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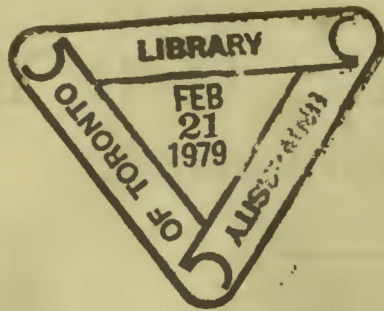
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him with a lighted lamp while he slept. Overcome with joy at his loveliness, she carelessly allowed a drop of hot oil from her lamp to fall upon his arm. Cupid therefore left her with reproaches. After many calamities she became the mental slave of the jealous Venus, who treated her with great cruelty. But her lover invisibly assisted her, and finally, having secured her immortality, made her his wife. The myth is plainly allegorical, and is a figure of the progress of the soul, by the aid of divine love, through the calamities of this life to a happier life hereafter.

Psychology [from *ψυχή*, "soul," and *λόγος*, "reason"], the science of the soul. From a very early date mankind, in speaking and writing, required to draw distinctions between the different exercises of the mind. The Eleatics distinguished between the senses and the reason, and had an intermediate operation, opinion. Plato proceeds on a threefold division of the mental powers—*αἰσθησις*, which makes known the feeling; *λόγος*, which reveals the fixed; and *διδασκαλία*, the discursive process which makes known the probable. But the founder of psychology as a science is Aristotle. He has a grand, twofold division of the faculties, which has ever since been acknowledged—the *gnostic* or *gnostic* (in Latin the cognitive), and the *erective* (in Latin appetent or motive). With him the *psyche* is organic life, and he mentions (1) the nutritive power; (2) sense-perception, with its common precepts by all the senses—viz. motion, rest, number, figure, magnitude—motion by touch and sight, and all the rest by motion; and proper precepts, such as color by the eye and odors by smell; (3) the memory, divided into *μνήσις*, spontaneous, and *αναμνήσις*, with an effort; in speaking of this he has his famous classification of the laws of association—viz. contiguity, resemblance, and contrast; (4) the phantasy involved in memory and giving us imagination. Above these—indeed, above the *psyche* altogether—he places the *νοῦς*, which is represented by him as immortal. Plato had spoken of the *νοῦς* as the place of principles (*τόπος εἰδῶν*); Aristotle adds, in capacity merely (*ἐν δυνάμει*). This classification of Aristotle's has been the foundation of every other. Psychology appears in every discussion on mental philosophy since that date, and is found in Augustine, the Schoolmen, Bacon, Descartes, Locke, and Kant. The Scottish school of Reid, Stewart, Brown, and Hamilton has paid great attention to it. It is diligently prosecuted in the modern German schools.

That mind exists, and is different from matter, can be established on two grounds: First, it is made known by a different mental faculty: body is made known by the senses; mind by self-consciousness. Secondly, we know the two as possessing different properties: mind has thought, feeling, will; matter has extension and powers of attraction, and can be weighed and measured. The science of psychology shows that mind follows laws of its own. Psychology is to be prosecuted mainly by self-consciousness looking within and marking what passes. As thus able to look into our own souls, we are able also to understand what takes place in those of others as manifested by their words and deeds and made known in biography, history, and poetry. Attempts are being made in the present day to show how physiology can explain mental phenomena. These have so far been successful, and should be encouraged. But no material forces can explain such phenomena as reason, conscience, will, or break down the distinction between mind and matter.

The common division of the faculties in the present day is a threefold one, adopted by Kant, and taken from him by writers in Germany and Great Britain: (1) the cognitive; (2) feeling; (3) the will. The following may be found a convenient distribution of the faculties:

FIRST, COGNITIVE.	SECOND, MOTIVE.
I. Simple cognitive, or representative.	IV. Conscience, or moral faculty.
II. Reproductive, or representative.	V. Emotions.
III. Comparative, discovering relations.	VI. Will, or optative power.

The cognitive give us knowledge and ideas; the motive stir up feeling and prompt to action.

1. *The Simple Cognitive*, so called because they give us knowledge in the first and simplest form; called also representative, because the object is now present. It embraces sense-perception and self-consciousness. In sense-perception we have a knowledge (not a mere idea) of things external to the mind—by taste, of a sapid affection of the palate; by smell, of odorous affections of the nostrils; by hearing, of a sound in the ear; and by touch proper or feeling, of the periphery of our bodily frame as subject to various sensations. So far, the infant's knowledge may not extend beyond its body; it knows the objects as external, but not as extra-organic. But by sight it knows a colored surface as affecting the eye, and by the muscular

sense a body as resisting our locomotive energy. From the very beginning and all along we have with our knowledge of body, and indeed as associated with every mental operation, a consciousness of self in its present state—not of a mere phenomenon or appearance of self (as Kant maintains), or of a quality of self (as the Scotch school holds), but of self as acting—say as exercised in thought or feeling. By these two powers we have the knowledge with which the mind starts of things without and within us. Other powers may now work.

II. *The Reproductive or Representative*.—By these the knowledge gained comes up once more in old forms, in ideas of objects, not present, but thus represented. (1) The knowledge is kept; this is retention. The object is not present, the idea is not always present, but there is now a capacity to recall it. The power of retention depends mainly on the amount of energy expended in the original knowledge. (2) The object is actually recalled by an image, say, of a lily or of a state of grief or joy. The faculty which does this we call the phantasy, and the product an idea, a species, or more unambiguously a phantasm. (3) It is recalled according to the laws of association, which are of a twofold nature—primary and secondary. The primary are contiguity and correlation, whereby things which have been together in the mind, or between which there is a discovered relation, tend to recall each other. The secondary determine among a number of objects, any one of which might be called up, why one rather than another presents itself, the main law being that of energy, whereby things on which we have bestowed the greatest amount of mental energy, whether of intellect, feeling, or will, come up more readily and frequently. (4) Things are recognized as having been before the mind in time past; this is the recognitive power (overlooked by Kant and Hamilton), being the main element in memory, and giving us the idea of time, always in the concrete. (5) The compositive power, putting things known in new forms and combinations, and this both by increase and decrease. This is the essential element in imagination, which stretches away into the infinite, our belief in which implies that it is beyond our widest idea, while nothing can be added to it—that is, that it is perfect. (6) The symbolic power, which enables us to think by means of signs, and especially language.

III. *Comparison*.—The mind can discover relations between the objects thus made known and recalled. (1) Identity, whereby the mind perceives that the same is the same, noticed, it may be, in different modes and with different concomitants, as, that I am the same to-day when I am joyful as I was yesterday when I was sorrowing. (2) The faculty of whole and parts, called comprehension and abstraction, whereby we separate a part from the whole, and form abstract ideas. The mind can also discover (3) the relations of space, which gives locality and the science of geometry; (4) of time, which gives arithmetic and chronology; (5) of quantity, from which proceeds mathematics as the science of quantity; (6) resemblance, which enables us to classify, and reach general notions; (7) active property, which notices the correlation of forces; (8) cause and effect, which enable us to rise from effect to cause till we reach a first cause. These constitute the higher intellectual powers of man. Working with them, we have motive powers.

IV. *The Moral Faculty*.—(1) It is partly cognitive; it discovers not a new object, as the senses may do, but a quality in certain objects—that is, in voluntary acts: they may be good or evil—good, such as gratitude, godliness; evil, such as cruelty, deceit. (2) It is also motive. Its exercises are accompanied with emotion, with feelings of approbation and disapprobation. From this power we get such ideas as those of obligation, duty, prompting to good.

V. *The Emotions*.—These imply four elements: (1) an appetite or spring of action, such as the love of pleasure or sympathy with our fellow-men; (2) an idea of an object as appetible or inappetible—say, as about to bring pleasure to ourselves or others; (3) the actual emotion, an excitement of mind, with attraction toward an appetible object and repugnance from an inappetible. In these three processes appetite is the spring, the idea is the channel, and the excitement is the stream flowing out. (4) There is an organic affection of the brain and nerves.

VI. *The Will*.—The essential element here is the power of choice and its opposite, rejection. Two or more objects are presented, and we take the one, and not the other or others; or it is one object pressed on us, and we accept it. This power includes volition, or the final decision to act. But it includes more: it includes wish. It should be noticed that in love considered as a virtue or grace there is wish, there is benevolence, which is well-wishing, a desire of good to the person beloved. It should be resolutely

maintained that the will has an essential freedom of which it can never be deprived.

It should be observed that every one of these groups of powers gives us one or more new ideas. The senses give us the idea of extension and resisting power; self-consciousness, the idea of mind and mental operations; the reproductive, of time and the infinite; the comparative, of connections; the conscience, of moral good and evil; the emotions, of the lovely; and the will, of freedom.

J. McCOSK.

Psychrolutidæ [from *Psychrolutes*; Gr. ψυχρολούτης, a "bather in cold water"], a family of fishes established by Dr. Günther for a species of West American fish. The body is rather elongated; the skin naked and quite loose; the lateral line absent (?); the head large and depressed; the opercular unarmed; the mouth with the cleft oblique and of moderate width; the teeth small and confined to the jaws; branchial apertures of moderate width, the gill-membranes being attached to the isthmus; branchiostegal rays very slender, seven in number; dorsal and anal fins opposite each other, situated far backward on the tail, without spines, and nearly entirely enveloped in the skin; caudal free; pectorals entire; ventrals close together, thoracic, and composed of few (two) rays; there are three and a half gills, and pseudobranchia are well developed. The only known species is *Psychrolutes paradoxus*, Günther, based upon specimens found in the Gulf of Georgia near Vancouver's Island. It is placed by Günther near the Blenniidæ and Cyclopteridæ.

THEODORE GILL.

Ptah, or **Phthah**, an important divinity of ancient Egypt, usually identified with the Greek Hephaistos and Latin Vulcan. His worship was traced to a remote antiquity, and was intimately connected with the adoration of the sun as the author of light and heat. Memphis was the principal seat of his worship, and the beetle (*Scarabæus sacer*) was his peculiar emblem.

Ptar'migan, the vernacular generic name for the species of grouse of the genus *Lagopus* which are distinguished by the legs being densely feathered to the claws, the nasal grooves closed over with feathers, and the development of sixteen or eighteen tail-feathers. The species are characteristic of the high northern regions of the globe, and, with the exception of one species, assume a white coat during winter; in summer they are of a more or less reddish or buff color. In winter they seek the shelter of thickets of willows, birches, etc., but in summer they frequent plains. When pursued in winter they frequently dive in the loose snow, in which they work their way with great ease. The female begins to lay her eggs about May or June, and deposits about eight or ten eggs in the nest. Six species have been recognized by recent authors, of which *Lagopus albus* inhabits both hemispheres, *L. rufescens* and *L. leucurus* North America, and *L. mutus*, *L. hemileucurus*, and *L. scoticus* the Old World. *L. scoticus* is extremely closely related to *L. albus*, and has been even regarded as the permanently dark insular form of that species.

THEODORE GILL.

Pteraclididæ [from Gr. πτερόν, "wing," and κλείς, "lock"—i. e. "fin-locked," on account of the extent of the fins], a family of mackerel-like fishes. The body is oblong or elongated and compressed; the scales of moderate size, and spinigerous or emarginated; the lateral line continuous; the head compressed, and with the snout obtuse and convex; the opercular unarmed; the mouth with the cleft wide and oblique; teeth on the jaws as well as palate; branchial apertures continuous below; branchiostegal rays seven; dorsal fin elongated, extending from the forehead to near the caudal, and composed chiefly of filiform spines; anal fin also enlarged, and extending from the breast nearly to the caudal; caudal distinct; pectorals with branched rays; ventrals jugular, with four to six slender rays; pyloric appendages developed in small number (about six in *P. Carolinus*). The family is based especially upon the genus *Pteraclis*, species of which are found in the Indian seas, the ocean about the island of Madeira, and along the coast of Carolina. To the family perhaps also belongs the genus *Pterycombus*.

THEODORE GILL.

Pterich'thys [Gr. πτερόν, "wing," and ἰχθύς, "fish"], the most remarkable member of the strange group of placoderm fishes, of which the remains are found in the Devonian rocks of Europe. It was of small size—the largest one foot in length—the body almost enclosed in a case or trunk of enamelled bone. From this projected a tail covered with angular scales and provided with a dorsal and a caudal fin. (See FOSSIL FISHES.)

J. S. NEWBERRY.

Pteri'idæ, a family of the MONOMYRIA (which see), to which belongs the pearl oyster. (See COMPARATIVE ANATOMY AND PRECIOUS STONES.)

Pterocarpus. See KINO.

Pteroc'idæ [from *Pterocles*; Gr. πτερόν, "wing," and κλείς, "hook"], a small family of birds peculiar to the Old World, containing the so-called sand grouse. The form is as much that of the pigeon as the grouse; the bill is short, compressed, and the culmen curved to the tip; the wings and tail are elongated and pointed; the tarsi moderately robust and covered with feathers; the toes rather stout, the three in front more or less united, the hinder rudimentary or wanting. In its anatomy this type is intermediate between the true gallinaceous birds and the pigeons; in some respects, however, they are much more nearly related to the latter than the former. Two genera are recognized by authorities—(1) *Pterocles*, with fourteen species, and *Syrhaptes*, with two. They are found in Southern Europe, as well as in Africa and Asia, in dry sandy places or deserts, rocky plains, and wooded grounds. They feed chiefly upon hard seeds, bulbs, and insects. The females lay from two to four eggs on the bare ground. *Pterocles arenarius* and *P. ulchata* are found in Southern Europe. *Syrhaptes paradoxus*, although strictly an Asiatic species, sometimes makes incursions into Europe as far westward as the British islands. One of these visitations was made in 1863, in which year it made its appearance at 148 European localities, as recorded by Newton—"from Galicia to Donegal, and from Gascony to the Faröe Islands." The earliest date given is 6th of May in Moravia; by the end of that month the farthest point throughout the N. W. had been reached. The species is said to have appeared in Europe in 1853; in 1859 it reappeared; and in 1863 the unprecedented visitation recorded took place. Its subsequent incursions have been inconsiderable.

THEODORE GILL.

Pterodactyls [Gr. πτερόν, "wing," and δάκτυλος, "digit"], an extinct group of flying animals, confined to the Mesozoic or Reptilian age, and usually regarded as an order of reptiles. The anterior limbs were adapted for flight by the elongation of the fore arm and fifth or outer digit, corresponding to the little finger of the human hand. By this means an expanse of membrane was supported as in the bats, which these animals in some respects resembled. The head was large, the jaws long, and armed with teeth. In many other points the skull approaches that of birds. Nearly all the bones were pneumatic, with very thin walls, as in most birds. The skin seems to have been destitute of scales or feathers, as no traces of either have been discovered. Prof. Seeley, who has recently studied the pterodactyl remains of the English Upper Greensand, considers them a sub-class of vertebrates equal in value to the birds, and closely related to them. The earliest pterodactyl yet known is *Dimorphodon macronyx* from the Lower Lias of England. Many species occur in the Oolitic lithographic slates in Bavaria. A few fragments only are known from the Wealden, while the English Greensand has furnished many large species. Others from the Upper Cretaceous were the latest forms of this group known from the Old World, and were perhaps contemporaneous with the gigantic species lately made known from the Upper Cretaceous shales of Kansas. The largest of these (*Pterodactylus ingens*, Marsh) probably measured between the tips of the fully-expanded wings nearly twenty-five feet. Two smaller species occur in the same formation, but all are large in comparison with the common European forms.

O. C. MARSH.

Pteroglossus. See RHANPHASTIDÆ and ARAÇARI.

Pterop'oda [Gr. πτερόν, "wing," and πούς, ποδός, "foot"], a group of mollusks formerly considered a separate class, but now generally regarded as of a sub-class of the class Gasteropoda. All living species are marine; all are characterized by a pair of swimming fins attached to the head. The right whales feed largely on shellless species. The shells of some are brought up by deep-sea dredges. They are comparatively little studied by scientists, because they are not often found alive near the shore.

Ptolemaic System. See PTOLEMY.

Ptolemais. See ACRE.

Ptolemy, the name of thirteen kings of Egypt belonging to the Greek or Macedonian dynasty, of which the most remarkable were—PTOLEMY I., SOTER (323-283), the founder of the dynasty. His father's name was Lagos, and the dynasty is often called the Lagides, but his mother, Arsinoë, had been the mistress of Philip II. of Macedon, and he was generally supposed to be a son of the latter. He was one of the most prominent generals of Alexander the Great, after whose death (in 323) he was appointed governor of Egypt. The reigns of Alexander's half-brother, Philip Arrhidæus (322-317), and his posthumous son, Alexander II. (317-311), were merely nominal, however, and Ptolemy was in reality the ruler of Egypt, though he did not assume the title of king until 305. The surname *Soter*, "the preserver," was given to him by the Rhodians, whom he saved