratulated for their real contribution to the advancement of knowledge in assuming the responsibility of publishing an English translation of Hugo De Vries' great work entitled, "The Mutation Theory."

Eight years have elapsed since "The Mutation Theory" was formally proposed and much can be said of its standing and influence. During this period De Vries has twice visited the United States and by conversation and lecture and personality has impressed himself and his views in a peculiar way upon American biologists. His influence upon scientific plant and animal breeding in this country has been very great and the general result has been an increasing conviction that his views and his examples have advanced biological science immensely.