The Open Court

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

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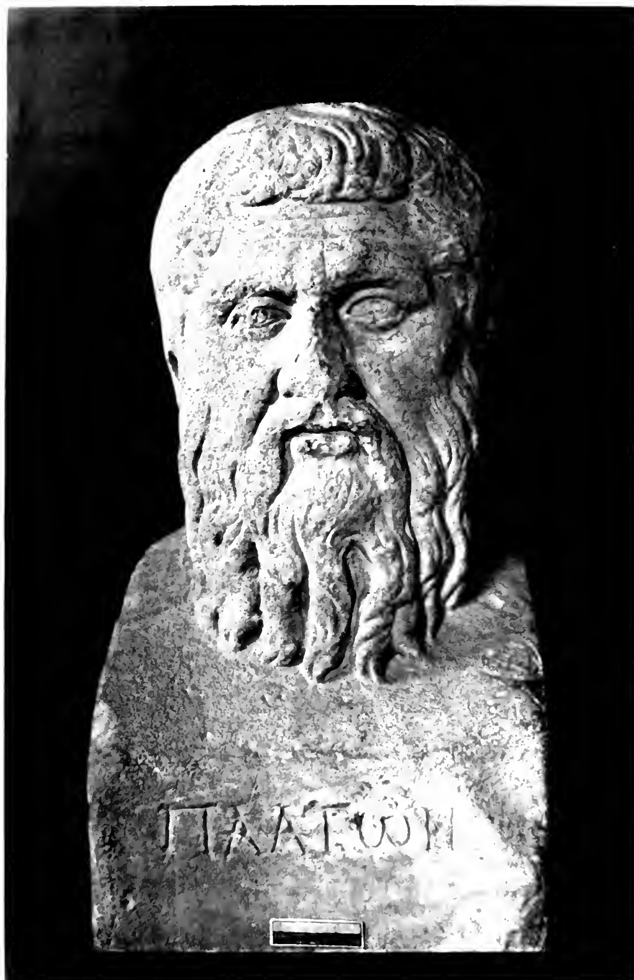

PLATO

429-347 B. C.

From a photograph of a bust in the Berlin Museum, published by the Verlagsanstalt für Kunst und Wissenschaft.

Open Court.

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ON GREEK RELIGION AND MYTHOLOGY.

BY THE EDITOR.

THE FATHERHOOD OF ZEUS.

HOMER anticipates the preamble of the Lord's Prayer when he addresses Zeus as Ὦ πάτερ ἡμέτερε, O our father! (*Od.*, I. 45); and in many other places, prayers begin with the words, Ζεῦ πάτερ, "Father Zeus!" (See for instance *Od.*, v. 7; xxiv. 351, and *Il.*, iii. 319.)

This same poet, the father of Greek poetry, glorifies Zeus as "ever powerful" and "great." He says:

Ἀλλ' αἰεί γε Διὸς κρείσσων νόος αἰγιόχοιο.

—Homer, *Il.*, XVII. 176.

"But ever prevaileth the spirit of Zeus, the wielder of lightning."

And in another place:

Τοῦ γὰρ κράτος ἐστὶ μέγιστον.

—Homer, *Il.*, IX. 25

"For his is the power, the greatest!"

The same sentiment is echoed in the writings of Anaxagoras, who says:

Ζεὺς κάρτιστος ἁπάντων.

—Anaxagoras

"Zeus is the mightiest of all."

Greek mythology is polytheistic, but the thinkers of Greece are monists or monotheists. Pythagoras (according to Diogenes Laertius, *De vita Pyth.*, 582) said that

"The principle of all things is Oneness."

Ἀρχὴν τῶν ἁπάντων μονάδα εἶναι.

Aristotle leaves no doubt as to his conception of the plurality of gods; he says:

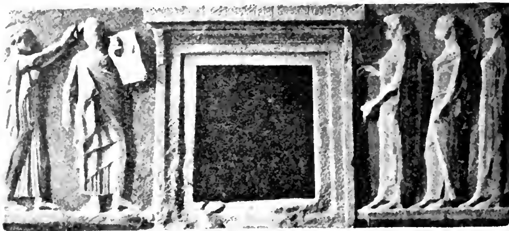
"Being one, God has many names, for he is called according to all the states in which he manifests himself."

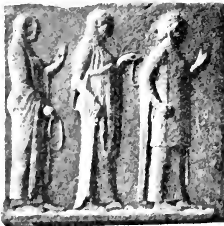
Εἷς ὢν πολυώνυμός ἐστι κατονομαζόμενος τοῖς πάθεσι πᾶσιν, ἅπερ αὐτὸς νεοχμεῖ.—Aristot., *De mundo*, V.

In Orphic poetry Greek polytheism was broadened into the conception that all the gods were manifestations of Zeus. A poem ascribed to Orpheus teaches the unity of all the gods in the words:

Εἷς Ζεὺς εἷς Ἥλιος εἷς Διόνυσος.

"Zeus, Helios, Dionysos are all one and the same."





GREEK TOMBS. RELIEF OF THASOS.[1]

Discovered in 1864 on the island of Thasos, now in the Louvre. (After Rayet, *Mon. de l'art ant. livr.*, I., pl. 4., 5.)

Two hexameters from the same source read as follows:

Εἷς ἔστ' αὐτογενής, ἑνὸς ἔκγονα πάντα τέτυκται,

οὐδέ τις ἔσθ' ἕτερος χωρὶς μεγάλου βασιλῆος.

"One alone is unbegotten—one of whom we all are children.
And no other godhead, truly, is beside this mighty ruler."

[1] The relief of Thasos is dedicated to Apollo, the Nymphs, and the Charites; Apollo may be recognised at the left leading the four female figures, and Hermes as the fourth in the group at the right.

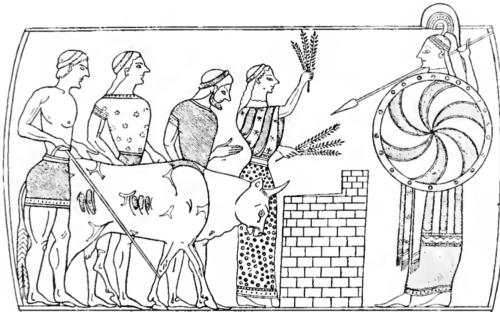
Zeus, though he is kind to his children, will not be an abettor of fraud. Says Homer:

Οὐ γὰρ ἐπὶ ψευδέσσι πατὴρ Ζεὺς ἔσσετ' ἀρωγός.

—Homer, *Il.*, IV. 235.

"Not in lies will father Zeus appear as a helper!"

ADONIS SARCOPHAGUS.[1]
(Louvre. Bouillon Musée, II., 51, 3.—*B. D.*, 15.)



OFFERING A SACRIFICE TO PALLAS ATHENA.[2]
(From Jahn, *loc. cit.*, pl. II., 1.)

Epictetus says:

Ἐπὶ παντὸς πρόχειρα ἑκτέον ταῦτα·

Ἄγου δέ μ' ὦ Ζεῦ καὶ σύ γ' ἡ Πεπρωμένη,

ὅποι ποθ' ὑμῖν εἰμι διατεταγμένος·

Ὡς ἕψομαί γ' ἄοκνος.

—Epict., *Enchir.*, 52.

[1] There is some doubt about the meaning of the scenes here represented. At the left Adonis takes leave of Aphrodite; in the center he is killed by the wild boar; and at the right he returns to the upper world from the abode of the dead. We must remember that the legend was represented on sarcophagi for the purpose of comforting the survivors with the hope of a resurrection from the grave, which was suggested by the myth.

[2] Cf. Jahn, *loc. cit.*, 14, 47. The priestess apparently sprinkles the altar with holy water. The statue is fully armed and may stand for the palladium, the prototype of which was believed to have fallen from Heaven.

> "In every condition we must have ready the following saying;
> 'Lead me, O Zeus, and thou Providence,
> Whithersoever thou decreest I shall go,
> Resolutely will I follow.'"

Concerning sacrifices Euripides says that "God needs them not if he is truly God."

> Δεῖται γὰρ οὐ θεός, εἴπερ ἐστ' ὀρθῶς θεός.

The Christian expression "Deus optimus maximus" is only a new version of the Roman "Jupiter optimus maximus," and this again has been anticipated by Homer who tells us that Agamemnon, when solemnly making his peace with Achilles, first prays and offers sacrifice, saying:

> "Hear us, first, O Zeus, of the gods thou the best and the highest."
> Ἴστω νῦν Ζεὺς πρῶτα, θεῶν ὕπατος καὶ ἄριστος.
>
> —Homer, *Il.*, XIX. 258.

Worshippers Kora Demeter

SACRIFICE OF A PIG TO DEMETER.

Initiation scene from the Eleusinian Mysteries. Found in Eleusis, now in Paris. (From Taylor's *Eleusinian and Bacchic Mysteries*.)

Æschylus says that none save Zeus is truly free.

> Ἐλεύθερος γὰρ οὔτις ἐστὶ πλὴν Διός.
>
> —Æschyl., *Prometh.*

Socrates is reported by Xenophon (*Mem.*, I. 3. 2) to have prayed simply for receiving "the good" because "the gods knew best what is good."

> Εὔχετο δὲ πρὸς τοὺς θεοὺς (ὁ Σωκράτης) ἁπλῶς τἀγαθὰ διδόναι, ὡς τοὺς θεοὺς κάλλιστα εἰδότας ὁποῖα τἀγαθά ἐστιν.

In the same spirit Christ taught his disciples to pray to God "Thy will be done" and he said:

"Your father knoweth what things ye have need of before ye ask him."—Matt. vi. 8.

Plato advises his followers to pray to Zeus not for the fulfilment of their wishes but for the good, and quotes an unknown poet who says:

Ζεῦ βασιλεῦ, τὰ μὲν ἐσθλὰ καὶ εὐχομένοις καὶ ἀνεύκτοις
ἄμμι δίδου, τὰ δὲ δεινὰ καὶ εὐχομένοις ἀπαλέξειν.

—Plato, II. *Alcib.* 9.[1]

"Ruler Zeus, give us the good whether or not it be prayed for; but the evil, even if we pray for it, ward off."

Statues of praying persons bear witness that there were people in Greece who prayed in spirit and in truth with child-like sincerity.

Zeus is omniscient, for he sees everything. Says Hesiod:

Πάντα ἰδὼν Διὸς ὀφθαλμὸς καὶ πάντα νοήσας.

—Hesiod, *Opp. et d.*, 267.

"All sees the eye of Zeus and everything he knows."

As the poor were blessed by Christ, so it was a fundamental tenet of the Greek religion that strangers and beggars were under the special protection of Zeus. Says Homer:

Πρὸς γὰρ Διός εἰσιν ἅπαντες
ξεῖνοί τε πτωχοί τε.

—Homer, *Od.*, IV. 207.

"For to Zeus's special care,
Belong the stranger as well as the needy."

Ζεὺς ἐπιτιμήτωρ ἱκετάων τε ξείνων τε.

—Homer, *Od*, IX. 270.

"Zeus the Avenger of supplicants and strangers."

St. Paul speaks of the development of the spiritual body which is immortal, and in like manner Plato speaks of the soul as acquiring wings wherewith to lift itself up to the heavenly spheres of divine life and to escape the mortality of the body.

The same philosopher quotes Pindar as saying that "he who is conscious of not having done any wrong may cherish sweet hope, which will be a good sustainer in his old age."

Τῷ μηδὲν ἑαυτῷ ἄδικον ξυνειδότι ἡδεῖα ἐλπὶς ἀεὶ πάρεστι καὶ ἀγαθὴ γηροτρόφος, ὥς καὶ Πίνδαρος λέγει.—Plato, *De rep.*, I. 330.

[1] See also Plato, *De legg.* III. 687d and VII. 801a et seq. The same idea is insisted upon in *De legg.* III. 589 and II. *Alc.*

COINCIDENCES.

There are three passages, one written in India, another in Palestine, and a third in Greece, all insisting on the omnipresence of the moral law and teaching that the effects of evil deeds are unavoidable; and this triple coincidence is enforced by a striking similarity in the mode of expression. The Hebrew Psalmist says (Psalm cxxxix, verses 7–10):

THE PRAYING YOUTH [1]

> "Whither shall I go from thy spirit? or whither shall I flee from thy presence? If I ascend up into heaven, thou art there: if I make my bed in hell, behold, thou art there. If I take the wings of the morning, and dwell in the uttermost parts of the sea; even there shall thy hand lead me, and thy right hand shall hold me."

This sentence can be paralleled in Buddhist literature as well as in Plato. The *Dhammapada*, the famous collection of Buddhistic aphorisms, and one of the best authenticated and most ancient books of Buddhism, speaks of the inevitableness of law and says to the sinner:

> "Not in the heaven, O man, not in the midst of the sea, not if thou hidest thyself in the clefts of the mountains, wilt thou find a place where thou canst escape the effect of thine own evil actions. (Verse 127.)

Plato, who can scarcely have been familiar either with the Hebrew psalms or with the Buddhist sacred books, expresses the same truth as follows:

> *Οὐ γὰρ ἀμεληθήσει ποτὲ ὑπ' αὐτῆς (τῆς δίκης θεῶν)· οὐχ οὕτω σμικρὸς ὢν δύσει κατὰ τὸ τῆς γῆς βάθος· οὐδ' ὑψηλὸς γενόμενος εἰς τὸν οὐρανὸν ἀναπτήσει· τίσεις δὲ αὐτῶν τὴν προσήκουσαν τιμωρίαν εἴτ' ἐνθάδε μένων εἴτε καὶ ἐν Ἅιδου διαπορευθεὶς εἴτε καὶ τούτων εἰς ἀγριώτερον ἔτι διακομισθεὶς τόπον.*—Plato, *De legg.*, X. 905.

[1] Bronze statue (Berlin). In praying the eyes were raised toward heaven and the hands lifted, palms upward, as Horace says, "*cælo supinas si tuleris manus*" (*Carm.*, III., 23, 1). See *B. D.*, p. 591

"Never wilt thou be forgotten by the justice of the gods; not when by making thyself insignificant thou descendest deeply down under the ground, nor when by making thyself high thou flyest up to heaven, wilt thou be able to escape the punishment which thou deservest, whether thou stayest here or art carried away to Hades, or art transferred to a place still more desolate."

Not only did Plato prepare the way for the doctrine of the Logos as the revelation of God, which in the shape that it received

Hermes Psychopompos Presenting a Soul to the Rulers of the Under World.
(From *Pict. Ant. Sep. Nasonum*, pl. I., 8.)

at the hands of Philo became later the basic idea of Christian philosophy; not only are there many other closer coincidences as to

Decking the Altar of Demeter.
(From *Admiranda*, pl 17.)

the nature of the soul and immortality; but there are also passages which strikingly anticipate distinctly Christian ideas. There are passages in Plato's works which, if they had been written after Christ, would have been regarded as indisputable evidence that the philosopher had read the Gospels. Plato says, for instance:

Αὐτῶν γε καὶ πόδας καὶ χεῖρας ἐθέλουσιν ἀποτέμνεσθαι οἱ ἄνθρωποι, ἐὰν αὐτοῖς δοκῇ τὰ ἑαυτῶν πονηρὰ εἶναι.—Plato, *Sympos.*, 205e.

"People will allow their own feet and hands to be cut off when they appear to become evil to themselves."

Which reminds us of Matt. v. 29 30:

"And if thy right eye offend thee, pluck it out, and cast it from thee: for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell. And if thy right hand offend thee, cut it off, and cast it from thee: for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell."

Like Christ, the Greek sages also demand simplicity. Says Euripides, "Simple is the tale of truth"—ἁπλοῦς ὁ μῦθος τῆς ἀλεθείας ἔφυ, and the Gospel of Matthew uses the same expression in the sentence:

"The light of the body is the eye: if therefore thine eye be simple (ἁπλοῦς),[1] thy whole body shall be full of light."

ÆNEAS SAVES HIS FATHER ANCHISES.[2]
(Gerhard, *Auserl. Vas.*, pl. 231, 1.)

It is probably more than a mere accident that pagan augurs used the very same words in their invocation, "kyrie eleëson—κύριε ἐλέησον," which is still sung Sunday after Sunday in almost all Christian churches.[3]

But the most striking coincidence, which now sounds like a

[1] The English version reads "single."

[2] Venus leads the way, Kreusa the wife of the hero follows. Iulus, his little son, runs by his side. Æneas is regarded as the ideal of filial piety.

[3] See Epictetus, II. 7. 12.

prophecy, is Plato's description of the truly good man who would rather be than seem virtuous, and of whom the philosopher says:

> *Ἐροῦσι δὲ τάδε, ὅτι οὕτω διακείμενος ὁ δίκαιος μαστιγώσεται, στρεβλώσεται, δεδήσεται ἐκκαυθήσεται τὼ 'φθαλμώ τελευτῶν πάντα κακα παθων ἀνασχινδυλευθήσεται.*

"They will tell you that the just man who is thought unjust will be scourged, racked, bound—will have his eyes burnt out; and, at last, after suffering every kind of evil, he will be crucified."

THE ETHICS OF RETURNING GOOD FOR EVIL.

We are now prepared to consider the parallels between the ethics of the Sermon on the Mount and ethics of Grecian philosophy, and shall not be astonished at their marvellous agreement.

Plato propounds plainly and briefly the injunction, "not to return evil for evil," **οὐδὲ ἀδικούμενον ἀνταδικεῖν.** (*Crito*, 127.)

The same injunction is more fully set forth in the 49th chapter of *Crito*, where we read:

"One must neither return evil, nor do any ill to any one among men, not even if one has to suffer from them."

> *Οὔτε ἀνταδικεῖν δεῖ, οὔτε κακῶς ποιειν οὐδενα ἀνθρώπων, οὐδ' ἂν ὁτιοῦν πάσχῃ ὑπ' αὐτῶν.*—Plato, *Crito*, 49.

A similar idea is expressed by Antoninus Pius, who said:

"Human beings have developed for each other.—For communion we are developed."

> *Οἱ ἄνθρωποι γεγόνασιν ἕνεκεν ἀλλήλων.—Προς κοινωνιαν γεγοναμεν.*
>
> —Antoninus, VIII. 24, 59 and V. 16.

Compassion, in the opinion of the Greeks, is the virtue that constitutes humaneness. Says Phocion (*Apud Stobæ. Serm.*, i. 3).

> *Οὔτε ἐξ ἱεροῦ βωμον οὔτε ἐκ τῆς ἀνθρωπινης φυσεως ἀφαιρετεον τὸν ἔλεον.*

"As little as one may remove the altar from a temple, so little should compassion be torn out of human nature."

These sentiments are not isolated in Greek literature. Pittacus says:

> *Συγγνώμη τιμωριας ἀμείνων· τὸ μὲν γὰρ ἡμέρου φυσεως, τὸ δε θηριωδους.*
>
> —Pittacus, *Ap. Stobac, anthol.*, XIX. 169

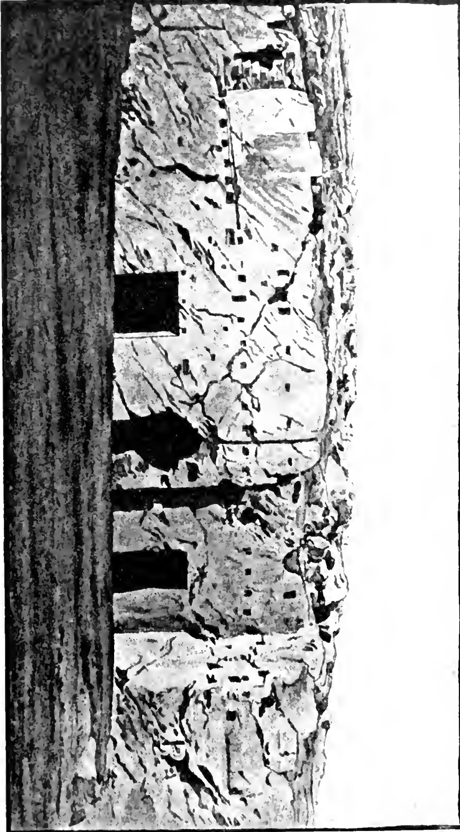
"Forgiveness is better than vengeance, the former shows culture, the latter is brute-like."

Diogenes Laertius says:

> *Τον φίλον δει εὐεργετεῖν, ὅπως ᾖ μᾶλλον φίλος, τὸν δὲ ἐχθρὸν φίλον ποιειν.*—Diog. Laert., I. 6

It is necessary to do good to a friend, in order to make him more friendly, and to change the hater into a friend."

Plutarch tells of Diogenes, that when asked by some one how



The Prison of Socrates

The holes in the rock prove that buildings were formerly attached to these cave like rooms. (*B. D.*, p. 155.)

he should defend himself against an enemy, he answered: **καλὸς κἀγαθὸς γενόμενος**, i. e., "By becoming perfectly good yourself."[1]

Diodorus Siculus says that all attacks should be made with a

[1] He here uses the word καλος κάγαθος so characteristic of the Greek mind.

view to future friendship. (προςκρουστέον ὡς φιλίας ἐσομένης.—*Diod. Sic.*, II. 20.)

Pythagoras is reported to have said: "We should deal one with another so as never to convert friends into enemies but enemies into friends." (*Ap. Diog. Laert.*, VIII. 23.)

Thales of Miletus used to say:

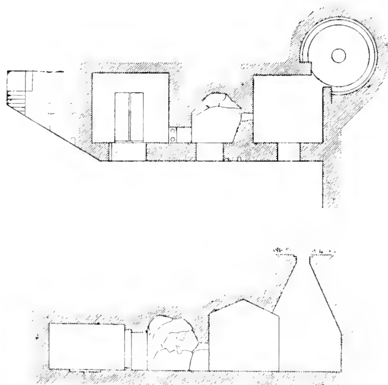
Ἀγαπα τὸν πλησίον μικρὰ ἐλαττούμενος·

"Love thy neighbor and suffer the little offences (he may give you)."

Egoism is vigorously condemned, and we are told that "it is a shame to live and to die for oneself alone."

Αἰσχρὸν γὰρ ζῆν μόνοις ἑαυτοῖς καὶ ἀποθνήσκειν.

—Plutarch, *Cleom.* 31.



GROUND PLAN AND ELEVATION OF THE PRISON OF SOCRATES.[1]

Aristippus, the hedonist, propounded the maxim "not to hate, but to change the mind (of one's enemy) by teaching him something better." (**μὴ μισήσειν, μᾶλλον δὲ μεταδιδάξειν.** *Ap. Diog. Laert.*, II. 8. 9.)

Philemon is the author of these lines:

Ἥδιον οὐδὲν οὐδὲ μουσικώτερον
ἐστ' ἢ δύνασθαι λοιδορούμενον φέρειν.

Philemon, *Ap. Stobae.*, *anthol.*

[1] It consists of three chambers (of which the middle one is not completed) with doors about two meters high. At the right farther corner of the third chamber is a cistern which must have existed when the prison was excavated; the wall being afterwards broken through, so as to gain a ourth room. (*B. D.*, p. 154.)

Sweeter is nothing nor nobler
Than bearing abuses with patience.

Greek ethics is frequently characterised as hedonistic; but the truth is that Epicurus and his school were much nobler and more high-minded than they are commonly represented. In fact, all the Greek moralists were stern anti-hedonists. It is probably no exaggeration to say that every Greek youth knew Hesiod's famous maxim by heart and believed that:

BUST OF SOCRATES.[1]
Villa Albani. (*B. D.*, III., p. 1683.)

"Before Virtue the immortal gods have placed Sweat. Long and steep to her is the road and rough at the outset. But when one reaches the height it becomes easy, however difficult it was before."

The original sounds like music and defies translation. It reads:

Τῆς ἀρετῆς ἱδρῶτα θεοὶ προπάροιθεν ἔθηκαν
ἀθάνατοι, μακρὸς δὲ καὶ ὄρθιος οἶμος ἐπ' αὐτὴν
καὶ τρηχὺς τὸ πρῶτον· ἐπεὶ δ' εἰς ἄκρον ἵκηαι,
ῥηΐδιη δὴ ἔπειτα πέλει, χαλεπή περ ἐοῦσα.

—Hesiod, *Opera et d.* 265

We conclude this collection of quotations[2] with a saying of Socrates which is a parallel to the prayer of Jesus on the cross, for his executioners (Luke xxiii. 34). When condemned to drink the hemlock, Socrates said, "I do not bear the least ill will toward those who voted my death":

Ἔγωγε (εἶπεν ὁ Σωκράτης) τοῖς καταψηφισαμένοις μου καὶ τοῖς κατηγόροις οὐ πάνυ χαλεπαίνω.—Plato, *Apolog.* 33.

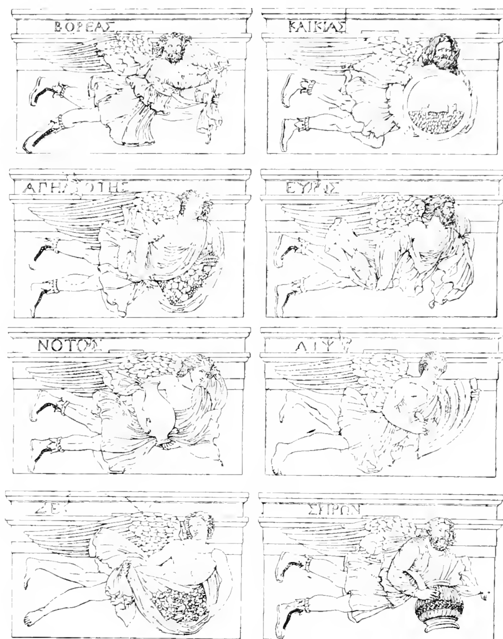
Louis Dyer,[3] speaking as a Christian, expresses the opinion prevailing at present among archæologists concerning Greek paganism, in these words:

"Christianity as we know it, Christianity as we prize it, is not solely and exclusively a gift from Israel. It is time to open our eyes and see the facts new and

[1] This bust is regarded as the best and most artistic likeness of the great philosopher. For a description see P. Schuster, *Die Bildnisse der griech. Philosophen*, Leipzig, 1876.

[2] We have drawn here profusely from Prof. R. Schneider's excellent book *Christliche Klänge aus den Griechischen und Römischen Klassikern* which contains a great number of similar quotations. But even Schneider's work of 360 odd pages of quotations is by no means complete. For instance, it makes no reference to Plato's startling proposition, quoted above, that the perfectly just man should be crucified.

[3] *Studies of the Gods in Greece at Certain Sanctuaries Recently Excavated.* London. Macmillan & Co. 1891.



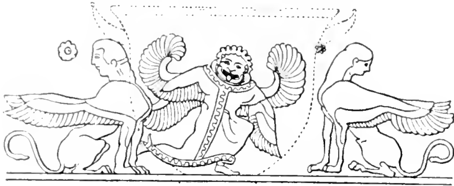
THE EIGHT WIND DEMONS.[1]
(After Stuart and Revett. *B. D.*, III., 2116.)

SUNRISE.[2] (Welcker, *Alte Denkm.*, III., pl. 9.)

[1] *Boreas*, the north wind, is strong, he holds a shell in his hand, using it as a trumpet. *Kaikias*, the northeast wind, brings snow in winter and thunder-showers in summer. He holds a vessel full of hail. *Apeliotes*, the east wind, brings fertilising rains and makes the fruit grow. *Euros*, the southeast wind, carries a bag of clouds over his shoulder. *Notos*, the south wind, holds an urn containing rains. *Lips*, the southwest wind, favoring the sailors entering the harbor of Athens, holds the ornament of a ship's prow in his hands. *Zephyros*, the gentle west wind, brings flowers; and *Skeiron*, the dry northwest wind, carries a large vessel, which (according to Stuart) may be a fire-pot.

[2] Eos is said to be in love with Kephalos, a beautiful youth who scorns her affection. She tries to take hold of him, but he threatens to throw a stone at her.

old that stare us in the face, growing more clear the more investigations and excavations on Greek soil proceed. To the religion of Greece and Rome, to the Eleusinian mysteries, to the worship of Æsculapius and Apollo, to the adoration



ERIS, THE GODDESS OF STRIFE, AND SPHINXES.
Picture on an antique skyphos.

ASKLEPIOS AND HYGIEIA.
(Diptychon of Florence. After Raphael Morghen's engraving. From Wieseler, *Alte Denkm.*, II., 792.—*B. D.*, I., p. 140.)[1]

of Aphrodite, is due more of the fulness and comforting power of the Church to-day than many of her leaders have as yet been willing to allow."

[1] The worship of Asklepios, the god of medicine and the protector of physicians, was widely spread over the whole Roman empire and entered for a while into a competition even with Christianity. Asklepios is accompanied by a little boy, Telesphoros, the genius of reconvalescence. Hygieia is sometimes called the wife and sometimes the daughter of Asklepios.

Much that is commonly deemed specifically Christian has demonstrably been inherited from the pagans, part of which is pagan and ought to be abolished, and part of which ought to be retained because it is the truth—the truth which is the same everywhere and may be discovered in various ways.

The present age, with its new light of science and increasing power of civilisation, has broadened our minds and enables us to understand the Logos-conception of the Fourth Gospel, "the true

NIKE OF SAMOTHRAKE BY PAIONIOS.[1]
Paris. Restored by Zumbusch. (After Conze, *Sam.*, II., 25*b*.)

light which lighteth every man that cometh into the world." Mr. Dyer says of this broadening spirit now pervading Christianity:

"It is indeed a privilege newly and exclusively granted to the highest moods and broadest minds of to-day, this enlightened tolerance, this 'genial catholicity of appreciation,' which finds even in paganism a message from the only and the everlasting God. Now at last, thanks to the painstaking work which truly scientific men have done in archæology, we are receiving something of the legacy bequeathed us by those who lived and loved and prayed of old in Athens and in Rome. Now at last we may feel, with no petty wish to carp or cavil, the sacredness of ancient sanctuaries, and know them forever consecrated to 'the sessions of sweet silent

[1] The original is a colossal statue, a torso, a picture of which is published by Conze, pl. 64, cf. *B. D.*, p. 1021.

thought, where we summon up not only 'remembrance of things past,' but also much of the sweet usage and workaday reality in things now present for our spiritual aid.'

TRANSFIGURED POLYTHEISM

Greek religion starts with a polytheistic mythology which is neither better nor worse than the mythologies of the other pagans, but develops to lofty heights and exhibits a nobility in its ethical

NIKE

Bronze relief from Olympia.
(Roscher, *Lex.*, II., p. 1047.)

EIRENE WITH PLUTOS.[1]
(Restored).
Statue of Kephisodotos, Munich
(Springer, *Handb.*, 172.)

ideals which parallels the greatest and best that other religions can offer to the world.

But in spite of the acknowledged supremacy of Zeus the polytheistic background was preserved even in the writings of the most advanced sages—and the reason is that polytheism has its justification, which through the zeal of its advocates was entirely lost sight

[1] Peace as the mother of prosperity is more a product of reflexion than a mythological idea and illustrates well the philosophical mode of conceiving the gods.

of during the period of the ascendency of monotheism. While it is true that those powers (be they general principles, or laws of nature, or human ideals) which are personified in the gods constitute one great system of norms, we can readily see that their efficacy is by no means without implications or conflict. Even Christianity knows of the conflict between divine justice and divine love, building upon it the drama of the salvation of mankind through Christ. Beauty and wisdom are rarely combined in one

THE ALTAR OF THE TWELVE GREAT GODS.[1]

FIRST SECTION.

Zeus and Hera. Poseidon and Demeter. Underneath, the three Graces.

person, and in human society the influences of both may clash, as they did when Aphrodite found herself opposed by Pallas Athene on the battle-field of Troy. In the same way the conditions represented by other gods, Warfare and Commerce, the Arts and Feasting, Wine and Health, and earnest application, as represented in Ares and Hermes, in Apollo, Dionysos, Silenos, Hygieia, Heracles,

[1] Ara Borghese in the Louvre. (After Wieseler, *Alte Denkmäler*, 43, 44, 45.) Probably an imitation of the altar of the twelve gods erected by Peisistratos in the market-place at Athens.

etc., are sometimes pitted against one another, and there may be virtue and goodness on both sides. Why then should not such a condition of things, a medley of contrasts in a higher unity, be represented by a whole family of gods, with one father above them?

That the Greeks were conscious of the fact that their gods represented abstractions of laws and conditions, that they were not real persons but mere personifications, is obvious to every student of Greek art. The gods became fixed types, but they never

THE ALTAR OF THE TWELVE GREAT GODS.

SECOND SECTION.

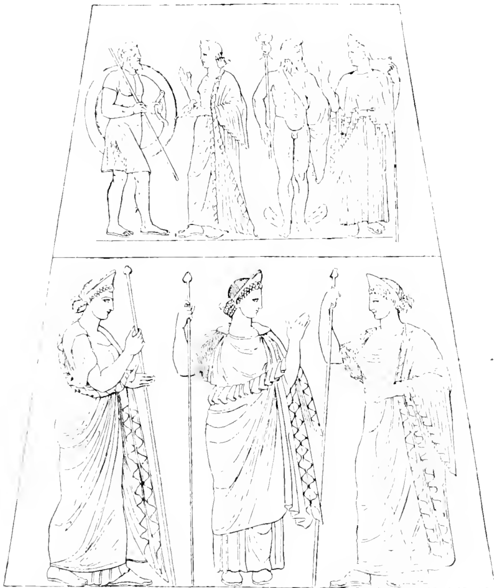
Apollo and Artemis. Hephæstos and Athena Underneath, the three Seasons

ceased to be the impersonal realities that prompted their conception, and above all mythology hovers the spirit of philosophy and a scientific interpretation of their legends and traditions.

At a very early date the gods were conceived as the harmonious diversity of the cosmic order,—a variety in unity and a unity in variety,—and this conception found popular expression in the

belief of "the Twelve Great Gods," in whose honor an altar was erected by Peisistratos in the market-place of Athens to denote the center of the city.

The world of the Greek gods passed away, according to the law of change. A terrible storm of iconoclasm swept them out of existence. Their temples were desecrated, their altars overturned, and their statues demolished. It was an historical necessity, as natural as is death in the life of individuals. The storm made room



THE ALTAR OF THE TWELVE GREAT GODS.

THIRD SECTION.

Ares and Aphrodite. Hermes and Hestia. Underneath, the three Fates

for Christianity, but if the vision of Elijah is applicable anywhere, it is here. God was not in the storm.

SCHILLER'S EULOGY OF THE GODS OF GREECE.

Not Christianity alone, with its rigid monotheism, appeared as the enemy of the poetic beauty of Greek mythology, but also the

abstract conception of a one-sided science—an idea which Schiller most beautifully expresses in his poem on the gods of Greece.

While we can never return to the naïve age of the Hellenic world-conception, we can still revert to it for more than mere historical reasons. The literal belief in the gods of Greece is gone past restoring, but we can now appreciate the truth which lay hidden in their myths, and in many respects our ultra-scientific age, forgetful of the life that animates nature and verging into the pseudo-science of a mechanical materialism, is wrong in the face of the Greek view which conceived all things as ensouled with gods.[1]

The Greeks faced the problems of life and science and art in a direct manner and formulated them with great simplicity, and this has become the characteristic type of all that is called classical.

We conclude with a quotation of some of Schiller's verses, following for the most part Sir Edward Bulwer Lytton's translation:

"Hail to the gods who in an age gone by
Governed the world,—a world so lovely then!—
And guided still the steps of happy men
In the light leading-strings of careless joy!
Well flourished then your worship of delight!
How different was the day, how different, ah!
When thy sweet fanes with many a wreath were bright,
O Venus Amathusia!

"Round ruthless fact a veil of witching dreams
The beauty of poetic fancy wreathed;
Through all creation overflowed the streams
Of Life—and things now senseless, felt and breathed.
Man gifted Nature with divinity
To lift and link her to the breast of Love;
All things betrayed to the initiate eye
The track of living gods above!

"Where lifeless, fixed in empty space afar,
A flaming ball is to our senses given,
Phœbus Apollo, in his golden car,
In silent glory swept the fields of heaven!
Then lived the Dryads in yon forest trees;
Then o'er yon mountains did the Oread roam;
And from the urns of gentle Naiades
Welled waving up their silver foam

[1] *πάντα πλήρη θεῶν.*—Heraclitus.

"No specter-skeleton at the hour of death
In Greece did ghastly on the dying frown.
A Genius with a kiss took life's last breath,
His torch in gentle silence turning down.
The judgment-balance of the realms below,
A judge, himself of mortal lineage, held;
The very Furies, then at Orpheus' woe,
Were moved to mercy, music-spelled.

"Even beyond in the Elysian grove
The Shades renewed the pleasures life held dear:
The faithful spouse rejoined remembered love,
And rushed along the course the charioteer,
The grand achievers of heroic deeds,
In those days, choosing Virtue's path sublime,
More anxious for the glory than the meeds,
Up to the seats of gods could climb.

"And gone forever with time's rolling sand
Is this fair world, the bloom on Nature's face.
Ah, only in the Minstrel's fable land
Can we the footstep of the gods still trace!
The meadows mourn for the old sacred life;
Vainly we search the earth of gods bereft;
And where the image with such warmth was rife,
An empty shade alone is left!

"Cold, from the bleak and dreary North, has gone
Over the flowers the blast that killed their May;
And, to enrich the worship of the ONE,
A Universe of Gods must pass away.
Mourning, I search on yonder starry steeps,
But thee no more, Selene, there I see!
And through the woods I call, and o'er the deeps,
No hallowed voice replies to me!

"Deaf to the joys which Nature gives—
Blind to the pomp of which she is possessed—
Unconscious of the spiritual Power that lives
Around, and rules her—by our bliss unblest—
Dull to the Art that colors or creates,
Like a dead time-piece, godless NATURE creeps
Her plodding round, with pendulum and weights,
And slavishly her motion keeps.

"New life to-morrow to receive
Nature is digging her own grave to-day;
And icy moons with weary sameness weave
From their own light their fulness and decay.
Home to the Poet's Land the Gods are flown,

A later age in them small use discerns,
For now the leading-strings of gods outgrown,
The world on its own axle turns

"Alas! they went, and with the gods are gone
The hues they gazed on and the tones they heard,
Life's melody and beauty. Now the word,
The lifeless word, reigns tristful and alone.
Yet, rescued from Time's deluge, still they throng
Unseen the Pindus they were wont to cherish;
Ah, that which gains immortal life in Song,
In this our earthly life must perish!"

EFFECT OF THE MYSTERIES OF ELEUSIS UPON SUBSEQUENT RELIGIOUS THOUGHT.[1]

BY THE REV. CHARLES JAMES WOOD.

THERE remain some points which may be stated as scholia to the propositions of my papers in the October and November *Open Courts* for 1900. The first is the Eleusis of ancient Egypt, the second point is a modern attempt to revive Eleusis, and the third is the effect of the Mysteries of Eleusis upon the development of Christian thought.

In a work recently published Mr. Adams of New College, Oxford, maintains that the ancient and marvellous work of Egyptian centuries commonly known as the *Book of the Dead* should be called by its correct and inscribed title *The Book* (or *Scroll*) *of the Master of the Secret House*: that this secret house is none other than the great pyramid of Khufu at Ghizeh, which was used to initiate into the sublime mysteries of truth, viz., the spiritual being of God, the order of the universe, the Trinity, the manner of the existence of God, the Incarnation, (which was shown also at Denderah in the ancient temple of Hathor, the Virgin Mother of God,) the resurrection, the certainty of continued personal conscious existence after physical death and the retribution which is implied in perfect goodness of the divine world-order, God Himself. The pyramid and temple, each was taught the initiate to be an image of the house eternal in the heavens.

These Egyptian mysteries were intended also to prepare a man to conduct himself rightly upon his entrance into the other life. Taken in this sense, *The Scroll of the Master of the Secret House* could be laid beside the Bible with most interesting results. Remembering always that *The Scroll of the Master of the Secret*

[1] Conclusion of the series "Certain Aspects of the Eleusinian Problem."

House is a liturgy or ritual of Mysteries of a primitive Church, in which the primordial customs and folkfaiths of the savage became systematised and his spirituality began to find definite expression.

The Zionitic Brotherhood of mystics who settled at Ephrata, Lancaster County, Pennsylvania, and built a Chapter-House for themselves in 1738, has left a description of the ordeal through which its neophytes were supposed to pass,—the initiation itself being also intended to promote a physical and spiritual regeneration, and presumably an introduction to immortality. Fastings, prayings, dietings, accompanied by study of esoteric problems, followed by the taking of a grain of "materia prima" or substantial immortality, and a few drops of the life-elixir, were supposed, in forty days, to reduce the initiate to the state of the primal innocence and deathlessness enjoyed by man before the Fall. The Chapter-House itself was built in three stories. The second floor was a circular chamber, with blind walls, lighted only by a lamp set on a pedestal in the middle of the room. Says J. F. Sachse in his account of the Ephrata cloister:

"Around this pedestal were arranged thirteen cots or pallets, like the radiating spokes of a wheel This chamber was used by the secluded votaries as their sleeping-room, and was known as 'Ararat,' typifying that heavenly rest which is vouchsafed by the Almighty exclusively to his chosen few, visibly instanced when the Ark of Noah settled down on the mount of that name, there to rest forever. The third or upper story was the mystical chamber where the arcana of the rite were unfolded to the secluded. It was a plain room measuring exactly eighteen feet square, with a small oval window on each side, opening to the four cardinal points of the compass; access to the chamber was attained through a trap-door in the floor."

It is worth mentioning that the Mormon church of to-day is modelled so far as can be inferred upon the Eleusinian Mysteries. The temple is never seen to be entered by any one but the president or high officials, through the doors. The entrance is gained through an adjacent building standing some yards away. There the candidates enter, receive their baptismal robes and proceed through an underground tunnel to the lowest part of the temple where they are baptised. Their advance to higher degrees in these mysteries is supposed to be contingent.

We shall now turn our attention to some of the apparent effects of the Eleusinian Mysteries upon the form and evolution of Christian thought.

Some of the special or technical terms used in the Mysteries of Eleusis were: *μύσται*, initiates; *τέλετη*, the ceremony of perfecting; *τελείοι*, the perfect, the initiated; *μύησις*, initiation to secrecy;

ἐπόπται, those who have seen, who look upon the ceremonies of the Mysteries; πειράσμος, the test in initiation; δόκιμον and δόκιμος, approval and approved, he who passed the trial in the initiation; and σοφία, the wisdom, or esoteric doctrine of the Mysteries. The casual occurrence of one or two of these terms in any writings would not be remarkable, but the cumulative and pointed use of them all cannot be regarded as without significance.

Turning, therefore, to the New Testament, we find such use as seems to be intended to allude to the Mysteries, and to be addressed to those who understood the allusions. For example, in the Epistle of St. James (i. 2–5) we read, "My brethren count it all joy when ye fall into divers tests (πειράσμοι), knowing this that the approving (δοκίμιον) of your faith worketh endurance (ὑπομένη). But let endurance have its perfect work (i. e., last up to the rite of perfection, τέλετη, that is through all the degrees to the final), that ye may be perfect (τελείοι) and entire (ὁλοκληροι, so to say 33° Masons), lacking nothing (i. e., having passed through all the degrees and having learned all of the secret doctrine, σοφία, of the divine Mysteries). If any of you lack wisdom (σοφία), let him ask of God who *giveth* to *all* men *liberally* and upbraideth not; and it shall be given him." Here the writer contrasts God's method with man's way in the Mysteries of communicating precious and holy truths. "Happy (μακάριος, another special word used of the initiated, as may be seen in passages already quoted) is the man who endureth the test (πειράσμος, since by psychologic law only through sorrow is spiritual vision gained), for when he is approved (δόκιμος, accepted as an initiate) he shall receive the crown of life," just as the initiated at Eleusis who endured the test were crowned and robed.

It would appear that St. Paul made many allusions to the Greek Mysteries. Some of these allusions can be sufficiently indicated by indicating the words peculiar in the sense he gives them to the rites at Eleusis.

At 1 Cor. xiii. 12 we read, "Now we see through glass darkly, etc., which rendered literally would be, "Now we look upon a scratched mirror." This may well be a reference to the mirror, a polished metal disk, easily scratched, used in the ceremonies of the Mysteries of the Thesmophoria. Into this mirror the candidates were bidden to look to see the "Hidden One." At this day the shrines of the Shinto cult of Japan contain a metal mirror upon the high altar; no image.

At verse 10 of this chapter St. Paul had written, "When that

which is perfect (*τέλειον*) shall come," and "Seeing face to face," which may allude to the *ἐπόπται*, spectators, who, having reached the *τέλειον* or degree of perfection, gazed face to face upon the most occult ceremonies at Eleusis.

In the following passage from the fourth and fifth chapters of the second letter to the Corinthians the probable allusions to the Greek Mysteries are indicated by italics.

"Therefore seeing we have this ministry, as we have received mercy, we faint not; but have renounced the *hidden things* of dishonesty, not walking in craftiness, nor handling the word of God deceitfully; but by *manifestation of the truth* commending ourselves to every man's conscience in the sight of God. But if our gospel *be hid*, it is hid to them that are lost: in whom the god of this world hath blinded the minds of them which believe not, lest the *light of* the glorious gospel of Christ, who is the image of God, should shine unto them. For we preach not ourselves, but Christ Jesus the Lord; and ourselves your servants for Jesus's sake. For God, who commanded the light to shine out of darkness, hath shined in our hearts, to give the light of the knowledge of the glory of God in the face of Jesus Christ. But we have this *treasure in earthen vessels*, that the excellency of the power may be of God, and not of us.

"Knowing that he which raised up the Lord Jesus shall raise up us also by Jesus, and shall present us with you. For all things are for your sakes, that the abundant grace might through the thanksgiving of many redound to the glory of God. For which cause we faint not; but though our outward man perish, yet the inward man is renewed day by day. For our light affliction, which is but for a moment, worketh for us a far more exceeding and eternal weight of glory; while *we look not at the things* which are seen, but at the things which are not seen: for the *things which are seen* are temporal; but the things which are not seen are eternal. For we know that if our *earthly house* of this tabernacle were dissolved, we have a *building of God*, an house not made with hands, eternal in the heavens. For in this we groan, earnestly desiring to be *clothed upon* with our house which is from heaven: if so be that being clothed we shall not be found naked. For we that are in this *tabernacle* do groan, being burdened: not for that we would be unclothed, but clothed upon, that mortality might be swallowed up of life."

There is another passage, in the first letter to the Corinthians, which deserves a passing notice. It begins with the fourth verse of the second chapter:

"And my speech and my preaching was not with enticing words of man's wisdom, but in demonstration of the Spirit and of power: that your faith should not stand in the *wisdom* of men, but in the power of God. Howbeit *we speak wisdom* (*σοφια*) *among them that are perfect*; yet not the wisdom of this world, nor of the *princes* (*ἄρχοντες*, the title of the leaders of the mystic rites) *of this world* that come to naught: but we speak the wisdom of God in a *mystery*, even the hidden wisdom, which God ordained before the world unto our glory: which none of the princes of this world knew: for had they known it, they would not have crucified the Lord of glory. But as it is written, Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love him. [This phrase is also in the spirit of the Mysteries.] But God hath

revealed them unto us by his Spirit: for the Spirit searcheth all things, yea, the deep things of God. For what man knoweth the things of a man, save the spirit of man which is in him? even so the things of God knoweth no man, but the Spirit of God."

Significant also, in this connexion, is the apostle's exclamation, 1 Cor. xv. 51: "Behold, I show you a *Mystery*." Also that other passage in the letter to the Ephesians (iii. 2–5):

"If ye have heard of the dispensation of the grace of God which is given me to youward: How that by *revelation* he *made known* unto me the *mystery*; (as I wrote afore in few words, whereby, when ye read, ye may understand my *knowledge in the mystery of Christ*) which in other ages was not made known unto the sons of men, as it is now revealed unto his holy apostles and prophets by the Spirit."

St. Peter writing of the full revelation (σοφία) of Christ in the transfiguration, uses with σοφία that other term peculiar to the Mysteries, for he says, "We are eye-witnesses (ἐπόπται) of his majesty."

The curious reader may compare with these passages St. Mark iv. 11, 33, 34, and St. Matthew x. 27. The cumulative evidence of all this is forceful.

Now, the use of these terms and allusions produced a profound impression upon the mind of the early Church. This impression was the wider for several reasons. In the first place, the beginning of the Christian era was coeval with a climax of magic. Everywhere magic, thaumaturgy, and necromancy were tried. Satanism was more open than in Paris, London, or Berlin of to-day. The psychological conditions which had brought this about, it is aside from my present purpose to discuss. At that same time the emotional element of Neo-Platonism was carried over into the Church both directly and through Hellenistic rabbinism. Therefore it came about that Christianity, which had begun by being a teaching (μάθησις), ended shortly after the Eutychian controversy in becoming a mystery (μυσταγωγία) or mystagogy, a system of ceremonies regarded as magical in their effects as those, say, of the great pyramid and of the Hall of the Initiated at Eleusis had been regarded.

The Abyssinian Church, which was founded in the sixth century and by reason of its isolation has probably changed hardly at all, represents the mystagogic character of the Eastern Church of the sixth century. From that age the images, the sacraments, even the creed and prayers, became objective charms, amulets, and magical cults. The various grades of Church membership were

modeled after the system of Eleusis. The cosmic cross, the chal ice of life, the liturgic dance, in short, the entire mystagogic conception of Christianity, was brought in upon the Church. Hence mysterious mutterings of the mass were heard, and curtains were drawn about the priest as he sacrificed upon the altar. Only the ἐπόπται were allowed to remain to hear the "blessed mutter of the mass" and see the lights dimly shining through the curtains. Even doctrine, as in the case of the elements of the Eucharist, comes in time to be a sacred object, to be assented to reverently, even though not understood. It is no longer μάθησις, it has become δόγμα, to be worn as the Jews wear their phylacteries, as the modern Syrian wears prayers illuminated upon parchment, like present-day scapulars, for mere amulets, or magic safeguards. Even beginning with the fourth century as τέλεται, mystic rites, sacraments were established. And the sacraments became systematised after a century into the mysteries of the Church.

The terminology of sacramental doctrine was borrowed from Eleusis. Dionysius the Areopagite, like the Master of the Secret House beforehand, taught that these mysteries of the Church were images and types of mysteries in heavenly places, and therefore *termini ad quos* of worship. No doubt the Gnostics had some hand in transferring this set of ideas and words from Memphis and Eleusis to Alexandria, to Athanasius and the Greek Church of Constantinople. In the end the Church was regarded in a mystagogic and even magical sense as steward of the Mysteries, i. e., mystic rites, mystic things, instinct with a material force of God, mystic and occult ideas in themselves saving by making the hearer σόφος, wise unto salvation, and Gnostic, γνώστικος, understanding the hidden things of God.

In brief, the influence of the Ancient Mysteries has led many to conceive of the Church as an organisation for the perpetuation of ceremonies, forms of words, and other sacred objects committed to the care of a unique class of ἱεροφάντες and μυσταγώγοι, themselves able to bind by the use of fixed formulas of words the presence and operation of the Infinite Life of the Universe. So much for the influence of Eleusis upon the writers of the New Testament and the early Church.

The later development of religious thought was forcibly influenced by the pseudo-Dionysios, whose writings carried over into Christian theology the mysteriosophy of the Alexandrian Neo-Platonists, and this mysteriosophy they probably derived in most part from Eleusis.

In conclusion, it is antecedently probable that the Greek drama, explicating as it did the spiritual and ethical aspects of the Mysteries at Eleusis, prepared the minds of men for the religion of Christ, for the divine tragedy of Calvary.

* * *

My *envoi* is an apology. In the *Midsummer Night's Dream* Hippolyta says:

"This is the silliest stuff I ever heard."

Theseus rejoins:

"The best in this kind are but shadows, and the worst are no worse if imagination mend them."

BRUSHWORK, AND INVENTIONAL DRAWING.

BY THOMAS J. McCORMACK.

ONE of the soundest contributions that have been made to the theory and practice of elementary education, of late years, is contained in the system of inventional drawing introduced by Mr. Ebenezer Cooke, of London, England. It is the gradual outcome of thirty years of practical teaching; it has latterly received the sanction of the Educational Department of the English Government, having been adopted in their official "Illustrated Syllabus of the Course of Instruction in Drawing under the Department of Science and Art,"[1] prepared by Mr. Cooke himself; and it has also been adopted in part, under the name of "Brushwork," in some of the kindergarten schools of our own country,[2] as a recognised improvement upon the system of Froebel, with the spirit of which it stands in absolute logical agreement.

Mr. Cooke's ideas are notable for their conformity to the facts of artistic development, for their psychological insight, and for their inherent pedagogic power; and we believe we are doing a service to the cause of education by bringing them to wider notice among unprofessional and untechnical readers. Save for a few prefatory remarks and a supplementary discussion of the physical and mechanical conditions which lie at the basis of Mr. Cooke's main innovation, we shall do little more than offer an abstract of his ideas, allowing him in the main to use his own words. Those who desire more detailed information may consult the *Special Reports on Educational Subjects for 1896-97*[3] and Mr. Cooke's pamphlet *Brushwork in the Kindergarten and Home.*[4]

[1] London: Eyre & Spottiswoode. 1896. Price, 4½ pence.

[2] For example, in the new Chicago Institute, conducted by Col. Parker.

[3] Published by Eyre & Spottiswoode, London, 1897. Price, 3s. 4d.

[4] *Sesame Club Papers*, Sesame League, London, Dover St., W. Price, 1s.

Art is but a form of human expression, the outward embodiment of human thought and sentiment, standing in this regard on the same lofty level with speech and music. It is the objective incarnation of a subjective meaning; it is *creation*, not mimicry; and, primarily, the outward forms which this creative activity assumes possess significance solely as symbolic indications of the *intellectual* and *æsthetic* messages they are designed to convey.

This is strikingly apparent to the student of Egyptian, early Greek, and Oriental art, where the artistic form, to our eyes, appears to lack utterly the elements of naturalness and truth, and which bears to our æsthetic apprehension the same relation of intelligibility as a sentence in some archaic Scottish dialect would to the linguistic apprehension of an American. And not only is the outward form of its intellectual message—its language—national and historical; it is also individual. "If living figures were posed and grouped like those in the pediment or frieze of the Pantheon and photographed, the beauty of line and generalisation of forms in each figure, or in the groups,—the thought, knowledge, and feeling of Pheidias would be wanting, even if his composition was imitated."

Art, in fine, is not photography, not imitation of nature pure and simple. It is picture-thought expressed in picture-writing,—a writing or language having its idiosyncrasies of form and expression, and requiring its own appropriate interpretation.

Art, in this sense, as the conveyance of thought, is to be distinguished from art as technique and as concerned with the perfection of form. Thus, outline, the primitive and natural method of expressing thought, common alike to the savage, the child, and the student, remains such even in the highest stages and is in this respect distinguished from painting, in which the expression of thought and feeling is subordinated to the representation of fact.

In this *creative*, *intellectual*, and *non-imitative* character of art, we have, now, obtained a pedagogic foothold for the guidance of instruction, and in this connexion Mr. Cooke remarks:

"Language is a means of expressing or conveying thought by signs. Outline does not represent form; there is no line round an object. The scribble of the little child stands for objects long before the child can make or even suggest resemblance to their form. Outline stands for the object or the mental picture; *it is a sign, not a representation* The child's drawing tells us what it knows by line signs, it is not a representation of the object.

"Children's early drawings seem to confirm the conclusion that line is language, and show at the same time that it is unnatural for the little child to draw directly from nature as a student does; its drawing from nature is done another

way To represent objects as they appear is very difficult; to express its knowledge by sign, is easy The child's first drawing of a man is not a representation, but a statement of its knowledge in line signs. The child frequently puts two eyes in the profile, for it knows there are two, and it tells us what it knows, not what it sees; it expresses its knowledge by signs, not pictorially "

And again, giving examples:

"In reasoning or representing, general truth or knowledge controls the result

"If a cherry is drawn from knowledge, it will frequently be represented by a circle, or by a form intended for it, for we recognise no other generalisation of rounded form but the circle. A cherry is round; the most perfect rounded line form is the circle; therefore the nearer the cherry is made to that general form, the more it will be like a cherry. With the real object in front, students often make this mistake. General truth controls the representation. It is easier to draw from knowledge than from sight; to use line language than represent things as they are.

"Take another illustration from color. A class of eleven girls are given a peony petal to paint; poppy or rose would have done equally well. Ten paint the petal one uniform red color, crimson lake One girl, who looks at her petal, adds a little scarlet and purple in some places. But the class laugh at this. The petal is red; they know this, and paint it so; there is no need to look. If they should look, and see other colors, so strong is the conception they do not attempt to represent what they see. Knowledge controls every line, every color."

"Seeing is not so easy as is often supposed. To see and interpret rightly what is seen is one aim of education."

The representation which constitutes infant art, coming thus from a knowledge that is within, and being thoroughly individual and independent in its character, it would seem that this *spontaneous bent for expression and activity* should be so fostered as to form almost the sole source from which the subsequent development should flow:

"The child must see and think for itself; it must combine and invent, not merely copy what others have done. . . . We can no more think for a child than eat for it, no more acquire for it than grow for it. All round us the materials are provided, but the mental activity and the process by which material becomes knowledge is the mind's own. . . . Some teachers seem to consider they are doing the child a service, instead of an injury, by providing it with copies made with easy strokes and touches of the brush They seem proud of efforts that babies in the kindergarten equal and sometimes surpass; and the worst of it is, they are quite unconscious of their mistake. The expression of its own thought, the exercise of its own mental activity, educates the child. It can put lines together as soon as it can draw. *Copies are cribs*; the real work of translation from objects into line has in them been done. Copies may be models of composition and have other values, but they exercise constructive imagination very little. Copies made with the class, by children; by teacher and children; as illustrations or examples; or in any way which brings class and teacher into communion and into action, which interests and stimulates to effort, are quite unlike the dead printed copies so commonly given, to the exclusion of all else. Copies may have value in many ways, but they should not come before the child's expression of his own ideas.

"The child must get his own knowledge of eyes from eyes and translate for himself; copies may help him, but not Michael Angelo's. Some early master whose mind and knowledge is in sympathy with his own, may help more. Archaic art, the early art of the race, is more in harmony with it. Our pre-Raphaelites insisted on important educational principles. Copies made on its own plane after its manner, entering into its thought, may help the child to express itself. The child tries to express its own thought before it imitates natural objects. Imitation of nature is a late stage. In its earlier stages thought is intimately connected with its drawing. Inventive drawing involves thought; drawing from imagination comes before drawing from objects. To go to nature is right, but it must be through the child's nature. Education is involved in the efforts to express our own ideas, not to copy others."

Having indicated principles, we may now proceed to mechanism. With our limitations of space we can do no more than sketch the general tendency and spirit of Mr. Cooke's *technique*. It is now familiar in its main principles and differs from the best recognised traditions chiefly in the emphasis it lays upon freedom and inventiveness. It is opposed to the representation of natural form by generalised geometric form,—an inheritance from the Schoolmen in their mistaken interpretation of the relations of Greek art and geometry, natural form in Greek education never having been subordinated to geometric form. In fact, it takes its origin precisely in the suggestions of Greek archaic art, in its recognition of the structure of the arm and the resultant form of lines, the free sweep it gives to brush and color. Mr. Cooke says:

"Elementary drawing books often begin with the two geometrical elements, straight line and arc, and immediately after them copies or examples are given, presumably combinations and exercises with these elements. Very often neither of the elements given appear, but instead of them there is another line with which all the exercises are made, but for this no element is offered. No beautiful freehand ornament can be made with these geometrical elements; the hand is constructed to move in other lines, for which no element is given; no drapery; few, if any, of the lines of movement; neither falling water nor fluttering flame; no rounded forms; not even circles as they are really seen, except in one position in which the eye rarely is, exactly opposite the centre; to these may be added the whole wide region of living form, their movements and gradual changes, and none of these, nor any portions of them, can be drawn with the recognised elements—straight line and arc. The yeast plant and other low forms of life may be circular at first, at rest, or when dead. The sun and moon look like circles; the eyes of animals, sections of eggs, and parts of plants may be circular, but as we usually see them they are not. Among living things the circle is rare, and when it occurs it is rarely in a position in which it can be represented by an arc, or any combination of arcs."

Our conception of form and its elements, therefore, requires revision. General, mathematical forms have been derived from natural objects; to nature consequently we must return.

In the inorganic world, the characteristic bounding forms are

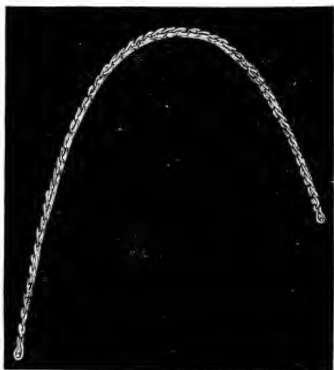
straight lines and plane surfaces; in the organic world, the characteristic bounding forms are curved lines and rounded surfaces. A snow crystal and a lily have both six parts radiating from a center, with the same angle between them. The crystal is bounded by straight lines, the flower by curves. Form is less fixed in living things; it is always changing with life, development, and movement. But in all their exuberant multiplicity a single fundamental form, according to Mr. Cooke, is apparent—the ovate form, the oval. It is seen in plants, birds' eggs, fishes, and shells.

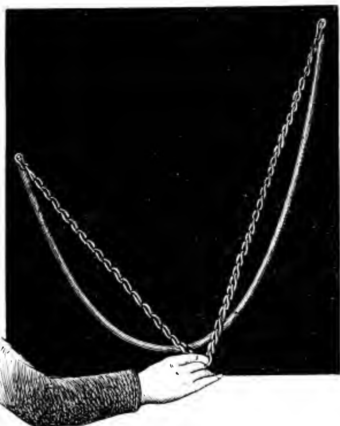
"Bud, leaf, flower, seed, embryo, even root and stem, as in onion, turnip, and potato, are but variations of the same shape—the form of bulb and fruit resulting from the form of their constituent parts. The general outline of whole plants, trees, sometimes their branches and shoots, repeat this shape or elements of it. Fir trees in form follow their cones, while the cones repeat the seed. The seed follows the trees as child follows the race."

The ovate form is thus the ground form of plants; and, though not so easily seen, of animals also. Conic sections and catenaries seem to be the prevailing curves in nature. This will be evident from certain physical considerations, which Mr. Cooke has not developed, but which afford a mechanical and mathematical support for his empirical observations. All living and plastic forms have been subject during their development to the effects of gravitation; and whatever modifications of their plastic substances have taken place, have been induced by gravitation. John and Jacob Bernoulli, the famous Swiss mathematicians and physicists of the seventeenth century, while once walking in the environs of Basel, accidentally came upon the question of the form which a chain suspended at both ends would assume if left entirely free to the influences of gravitation. They both immediately reached the conclusion that the form would be that in which the center of gravity of the hanging mass would lie lowest, in accordance with the principle that heavy bodies tend to sink as far as they can. This curve was called the *catenary* or chain-curve from the object which was first historically employed for its illustration. Pictures of the form of this curve are given in the annexed cuts taken from Mach's *Mechanics*. The general appearance of the curve will vary greatly, according to the distance between the points of suspension; but mathematically and mechanically every curve so produced will possess the same properties. Whatever hangs hangs by catenaries; it is the curve which the cables of suspension bridges make; it is the curve of the dorsal and ventral portions of animals; it is the curve of draperies, the curve of human beauty, of hanging vines, and of all

animal and vegetable forms which have shaped themselves in natural conditions of pendency. Modified by the various stresses and strains imposed by interferent conditions, and antagonised occasionally by molecular and tensional forces of superior power, it has in its multiple variations naturally furnished the ground form for the development of all animate nature.

It is the generalised conic section, thus, that Mr. Cooke has adopted as the most natural fundamental line. The ellipse seems to be the form best suited to his purposes, and its quadrant is chosen as the elementary line having the same value as the straight





THE CATENARY, OR CURVE FORMED BY A HANGING CHAIN.

The center of gravity of the entire mass tends to seek its lowest possible point,—a physical fact by which the mathematical peculiarities of the curve are determined.

line and the arc of a circle, completing the alphabet of linear form and constituting the missing element of outline—the line of life, development, and of movement.

As to the non-coincidence of the mathematical properties of the curves considered, he seems to be unconcerned. The characteristic which he seeks in his new element is *gradation.* His sole request is that one end of his line should be nearly straight, and that the remainder should gradually curve more and more towards the other end. It performs various mathematical eccentricities: if set free, it continues to curve or coil until it becomes a spiral, the form of shells. Yet it is the curve of natural movement, the

curve which the child is compelled to make by the very structure of his arms,—the curve of Greek art. When produced by continuous rapid and repeated action freely from the shoulder, and with non-resisting materials, it is performed happily, freely and spontaneously. It is the expression of the child's own impressions, thought, or feeling; it is in perfect subjective and artistic harmony with the characteristic form of living things; it is thus the counterpart of nature.

The graduated curve, rapid free movement, the use of non-resisting materials, repetition, these are the foundation.

"We should draw out power by doing. The child shows how it can be done. It goes rapidly over and over, round and round. Repetition is just what is wanted, and this is delightful to the child, for it is natural to the structure and movement of the arms, and pleasant to its senses. The rapid movement is the innovation; it is opposed to all our established tradition. But we go to nature: this is her direction. We have no choice; we must follow, and we soon find it is right. All motion is subject to law. Skating and cycling are quicker than walking, but are not less direct. The rapid motion of the potter's wheel and the lathe assist materially to make the form produced. The child who makes lines at first with such intense concentration of energy at its finger tips and pencil point that the paper is cut through, is wasting power and reversing the method of nature; which seems to be rapid movement and non-resisting materials, or soft clay should be given and incised lines made in it with a hard point.

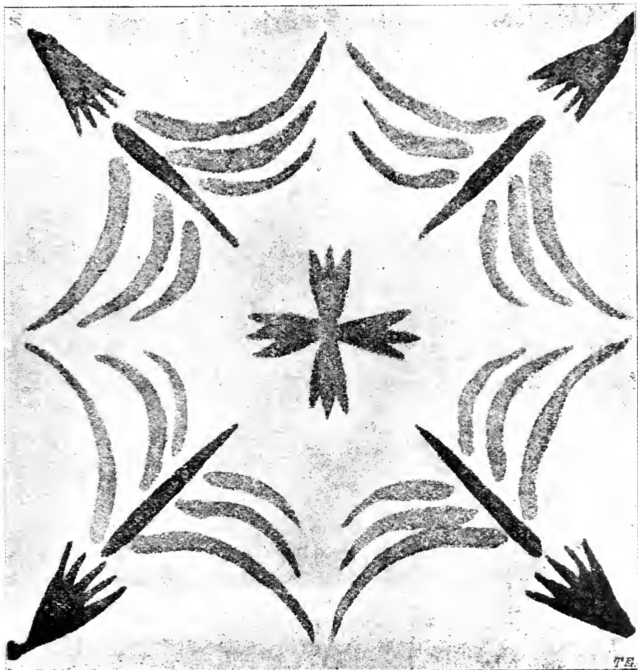
"Freehand often means cramped fingers and indirect drawing—fifty little touches to a line five inches long, rubbed out, perhaps twenty times, in parts and patched up. The whole arm is used by the child when scribbling, and its structure shows it is well adapted for this free action and for graduated curvature. Rapid action over a smooth surface is more easily directed and controlled than a slow movement, deeply incised in the substance of the paper. There is less resistance and more help from bodily structure and the mechanical movement.

"Non-resisting materials the child selects, and the pavement artist knows their value. The misty window-pane, the sea-shore sand, the wet finger-tip, the leading of water over a smooth surface are some of the child's suggestions. Chalk and blackboard, brush and color, charcoal or colored chalk on paper we can adopt. Brush and water on the blackboard are the readiest materials for us: whatever can be most easily used should be used; drawing in the air with the finger tip is not to be despised."

We have here the first intimation of the character of brush-drawing, proper. "The history of drawing with a brush, as distinguished from painting, is not yet written. Engraving, etching, and pen-drawing—all products of a firm point—have their literature; but the work of the soft, flexible brush-point, with its many and varied powers, is hardly known outside the region of technical art." It is the chief instrument in some kinds of lithography, and it was recommended and practised in a measure by Ruskin and Rosetti. But the analysis of the full powers of the brush in edu-

cational drawing remained for Mr. Cooke, and it was effected first in connexion with the study of Greek art, and secondly in connexion with his actual work of teaching.

"There are two kinds of brush lines in Greek art—namely, broad bands all round the vases, and freehand patterns. The bands seem to have been made mechanically. They may have been made by holding or fixing the brush steadily in one place while the vase revolved, as a chisel is worked at a lathe, and as the hand



Elementary Brushwork.
"Alma" School, Bermondsey, London, S. E. Age, 8 years.

itself moulded the vase on the potter's wheel. The bands vary in width, but between them are free lines arranged in a simple manner, often in a kind of geometric pattern. It is in making these free lines that the power most characteristic of the brush asserts itself. It persistently presents to the artist, as the child presents to its teacher, the most important characteristics of its inner self, until at last the artist recognises its right to speak and the truth of its message, and accepts the teach-

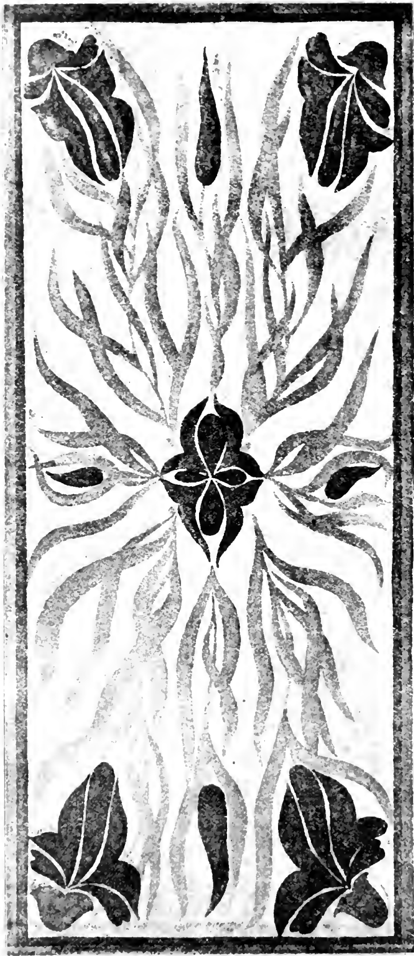
Elementary Brushwork.
"Alma" School, Bermondsey, London, S. E. Age, 9 years.

ing of his instrument. The shape most natural to the brush is ovate, the form of the brush itself, and also the outward expression of the force employed. When hand, brush, and material work harmoniously together, various ovate forms are produced with ease at one stroke, by the free play of the brush. Some of these are very suggestive of living forms; alone or arranged in the most simple ways, imagination sees in them likeness to flowers, leaves, shells, fishes, and birds. Inventive imitation stimulates observation; fish and bird are looked at again and the forms are improved. The eye of the fish, which at first was placed in the mouth, or at the furthest end, is put in its right place; its "lots of fins" become definitely numbered, of better form, and in their right places. This may have led to the direct study of nature; but at first these forms are not copied from nature. The strokes of the brush most easily made in free play for decoration suggest the forms of objects, and a few touches are added playfully from memory to accent the discovery. By frequent repetition and directed observation these are made more complete. From the simpler animals the higher forms develop; from fish to bird, from bird to mammal, and so up to man. This interesting course can be followed on the vases from ragged and unequal lines, to most skilful decoration, from simple ovate strokes to the majestic dignity of Athenæ and the supreme beauty of Aphrodite."

Line, with the brush, was not an easy beginning even for the Greek artist, and it is not easy for the child, although there are, as Mr. Cooke indicates, easy ways of making lines. Line and mass seem to be the most natural beginning with the brush, but there is another—the "blob." This is the characteristic innovation of Mr. Cooke's work, known to the educational world now for many years, even in manifold perversions, but still interesting and deserving of wider dissemination. We will listen to its origin and function in his own words:

"While I was considering the problem, 'How to begin coloring with little children,' and watching them for guidance, a child helped me. If he did not suggest the way—I rather think he did—he fixed it, and although this new way has been now much abused, it is a useful beginning. The Greeks did not use it much, if they found it. The Japanese have found and used it, but neither to Greek nor Japanese am I indebted, but to a little boy.

"It came in this way. As the function of drawing is to express ideas, as expression of ideas is educative, and as children like to make pictures, I asked Jack L—— to make drawings of the story of the Sleeping Beauty. He had come to that fateful birthday, when the Beauty, believing all danger past, wandered to the uninhabited upper room in the ancient castle, and found the old witch there spinning. It pleased him in making a picture of this scene to fill the room with real and unreal strange creatures. Dusty cobwebs indicated the neglect of ages. Big spiders spun webs in windows, rafters and corners; imps gambolled on the floor; but over and above all, rats were most abundant. There was a reason for this. They had gathered into themselves a new and absorbing interest beyond and above the picture itself, and had overflowed its bounds and filled its margin. For he had made a discovery, apparently as the picture neared its end. It was that a rat could be made by one touch of the side of the brush—by that "blob" with which we are now so familiar—adding only a few short strokes from memory for ears, tail, and



Application of Design to Panel of Partition

Specimen Brushwork of the "Alma" School, Bermondsey, London.

legs. Delighted with his discovery he covered the floor in the picture, and then the whole margin of the paper all round, with rats. This impressed the 'blob' on me, but even then it might have passed unnoticed had not these two questions been working in my mind: 'What are the general forms in living objects'; and 'How can we help little children to begin to color?' To this last question here was an answer; here were all the conditions required; the ovate form and an animal at once, made with one easy stroke, and that so delightful to a boy that he repeated it scores of times just to please himself with its free play. Although Jack L—— has been dead several years, he did not live altogether in vain."

A few words as to the mechanical production of the "blob":

"A brush is ovate in shape, leaf-like; fill it with color not too thin and watery, let its whole length drop on the paper, press it down a little, then take it up, without moving it sideways, and it paints at one touch a portrait of itself—an ovate blot or blob. Any child who can hold a brush can make it. . . . To make it the brush should be held nearly parallel to the paper, not like a pen at an angle of 45°. One way of doing this is to put the long handle inside the hand, and drop the brush on the paper. One end of the blob thus made is dark, the other light; the color is graduated like the form. To get the full value of this gradation, to get the darkest points together in the centre of a flower or whorl, the hand must be turned at the wrist freely, and for this some preliminary gymnastic exercises will be useful."

Next, as to the suggestiveness and inherent potentialities of the "blob":

"The ovate forms, separately or combined, will suggest to the child natural objects, such as leaves or fish. Two ovates or blobs will by the addition of a stroke or two represent a plantlet; three, a clover leaf, or flying bird; four, a wall-flower; five, a starfish, or flowers, regular or irregular, as roses or violets. If the ovate forms are arranged along a line instead of radiating like a wheel or floral leaves, buds and fruits will be suggested. Many other things—animals of many kinds, from worms to man, can be easily made by adding limbs and other appendages. The Greeks seem to have seen very soon in the ovate stroke the likeness to the cuttle fish.

"Children constantly find similarities in ovate forms and in chance combinations they make. This characteristic of the child long survives, and it indicates an easy way of beginning and helping design; we can begin with something outside, or from something done, as well as from thought, perhaps better. The child's natural method supports this. At the age of four a child names what it has drawn after the drawing is made. Even artists like Leonardo da Vinci, have advised that a plate should be held over a flame, to get suggestions for pictorial effects, from the chance scribbles and tints of its smoke. This way of beginning with the outer, sanctioned by the child's nature and highest authority, may be used, at least as the child uses it, to get initial suggestions. It can be abandoned if not needed, but when we see how some earnest people 'cudgel their brains' trying hard to invent, and nothing comes, a beginning of this kind may be a relief and a comfort. The little child begins by doing, and thinks afterwards. This shows how production promotes thought; suggestions arise from the doings of the hand as well as from the activity of the head, from outer as well as from inner; only begin, and the next step will be easier. Put down two blobs, they may suggest combinations, when thought fails."

And finally a remark on the rôle of accident in creative invention and on the power of the accomplished fact:

"A child will often, by happy accident, make something like a bird or beast, and this can be made again. 'I can't' has lost its power; what the child has done, it can do. If chance combinations are repeated they will come under the control of will and cease to be accidental. The happy accident will also induce the child to look again, of its own free will, at the actual thing to see how like it is, and so more knowledge will be gained and the form improved. Anything that will induce the child to go to Nature itself—instead of having Nature brought to it by another—to use its eyes and senses constantly out of doors and about it, is good. Its drawing may be useless, but to see is better than to draw. All study will be benefited by cultured and constant observation. The little child observes habitually, and the habit should never be allowed to die."

Little has been said in our quotations regarding details of technique. This is a matter for which the reader is referred to the sources above mentioned. But we may mention in conclusion, and *à propos* of this point, the work of the "Alma" School of London, one of the newer well-designed and well-equipped schools of the London School Board, in which the new *Alternative Syllabus of Drawing* which embodies Mr. Cooke's ideas has found successful adoption, and from the records of which the specimen illustrations accompanying the present article have been taken. The "Alma" School is attended by the children of workingmen, of ages ranging from seven and one half to thirteen and one half years; there are two lessons in drawing a week, the main object of which is the teaching of design. The introduction of the system in this school has been very encouraging from an inventional point of view. "It has evoked in the boys," says the Headmaster, "such an intense interest as I had never seen displayed before. The study has been from the beginning taken up with the utmost enthusiasm. The boys were charmed to be able to use chalk, but they have been fascinated with the brush, and the deftness with which they manipulate it is marvellous; there is almost an entire absence of color in the wrong place; a spotted or smudged drawing is scarcely ever seen; they take an immense pleasure and rapidly acquire skill and taste, in mixing and harmonising colors." It has called forth a great deal of voluntary homework, and has appealed to the dullest as well as to the brightest. "Nor has the effect of this work been confined to the drawing; the consciousness of power which a boy obtains in producing a good design overflows into all his other work. Some timid, hesitating lads have been simply transformed intellectually under its influence. Such a boy no longer does merely what he is told; he works because he enjoys it, because he feels that by work he can achieve something." It has supplied, in fine, "an artistic and scientific basis for true technical training, and produced at the same time the spirit which alone will make that training effectual."

GOSPEL PARALLELS FROM PÂLI TEXTS.

Translated from the Originals by ALBERT J. EDMUNDS.

(Fifth Series.)[1]

APOSTOLIC SUCCESSION.

Matthew xvi. 17-19. And Jesus answered and said unto him, Blessed art thou, Simon Bar-Jonah: for flesh and blood hath not revealed it unto thee, but my Father which is in heaven. And I also say unto thee, that thou art Peter, and upon this rock I will build my church; and the gates of Hades shall not prevail against it. I will give unto thee the keys of the kingdom of heaven; and whatsoever thou shalt bind on earth shall be bound in heaven: and whatsoever thou shalt loose on earth shall be loosed in heaven.

MIDDLING COLLECTION, DIALOGUE CXI.

MONKS, it is only of Sâriputto that one can truly say: He is a lawful son of the Blessed One, born of his mouth, born of his religion, spiritually created, a spiritual kinsman, not a carnal one. Sâriputto, O monks, keeps up the incomparable empire of religion set going once for all by the Tathâgato.

NUMERICAL COLLECTION I. 13.

Monks, I do not perceive another single individual who keeps up the incomparable empire of religion set going once for all by the Tathâgato, excepting Sâriputto.

Sâriputto, O monks, keeps up the incomparable empire of religion set going once for all by the Tathâgato.

NUMERICAL COLLECTION V. 132.

Monks, the eldest son of a king who is a world-ruler (*Cakkavatti*) is endowed with five attributes, and keeps up the empire (lit., keeps the wheel rolling) set going by his father by righteousness alone: that is the wheel which cannot be turned back by any human being, by any hostile hand.

What are the five attributes?

In this world, monks, the eldest son of a king who is a world-

[1] Counting *The Penitent Thief* (October) as the Fourth Series.

ruler is worldly-wise, and spiritually wise, temperate, wise in the times, and wise in the assemblies.

Monks, the eldest son of a king who is a world-ruler is endowed with these five attributes, and keeps up the empire set going by his father by righteousness alone: that is the wheel that cannot be turned back by any human being, by any hostile hand.

Exactly thus, monks, does Sâriputto, with five qualities (*dhammas*) endowed, keep up the incomparable empire of religion, set going once for all by the Tathâgato: that is the wheel that cannot be turned back by philosopher or brahmin, angel or Tempter, archangel, or any one in the world.

What are the five qualities?

In this case, monks, Sâriputto is worldly-wise, spiritually wise, temperate, wise in the times and wise in the assemblies.

With these five qualities endowed, monks, does Sâriputto keep up the incomparable empire of religion set going once for all by the Tathâgato: that is the wheel that cannot be turned back by philosopher or brahmin, angel or Tempter, archangel, or any one in the world.

SUTTA NIPÂTO 557

The wheel set rolling by me—
Religion's incomparable wheel—
Sâriputto keeps rolling,
[He] the fellow of the Tathâgato.

Saving Power of Belief.

Mark ix. 23. Jesus said unto him, If thou canst! All things are possible to him that believeth.

Cf. John iii. 18, and the New Testament throughout.

NUMERICAL COLLECTION I. 17.

Monks, I do not perceive another single quality whereby beings, upon the dissolution of the body after death, rise again in states of suffering, woe, destruction and hell, to be compared, O monks, to false belief.

Beings, possessed of false belief, O monks, upon the dissolution of the body after death, rise again in states of suffering, woe, destruction and hell.

Monks, I do not perceive another single quality whereby beings, upon the dissolution of the body after death, rise again in the world of weal and paradise, to be compared, O monks, with Right Belief.[1]

[1] The first step in the Noble Eightfold Path of Gotamo's famous Sermon in the Deer Park near Benares. The doctrine of the saving power of Belief is thus fundamental in Buddhism.

Beings, possessed of Right Belief, O monks, upon the dissolution of the body after death, rise again in the world of paradise.

THE LOGIA.

JESUS SAITH is the formula in the Egyptian Logia-fragment found in 1897, and of frequent occurrence in the Gospels. The ancient Christian Logia-Book, or primitive Gospel of Matthew mentioned by Papias (Eusebius, H. E. iii. 39) is lost; but the Buddhists are more fortunate in having their Logia-Book extant. It is called the ITIVUTTAKA, that is, the *Thus-Said.* Its antiquity is attested not only by the internal evidence of terseness and simplicity, but by the external evidence that the name itself is one of the ancient Nine Divisions of the Scriptures which antedate the present arrangement of the Pâli Canon. The formulæ of the Itivuttaka are the following:

1. *This was said by the Blessed One, said by the Holy One, and heard by me.*

2. *This is the meaning of what the Blessed One said, and here it is rendered thus [in verse].*

3. *Exactly this is the meaning spoken by the Blessed One, and thus it was heard by me.*

These three formulæ accompany each of the first 79 paragraphs (*suttas*) of the Itivuttaka; No. 80 has the first two formulæ only; Nos. 81–88 have none of them; Nos. 89 and 90 have all; Nos. 91–98 have none; Nos. 99 and 100 have all; Nos. 101–111 have none; the closing sutta, No. 112, has all three. Five of the suttas that want the formulæ (Nos. 101, 105, 108, 110, 111) are found in the Numerical Collection, as well as two where they have been supplied (Nos. 90 and 112). It is therefore probable that the original Itivuttaka has been added to, and this is borne out by the fact that the suttas increase in length towards the end. Moreover, the suttas borrowed from the Numerical Collection all occur *after* No. 80, where the formulæ cease to be regular.[1]

The earlier part of the Itivuttaka appears to be of great antiquity. Its themes are found all through the Canon in a more developed form, but they are here expressed with a terse simplicity and with the solemn deposition in each case that Buddha spoke them.

See also Itivuttaka, 32, 33. The word *Belief* is literally *Sight* and can also be rendered *View* or *Speculation*.

[1] If it be said that the Anguttara borrowed certain suttas because they were numerical, the fact confronts us that Nos. 108 and 110 to 112 are not numerical; while Nos. 1 6, which are not borrowed at all, one would expect to find in the Eka-Nipâto.

THE RELIGIOUS CHARACTER OF THE NORTH AMERICAN INDIANS.

BY W. THORNTON PARKER, M. D.

THIS contribution which I offer concerning Indian religious character is more in the nature of homage for a people who have by their manly sincerity won my affection ; otherwise, there is very little which is new. The works of Parkman, Catlin, Inman, not to mention the rich archives of our great Smithsonian Institution to which so many well-known authorities have contributed, would make my few words seem infinitesimal had I other excuse for presenting them. I have known the Indians since when in my boyhood days I rode the saddle with the gallant "long knives" of the dear old 3rd U. S. Cavalry. I have met many tribes since then, but dearer to me than any other are my *Christian* friends of the Ojibways—warriors, orators, farmers, fathers, mothers, but all the "children of the same Father"!

Their religious character is one of their most conspicuous traits, and we are bound to acknowledge and respect them for it. A people devout, and with a strong and genuine belief in the "Great Spirit," in the "Mighty Creator," in the "loving attentive Father"—a people devoted to their country, to their nation, to their homes (humble though they be), to their families, and whose love for their children is beautiful beyond description,—such a people demonstrate beyond a doubt that their *religion* is practical, genuine, and worthy of recognition. These people are an inspiration to the palefaces who have met them !

When I asked my brave old friend Emmengahbowk, the beloved Indian priest of the Episcopal Mission at White Earth, Minnesota, what actuated him in risking his life to save the paleface women and children from capture and death, he replied: "They have been kind to me, and I could not bear to have them

harmed, and it was my duty as a Christian." Can a man do more than risk or give his life for his friends?

The great good friend of the Indian, whom they call Straight-tongue, in his interesting book, *The Lights and Shadows of a Long Episcopate*, refers to his faithful priest Emmengahbowk:

"The wily chief Hole-in-the-Day had planned for a massacre at the same time on the northern border. But Emmengahbowk had sent a faithful messenger to Mille Sacs, to urge the Indians to be true to the whites and to send men to protect the fort. More than a hundred Mille Sacs warriors went at once to the fort,

MEE-SHEE-KEE-GEE-SHIG (DARK-LOWERING-DAY-CLOUDS-TOUCHING-ALL-AROUND). Ojibway war chief. From a photograph in the author's possession.

but meantime Emmengahbowk himself walked all night down Gull River, dragging a canoe containing his wife and children, that he might give warning to the fort. Two of his children died from the exposure. Messages were also sent to the white settlers, and before Hole-in-the-Day could begin war the massacre was averted.[1]

"I have never known an Atheist among the North American Indians. They believe unquestionably in a future life. They believe that everything in nature—the laughing water-fall, the rock, the sky, the forest—contains a divinity, and all mysteries are accounted for by these spirits, which they call manidos. When they first saw a telegraph they said: 'A spirit carries a message on the wires.'

[1] *Loc. cit.*, p. 110.

"The Ojibways are not idolaters, they never bow down nor worship any created thing. They have preserved a tradition of one Supreme God whom they call Kitche-manido' the 'Uncreated,' or the kind, cherishing Spirit. They believe that the Grand Medicine was given them by an intermediate deity, the 'Grand Medicine-God.'"[1]

When an Indian is thought to be at the point of death, his friends and relatives make careful preparation and nothing is omitted to ensure an honorable funeral ceremony. The dying Indian's hair is combed and oiled and braided, and he is dressed in his best clothing; if possible a new suit is provided—new blankets, leggings, and moccasins. His face is painted red (vermillion). It may be an hour, a day, or many days, before death takes place, but he is made ready for the final event with scrupulous care and attention in every detail.

"Indians are at all times prayerful and careful in their religious observances, but they are never more scrupulous about these matters than when starting on the war-path."[2] Those whom they have left behind pray for them at camp. The parents unwrap their sacred bundles and sing their sacred songs. Before eating, the warrior prays for the success of his undertaking. He must seek his success from Deity; without divine aid his task is hopeless, he can accomplish nothing. Each man is instructed before he sleeps to offer up his petition for strength and help and victory. The leader must offer his sacrifice for the command as well as for himself. Oftentimes the Indians continue all night in prayer, and burn incense of sweet pine and sweet grass to purify themselves. Often he offers sacrifices of food, tobacco, ornaments, some of his own hair, a scalp lock, or even a portion of his own flesh. He makes use of scourging and of incisions into his flesh, often causing sharp hæmorrhage, and even fiery coals are placed upon his naked skin to strengthen his powers of endurance and of self-control.

The Indians believe that when the spirit reaches its final destination, the great country, the happy hunting-ground, the final life-everlasting is forever and peacefully completed.

He forgets not his dead, this North American Indian, but often, not only once a year as on our All Souls' Day, but more frequently, they hold their rude commemorative ceremonies, and contribute from their slender means the best feast they can produce. Nor does his charity extend to the dead alone; he is peculiarly tender in his love for children, for the infirm, for the demented,

[1] Bishop Whipple, *Lights and Shadows*. [2] Grinnell.

the wounded and the dying. If compassion is the test of true religion, the Indian deserves respect. Tales of his barbarity are in

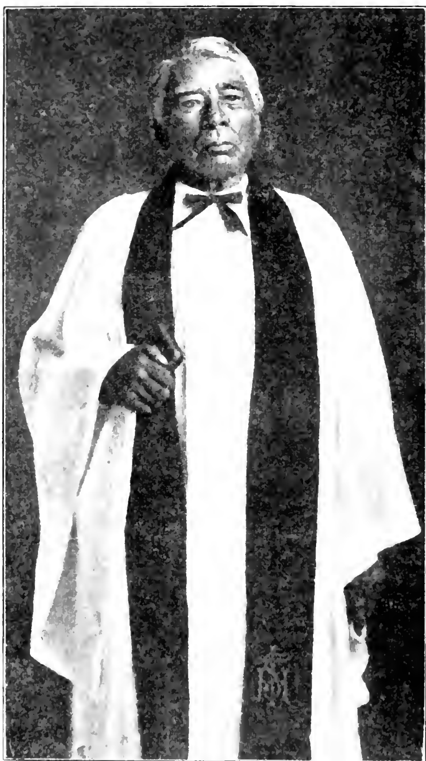
WASOSO BOYS AND GIRLS.

Indian mothers are as fond of their children, and as happy in them, as white mothers are in theirs. The picture shows Indian children dressed in the best that wild life affords. (From *The Indian Missions*, by Bishop Hare.)

the excitement of war; but how tame our Indians appear when compared with the cruel Chinese!

The Grand Medicine Man at the funeral ceremonies says in his address to the departed spirit, as he kindly spreads over the corpse the blanket:

"Do not look back, but look to your journey towards the setting sun. Let



THE REV. J. J. "EMMENGAHBOWK" (THE-MAN-WHO-STANDS-BEFORE-HIS-PEOPLE).
From Bishop Whipple's book, *Lights and Shadows of a Long Episcopate.*

nothing disturb or distract you or cause you to look away from your journey's path. Go—Go, in peace!"

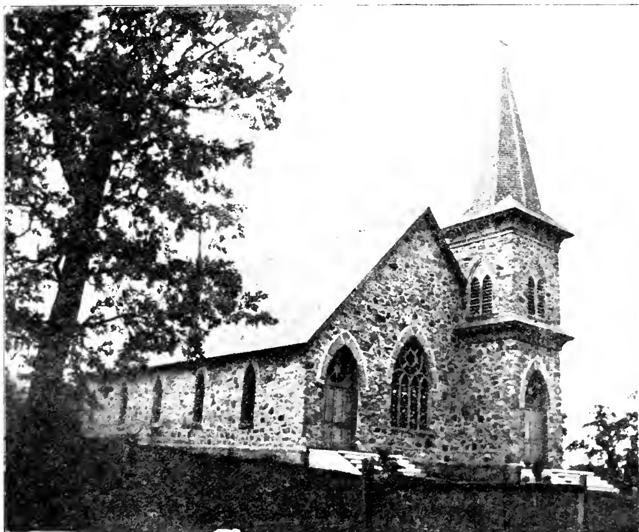
Then another medicine man repeats this; then all in unison sing these words:

"I walk on peacefully for my long journey of life,
Soon, soon to reach the end of my journey,
Soon to reach my friends who have gone before me."

When this chant is ended, the Grand Medicine Man calls in a loud voice:

"Nuh—gah—kuk—nuw
Nuh—gah—kuk—nuw."

"An Indian burial is most touching. If of a child, the mother places the playthings of the little one in the birch-bark coffin, and strews flowers in the grave. She then makes an image of the baby, ornamenting the head with feathers, and



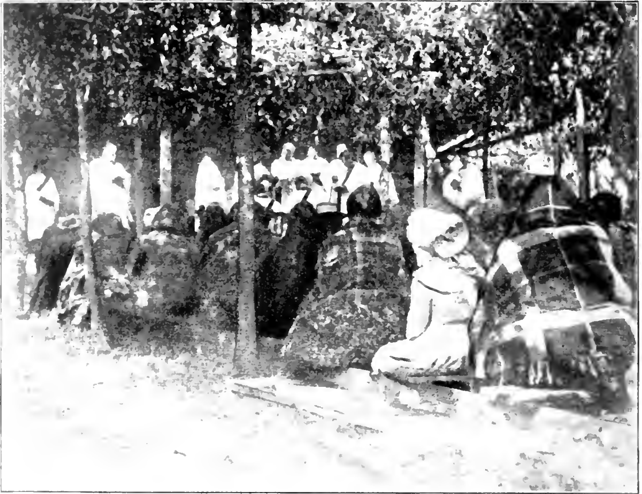
ST. COLUMBUS INDIAN EPISCOPAL CHURCH.

White Earth Reservation, Minnesota. This church cost $12,000. The money was raised mostly by the efforts of Emmengahbowk and Minageeshig, who travelled in the Eastern States for that purpose.

carries it with her for one year. If of a chief or warrior, the body is arrayed as if for the chase or war-path with bows and arrows and medicine-bag by his side. The favorite dog is killed, that it may accompany him on his journey. The orator of the band then addresses the silent figure, telling of his deeds of bravery, of how he pursued his enemies and brought back their scalps, of his wise words of counsel and acts of kindness, and how having left this world for the Happy Hunting-grounds, he will find the trail a narrow one, and will be tempted by evil spirits to

[illegible] but that he must be deaf, for if he stops to listen he will miss the trail and be lost.[1]

Lt. Totten of the United States army believed our North American Indians to be the descendants of the lost tribes of Israel.[2] Certainly their traditions point to the region of Behring's Strait as the place from whence they came and whither they are wending. But whether their customs and their beliefs are merely human nature, showing out in redskin as well as in paleface, there is a start-



Bishop Hare Ordaining Two Indians.

The ordination took place at the Convocation of 1898. The two candidates are kneeling in the center.

ling similarity in Indian laws of hygiene, of cleanliness, and customs of the men and women, to say nothing of their reverence for the Great and Sacred Name, which suggest Israelitish origin. And the "Chosen Race" need not be ashamed of them! The attitude of worship, the bowed head, the instantly extended palms when the

[1] Bishop Whipple, *Lights and Shadows*.

[2] There is no ethnological, historical, or psychological ground that we know of, for this fantastic hypothesis, the mention of which is to be interpreted here merely as affording Dr. Parker occasion to introduce his references to the natural coincidences of religious myths, customs, etc.—*Editor*.

sacred Deity is referred to, are surely remarkable. What other Aborigines are so devout and sincere, so brave in suffering, so

AN INDIAN BEAR DANCE.
This picture represents one of the peaceful dances. It gives a good idea of wild Indian life in its milder and unwarlike phases, showing the raw material with which the Missions had to begin

fearless in battle, so loving to children, so faithful in friendship, so unselfish, and so true?

The Indian's heaven we know as his happy hunting-grounds,

—a country of wide green and cool, clear streams, where the buffalo and other game are always plenty and fat, where the lodges (tepees) are ever new and white, the ponies always swift, the war parties successful, and the people happy.

Sometimes the Indian, "When the slanting rays of the Western sun tinge the autumnal haze with red, beholds dimly far away the white lodges of such a happy camp and sees thro' the mist and dust ghostly warriors returning from the hunt, leading horses as in olden times, with dripping meat and with shaggy skins."[1]

This happy land is usually located *above* the sky, but with many tribes it is to the west beyond the *Gitche gummee*, the Big Sea Water. But wherever the home of the "Almighty Creator," the "Great Spirit," may be, his Indian children love best to call him by the endearing title of "Father." Although called by this name which the Saviour taught His followers to utter, whether of the white, the yellow, the black, or the red peoples, the Indian regards this "Father" as omnipotent, beneficent, the Supreme Ruler. Everything is within His Holy Keeping, just as *we* have been taught that no sparrow falls to the ground without *our* Heavenly Father's consent.[2]

Resting upon His fatherhood, nothing is undertaken without praying for His assistance. When the pipe is lighted, a few whiffs are blown upwards as incense. Some of the food is sacrificed to Him. Burnt offerings are still continued in His honor, a part of the first deer, the first buffalo, and we might almost expect to find their rule in the words of the Bible,—Whatever we do, do all to the glory of God. The words may be absent, but the practice is there.

"Father above" is the counterpart of "Our Father who art in Heaven," for do they not say, "Father who is in *all* places," "The Heavens are Thy house; we, Thy children, live within (or beneath)"?

"Father of the dead, You see us."

If the Indians have other gods, they use them merely by praying to them, "intercede for us," "pray for us" to *the* God, the "Heavenly Father."

Atius Tirana is Father Spirit. The Indian blows the first four smokes to Atius, then four to the earth, then four to each of the cardinal points.

The young warrior is advised: "My son, when thou smokest

[1] Grinnell. [2] St. Matthew x. 29.

in thy pipe, always blow four smokes to the east,—to the night." The Indian regards the east as the place of night, *it comes* from the east!

The Indian is taught that he must offer sacrifices and burnt offerings to the Almighty—humbling himself and imploring His aid—if he would attain success in the world or in the life "*everlasting.*" The Indian states his belief in his prayer: "My Father who dwelleth in Heaven and in all places, it is through *You* that I am living"; and it is the equivalent of our "In Him we live and have our being."

Longfellow, in *Hiawatha*, has beautifully told the story of Indian worship and belief. Pathetic beyond description is the tender, loving care bestowed upon the dead,—the solemn service, the sweet hymns, the birch-covered coffin, the hemlock-lined grave, the gentle depositing of the earth, and last, but not least, the little sheltering house above with its small window and the cross of hope rising from its eastern gable.

How beautiful in Longfellow's *Hiawatha* is the picture of the Indian's Heavenly Father, the Almighty Creator. One picture in His majesty touching the mountains, and the other,

> "Gitche Manitou, the Mighty,
> The creator of the nations,
> Looked upon them with compassion,
> With paternal love and pity."

And then the poet tells in his matchless verse such a story of Indian belief in the Almighty Creator that one feels as if the Indians should send missionaries to the palefaces!

Surely, a people with no "cuss" words, and who never mention the name of Deity except in reverence, and with bowed heads and palms extended outward, are justly entitled to respect. It is indeed inspiring to see these people we call savages going with their humble petitions to their Heavenly Father, pleading for help in their distress when all earthly help has failed.

> "Gitche Manitou, the Mighty,
> Cried he with his face uplifted
> In that bitter hour of anguish,
> Give your children food, O Father,
> Give us food, or we must perish."

This prayer from the *Famine* is one of Longfellow's greatest pictures in his unrivalled collection. The poem of *Hiawatha* is best appreciated by those who know the Indian. The "parting"

is a picture with which to close our quotation. "Westward, Westward," is the word ever on their lips so mournful and so prophetic.

> "Thus departed Hiawatha,
> Hiawatha the Beloved,
> In the glory of the sunset,
> In the purple mists of evening,
> To the regions of the home-wind
> Of the north-west wind Kee-way-din,
> To the islands of the Blessed,
> To the kingdom of Ponemah,
> To the land of the Hereafter."

MISCELLANEOUS.

A HISTORY OF THE ART OF PHYSICAL EXPERIMENTATION.

It is a fascinating picture for the student of civilisation that Dr. E. Gerland and Dr. F. Traumüller have unrolled in their recent *History of Physical Experimentation*.[1] We have many books that treat of the development of physical theory, but none that give a complete history of the origin and growth of the wonderful and ingenious mechanical devices by means of which our mastery of the forces of nature has been advanced to the astonishing pitch witnessed by the closing days of the nineteenth century.

It is little considered what the history of civilisation owes to the invention of the simplest machines and tools, which may be regarded as the extensions and materialisations of man's intellect, which have entirely offset the initial advantages that brute creation possessed over him in the struggle for existence, and which have multiplied his power and opportunities to a degree nothing short of superhuman. The invention of the wheel alone bears upon it the burden of as great cultural achievements as the political history of many empires; its presence is so familiar to us and its function so imbedded in the fabric of our material welfare, that the very idea of its having had an origin or of a period of civilisation that could have possibly existed without its puissant aid, appears to have altogether escaped the notice of the ordinary observer. Yet the Assyrian and Egyptian monuments plainly show that some of its simplest and crudest uses are far from having been prehistoric. Its introduction, the development and application of its varied powers, were very slow processes; and, moreover, that development was, as in most other cases, continuous, and little broken by accident; its history, from a short time after its possible chance beginning to its present stage of extreme mechanical refinement, has been a succession of interrelated and rational conquests, conditioned by the knowledge, art, technical advantages, and intellectual dispositions of the ages. The accidents in its development have never occurred save to the inventive minds who were looking for them.

This intellectual and cultural continuity in the evolution of human implements, workshops, and laboratories is finely brought out in some of the examples whose history we can follow in Dr. Gerland and Dr. Traumüller's work, and notably so in the case of the development of the steam-engine, the origin of which popular romance delights to accord to the chance contemplation of a boiling tea-kettle. It is not a derogation, but rather a noble compliment, to Watt's genius to recognise

[1] *Geschichte der physikalischen Experimentierkunst.* Leipsic: W. Engelmann. 1899. Pages, 442. 425 cuts. Price, bound, 17 marks.

that his great invention was the rational and crowning flower of the scientific and technical growth of an entire century, and that he had in his work a line of illustrious predecessors, Huygens, Somerset, Savery, Pappin, and Newcomen, one of whom at least was as clear as man could be of the desired goal. No finer picture, in fact, of the state of experimental art and mechanical ideals a century after Galileo can be found than that of the efforts of Denis Pappin (1647–1714) to construct a steam-engine to replace human labor. He invented both a low-pressure and a high-pressure steam-engine; his procedure was as logical and as cautious as could be desired; his work was guided, not by theoretical fancies, but by the requirements of the facts, as experimentally ascertained. He was fully conscious of the scope of his invention; it was designed to pump water from mines, to throw projectiles, and to propel ships and vehicles. Legend even had it that he actually built a steam-boat, urged by oars, and sailed on it in 1707 from Cassel to Münden, intending afterwards to proceed to England,—a project in which he was foiled by the Westphalian mariners, who destroyed his vessel from jealousy. Be that as it may, one cannot withhold one's admiration either for Pappin's ideas or for his practical execution of them. But the *technique* of his time failed him, and, as our authors remark, the construction of his machine was so unutterably clumsy that it can now provoke from us only a generous smile.

The foregoing is but one of the many developments in the work under consideration which will interest the unprofessional reader. The history of the experimental and mechanic arts in Egypt and Assyria, in Greece and Rome, though meager, is not without its surprises. Archimedes, Hero, Philo, Ctesbius, and Ptolemy do much to relieve the absolute barrenness of the later periods. The inquirers of antiquity and the Middle Ages mostly constructed their apparatus themselves; although Hero and Philo report that they had special mechanics of great skill. The manufacture of astronomical instruments was entrusted chiefly to goldsmiths and other workers in metal. The artistic Roman steelyards are distinctively their work. This did not change for centuries, and the trade of instrument-making proper was not constituted as an independent craft until the invention of mechanical clocks: the first professional instrument-makers came from the ranks of the clock-makers.

The Byzantine period has nothing to show; the Arabs are more interesting; there are some glimmerings in the Middle Ages (Roger Bacon); there is light in the sixteenth century with Leonardo da Vinci, Maurolycus, Della Porta, Gilbert, Copernicus, Stevinus, and Tycho Brahe (some of whose astronomical instruments were reproduced from the present work in *The Open Court* for July, 1900); but the full radiance of the experimental procedure in physics burst forth with Galileo (1564–1642), who first systematically applied the Socratic method of induction in science and rightly conjoined it with deduction, as controlled by experiment. Galileo's procedure required the constant check of conclusions by facts; and the development of experimental technics sprang from this requirement as fast as the advance of the mechanic and industrial arts in each succeeding age permitted. The leaps which it has taken in the present century are known, as to their magnitude at least, by all.

But, as was above noted, the ideas of the inquirers often ran in advance of the possibility of execution. One of the most celebrated books describing physical experiments of the seventeenth century is that of Otto Guericke, the inventor of the air-pump. The two cuts here reproduced from his *Experimenta nova (ut vocantur) Magdeburgica* (1672) show the simple apparatus with which he originally

sought to obtain a vacuum. The first is that of a common barrel filled with water which was drawn out by means of a fire-engine pump and which the air followed through the crevices as rapidly as the exhaustion was performed; the second is that of two semi-spherical copper vessels, which burst owing to their defective curvature.

GUERICKE'S FIRST CRUDE AND UNSUCCESSFUL ATTEMPTS TO OBTAIN A VACUUM.
(Facsimile reproduction from the *Experimenta Magdeburgica*, Amsterdam, 1672.)

Guericke's book has supplied our authors with a great number of very interesting illustrations. This, indeed, is a feature in which their work is very rich. The cuts, which number 425, are drawn from rare sources and in themselves form a

veritable panorama of the development under consideration. The works of Huygens, Descartes, Hooke, Newton, Faraday, and many others, far more rare, have also been exploited by the authors and publisher in lavish and commendable manner, and it is our only regret that we cannot give more space to the notice of the important phases of human thought which they represent. Certainly, to many readers this book will prove an inspiring one. T. J. McCormack.

ASPIRATION.

A SONNET.

'Tis the afterglow of sunset! and a mist
  Of molten gold, at the bidding of the breeze,
  Is blown athwart the sky beyond yon trees,
Wind-woven with waves of fire-fringed amethyst.
No limits bar the soul! Where'er it list,
  Borne on the untrammelled wings of Joy, it flees
  Through throbbing paths of light: yet naught it sees,
Nor dreams of aught, save but to be star-kissed.
On! on! it hastens; all its heart athirst
  With love unspeakable, to touch with love
    That lovely light which glimmers now in grey:
On! on! until in Hesper's arms, where erst
  It yearned to lie, it sinks; as all above
    Night's palsy stills the last faint pulse of Day. F. J. P.

AN AMERICAN ANTHOLOGY.

The task of compiling an anthology of American verse[1] could not have been entrusted to a more sympathetic critic than Mr. Edmund Clarence Stedman, the author of the admirable *Victorian Anthology*, and himself a poet of no mean merit. He has performed his work with true American breadth and in a democratic spirit that few would have had the courage to exhibit, but which has shown the development of our national versification in all its varied phases, in its highest as well as its lowest sources, demonstrating it to be a genuine utterance of the national heart, "of import in the past and to the future,"—a powerful stimulant to the nation's growth. By his wide inclusiveness of selection he has put it beyond a doubt that "if our native anthology yields to a foreign one in wealth of choice production," it is still "from an equally vital point of view the more significant of the two." Throughout the years resulting in the Civil War, literature was with us really a force; and a generous foreign critic, Mr. William Archer, has in Mr. Stedman's judgment truly said: "The whole world will one day come to hold Vicksburg and Gettysburg names of larger historic import than Waterloo or Sedan." "If this be so," Mr. Stedman continues, "the significance of a literature

[1] *An American Anthology*, 1787–1899. Selections Illustrating the Editor's Critical Review of American Poetry in the Nineteenth Century. Edited by ***Edmund Clarence Stedman***. Boston and New York: Houghton, Mifflin & Co. 1900. Pages, lxvii, 878. Price, large crown 8vo, $3.00; full gilt, $3.50; half calf, $5.00.

"of all kinds that led up to the 'sudden making' of those 'splendid names' is not "to be gainsaid. Mr. Howells aptly has pointed out that war does not often add "to great art or poetry, but the white heat of lyric utterance has preceded many a "campaign, and never more effectively than in the years before our fight for what "Mr. Archer calls 'the preservation of the national idea.' Therefore an American "does not seem to me a laudable reader who does not estimate the present collec- "tion in the full light of all that his country has been, is, and is to be."

Yet the influence of the great names of American literature, Longfellow, Bryant, Emerson, Lowell, and Whittier, has not been wholly restricted to our own nationality. "Emerson presented such a union of spiritual and civic insight with "dithyrambic genius as may not be seen again. His thought is now congenital "throughout vast reaches, among new peoples scarcely conscious of its derivation. "The transcendentalists, as a whole, for all their lapses into didacticism, made "and left an impress. Longfellow and his pupils, for their part, excited for our "people the old-world sense of beauty and romance, until they sought for a beauty "of their own and developed a new literary manner,—touched by that of the "motherland, yet with a difference; the counterpart of that 'national likeness' so "elusive, yet so instantly recognised when chanced upon abroad. In Bryant, "often pronounced cold and granitic by readers bred to the copious-worded verse "of modern times, is found the large imagination that befits a progenitor. It was "stirred, as that of no future American can be, by his observation of primeval "nature. He saw her virgin mountains, rivers, forests, prairies, broadly; and his "vocabulary, scant and doric as it was, proved sufficient—in fact the best—for "nature's elemental bard. His master may have been Wordsworth, but the differ- "ence between the two is that of the prairie and the moor, Ontario and Winder- "mere, the Hudson and the Wye. From *Thanatopsis* in his youth to *The Flood "of Years* in his hoary age, Bryant was conscious of the overstress of Nature un- "modified by human occupation and training."

And as for Poe: "He gave a saving grace of melody and illusion to French "classicism, to English didactics,—to the romance of Europe from Italy to Scan- "dinavia. It is now pretty clear, notwithstanding the popularity of Longfellow in "his day, that Emerson, Poe, and Whitman were those of our poets from whom "the old world had most to learn; such is the worth, let the young writer note, of "seeking inspiration from within, instead of copying the exquisite achievements of "masters to whom we all resort for edification,—that is, for our own delight, which "is not the chief end of the artist's throes. Our three most individual minstrels "are now the most alive, resembling one another only in having each possessed "the genius that originates. Years from now, it will be matter of fact that their "influences were as lasting as those of any poets of this century."

With the poetry of these men we are all familiar, and however much we may be indebted to Mr. Stedman for his careful selection of their choicest lyric productions, it is not in this that the greatest worth of the present volume lies for the ordinary reader. This is contained in the vast mass of occasional verse that has emanated from lesser pens, but is of no less enjoyable quality, and that the majority of us would doubtless have missed had it not been here made accessible to us in a single volume. Holmes and Bayard Taylor (not to mention our earlier poets like Drake and Halleck); "the stately elegance of Parsons"; Stoddard, Read, and Story; that "sheaf of popular war-songs, Northern and Southern"; the poets of the Middle West, Field and Riley; Emma Lazarus and Sidney Lanier; the negro melodies and folksongs; and an innumerable host of recent and more fugitive

efforts typifying every phase of our national life, endeavors, and humor,—all here find their representation, which we should elsewhere long seek in vain.

The volume is a vast one (covering nearly nine hundred pages). Mr. Stedman would gladly have made it more eclectic,—a genuine *Treasury of American Song*, such as Palgrave gave of English lyrics, if that were possible with our one century of chaotic and youthful endeavor. But he has had a different purpose in view, namely, that of supplying "a breviary of our national poetical legacies from the nineteenth to the twentieth centuries," from which the critic or historian may derive whatever conclusions he wishes. And in this he has admirably succeeded, making it a volume which every American should be proud, and will be profited, to possess.

The biographical notices, the indices of names, titles, and first lines, and the slight pictorial adornment, are also to be commended in the work.

T. J. McCormack.

A NEW EXPERIMENTAL GEOGRAPHY.

Something novel in the way of American geography-making has been attempted by Professor Tarr of Cornell University and Professor McMurry of Columbia University, in their *Home Geography*.[1] The book resembles, as to its exterior form, the geographical school-books of Europe, which are divided into text and atlases separately, rather than the large, flat, and unwieldy text-books in use in American schools. But it is its internal features that most attract attention, and the most prominent of these is the emphasis which is laid upon the necessity of gaining by actual experience in the home environment the basis for geographical study. Even in the acquisition of basal notions not suggested by home environment, the inductive and experimental method is followed and indications given for much interesting practical work in simple physiography. "The average pupil who has pursued geography for a year, has little notion of the great importance of soil, of what a mountain or a river really is, of the value of good trade routes, and why a vessel cannot find harbor wherever it will cast anchor along the coast. Yet such ideas are the proper basis for the study of geography in the higher grades. The fact that they are so often wanting is proof that our geography still lacks foundation."

The first 110 pages of the book have accordingly been devoted by the authors to supplying this foundation "by treating first such common things as soil, hills, valleys, industries, climate, and government, which are part of every child's environment, and secondly other features, as mountains, rivers, lakes, and the ocean, which, although absent from many localities, are still necessary as a preparation for later study." This part of their work has been done very practically and skilfully. The photographic illustrations, which show the origin and formation of the soil, the contour, setting, function, etc., of rivers, hills, mountains, and valleys, the methods, mechanism, and conditions of industry, commerce, and government,

[1] *Tarr & McMurry's Geographies. First Book. Home Geography and the Earth as a Whole.* By *Ralph S. Tarr*, B. S., F. G. S. A., Professor of Dynamic Geology and Physical Geography at Cornell University, and *F. M. McMurry, Ph.D.*, Professor of Theory and Practice of Teaching at Teachers College, Columbia University. With many colored maps and numerous illustrations, chiefly photographs of actual scenes. New York: The Macmillan Company. London: Macmillan & Co., Ltd. 1900. Pages, xiii, 279.

have all been well selected. The paragraphs on the meaning of maps also are good.

The second part of the work treats in brief manner of the earth as a whole, by like fruitful methods. The illustrations in this part are in the main physiographic, biological, and ethnological. They form a very essential part of the book, and carry with them as much instruction as the text itself. The maps, while small, are clear and well conceived; they are not overloaded by useless details, and while all persons will not be inclined to concede to them the superlative merit which the authors claim, they are certainly for practical purposes an improvement on the traditional cartographical products. In the statistics given in the appendix, there is a discrepancy between the figures representing the area of North America in square miles and those representing the total area of its component states. The area of North America is given as only six and one half million square miles, while the total area of the United States, Mexico, Canada, and Central America by actual addition foots up to more than eight million square miles. T. J. McC.

BOOK NOTICES.

ERNST HAECKEL, EIN LEBENSBILD. By *Wilhelm Bölsche*. Dresden and Leipsic: Verlag von Carl Reissner. 1900, Pages, 259.

Wilhelm Bölsche's excellent biography of Ernst Haeckel is one of the volumes of a series of biographical portraitures called *Men of the Period*. Krupp, Nansen, Nietzsche, Liszt, Windthorst, Forschenbeck, and Stephan form the other numbers of the series. Each volume is provided with a good portrait. Haeckel's career is exceedingly interesting from a human as well as from a scientific point of view; is has been spent in the very thick of the great intellectual contests of the period, and is representative and characteristic in every way. And as to Mr. Bölsche's portrayal of his achievements, it may be said to be in every respect satisfactory, and quite worthy of its subject.

It seems rather odd that a mathematical text-book written by a native of India should possess such merits "as to entitle it when introduced into England with suitable modifications and additions to a unique position among English school-books"; yet such is the case, say Mr. William Briggs and Mr. G. H. Bryan, editors of the University Tutorial Series, which has for its purpose tuition by correspondence and preparation for the examinations of the University of London. These gentlemen, who are the authors or editors of several practical scientific and mathematical school-books, have taken the *Algebra* of an Indian professor, Radhakrishnan, which has been characterised as "a Chrystal for beginners," and by the addition of chapters on logarithms, interest, graphical representation, continued fractions, etc., have adapted the same to instruction in English and American schools. The work, which consists of two volumes, is particularly fitted for the purpose of independent study. The text is ample, the explanations and examples are full, the typography is clear. In Part II., *The Advanced Course*, which we now have before us, modern ideas of algebraic form have been sufficiently interwoven with the prevailing method of presentation to make the work superior to the ordinary run of algebraical text-books. The essential elements of Chrystal's work have been reproduced in the chapters treating of zero and infinity,

maxima and minima, imaginary and complex quantities, the notion of functions, graphs, etc., permutations and combinations. While Professor Chrystal has himself recently written an *Introduction to Algebra*, it will be admitted, we think, by all who have ever used the book that his presentation, despite its practical aims, is in the majority of the chapters too abstract for the ordinary young student,—a fact which, added to the annoying compactness of the typographical setting of the work, renders it in places even more difficult of comprehension than his larger treatise. The independent student, therefore, is likely to gain much more from such digests of Chrystal's work as the present than he would even from Chrystal's *Introduction* itself. (*The Tutorial Algebra:* Part II., Advanced Course. By William Briggs, M.A., F.C.S., F.R.A.S. and G. H. Bryan, Sc.D., F.R.S. New York: Hinds and Noble, 4 Cooper Institute. London: W. B. Clive, 13 Booksellers Row, Strand, W. C. 1898. Pages, viii, 596. Price, 6s. 6d.)

The attention of the readers of *The Open Court* should be called to the elementary scientific and educational publications of the Society for Promoting Christian Knowledge. These publications embrace several series, bearing such titles as "The Romance of Science," "Manuals of Elementary Science," "Natural History Rambles," "Ancient History from the Monuments," "The People's Library," etc., etc. "The Romance of Science" and "Ancient History" series particularly claim our attention. The former contains some excellent little books by men quite eminent in their way, as *The Birth and Growth of Worlds*, by Prof. A. H. Green; *Soap-Bubbles, and the Forces which Mould Them*, by C. V. Boys; *Spinning Tops*, by Prof. J. Perry; *Diseases of Plants*, by Prof. Marshall Ward; *The Story of a Tinder-Box*, by Charles Meymott Tidy; *Time and Tide*, by Sir Robert S. Ball. We have recently received two practical educational books from these series; viz., (1) *Simple Experiments for Science Teaching*, by J. A. Bower, and (2) *How to Make Common Things*, by the same author. The first book is a detailed descriptive manual of physical and chemical experiments which can easily be performed without expensive scientific apparatus, by means at every person's disposal. The second is a composite of modern ideas of manual training, with the older theory and practice of carpentry-work for boys. It gives directions for making many useful and ornamental objects, such as shelves, desks, stands, brackets, picture frames, models of sailing vessels, etc., for wood-carving, metal-working, copying of medals and casts, and the construction of useful electrical appliances. "The Ancient History" series contains volumes on Assyria, Babylonia, Egypt, and Persia, by such authorities as the late George Smith, the Rev. A. H. Sayce, Dr. S. Birch, and Mr. W. S. W. Vaux. For details readers are referred to the catalogues, which will be supplied on request by the publishers. (New York: E. & J. B. Young & Co. London: Society for Promoting Christian Knowledge.)

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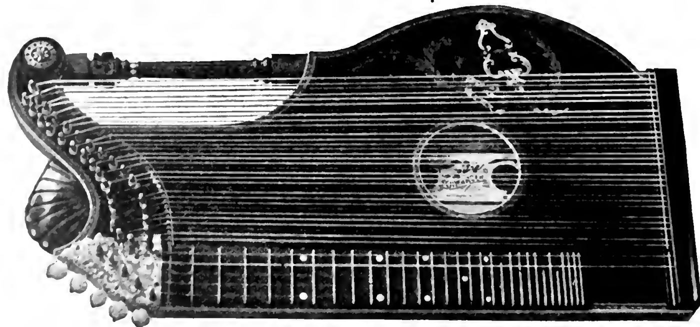

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