

yet they cannot naturally be moral. Thus, *e.g.*, self-interest is all in all with animals, but it can never lapse into selfishness, which is the *conscious* abuse of self-interest. We "punish" a dog, but we never look upon it as a criminal. So, too, no animal can ever act unjustly towards another, because it cannot be conscious either of justice or injustice. The abstract conceptions of righteousness and justice are only applicable to acts done *under a sense of righteousness and justice*. The same remark applies to personal immoralities; so that no animal can be immoral. That animals cannot entertain abstract ideas is not at all surprising, seeing how slow children are to do the same. A somewhat grotesque illustration will show this. A class of boys was asked what conscience was. None could explain it, so the teacher defined it as "something within you that tells you when you have done wrong." A boy at once exclaimed it was a stomach-ache. On inquiry it turned out that he had stolen and eaten some unripe fruit, and doubtless felt the *remorse* of conscience accordingly! If, then, my former position be qualified, I would restate it as corrected by the cases recorded as follows:—Animals reason as we do, but always in connection with concrete phenomena whether immediately apprehended by the senses, or present to consciousness through memory; but like children they are slow to perceive the suggestiveness of things. They have, moreover, no power of conceiving truly abstract ideas. Hence they cannot be self-conscious, cannot conceive of God, and can neither be moral nor immoral, but are simply non-moral automata. On the other hand, that which rescues man from being an automaton pure and simple, is his power of conceiving of abstract ideas, which enables him to be self-conscious; consequently he can conceive of a personal, *i.e.* self-conscious Deity, so that he at once becomes a responsible being, and can be positively moral or immoral.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

At a recent meeting of the governors of Owens College, Manchester, the Committee on the proposed University charter presented a report. It appears that "negotiations have been actively carried on with the Council of the Yorkshire College, Leeds, partly by letter and partly by means of interviews between members of the respective committees. The suggestions agreed to by the Council of the Yorkshire College, Leeds, provide that the Owens College shall be named in the charter establishing the University as the first college in it; that the president and the principal of the Owens College shall be the first chancellor and vice-chancellor of the new University; that its *locus* shall be Manchester; and that in the system of proportionate representation proposed for the governing and the executive bodies of the University, the Owens College shall in either case begin with the maximum number of representatives allowed by the scheme." To obviate objection to a local name, that of Victoria University is suggested. The report and draft memorial were approved of, and the Committee were requested to make arrangements for the presentation of the memorial to the Lord President of the Privy Council at as early a date as possible, and for carrying out the other suggestions of the report, which was passed.

THE British Medical Association are getting up a memorial to the House of Commons urging the immediate institution at Oxford of a thorough medical curriculum, on the same basis as the medical schools of other English towns, in the following subjects at least:—Human anatomy, physiology of man, general pathology, materia medica, clinical medicine and surgery for beginners, State medicine, including jurisprudence and public health.

SCIENTIFIC SERIALS

American Journal of Science and Arts, April.—An opening obituary notice of the distinguished botanist, Dr. Jacob Bigelow, who died in January, aged 92, is here followed by a note in which Prof. Marsh traces the connection between the two widely divergent forms of vertebrae of the toothed birds *Ichthyornis* and *Hesperornis*. In the former the articulation of the centrum is cup-shaped; in the latter the ends of the centrum are saddle-shaped, as in ordinary birds. The third cervical vertebra of *Ichthyornis*, however, has a transition form, affording a ready solution of the development of the modern avian vertebra from

the fish-like. The order of development of vertebrae seems this: Biconcave vertebrae (fishes and amphibians), plane vertebrae (mammals), cup and ball vertebrae (reptiles), saddle vertebrae (birds).—The double stars discovered by Mr. Alvan G. Clark, which (except Sirius) have not been brought to the attention of astronomers generally, are the subject of a paper by Mr. Burnham.—Interesting details are furnished by Prof. Church of underground temperatures in the Comstock lode in Nevada, where are, apparently, the hottest mines in the world. (The rock in the lower levels seems to have a pretty uniform temperature of 130° F.)—Prof. Lesquereux contributes a review of Count Saporta's valuable work on the plants of the world before man, taking occasion to compare the essential characters of certain tertiary groups of the North American continent, in order to determine some points still under discussion as to their age.—Mr. Palsinger indicates a method of estimating the thickness of Young's reversing layer; and among other subjects dealt with are, the lower jaw of *Loxolophodon* and the presence of chlorine in scapolites.

Journal of the Franklin Institute, April.—We note here the following:—Reports of the Committee on Science and the Arts, on Ainsworth's automatic switch for railroads, and a machine for treating flax, hemp, &c.—Tests of a Baldwin locomotive, by Mr. Hill.—The Franklin Institute standard screw thread.—The Butler mine fire cut off, by Mr. Drinker. In the course of investigations described in this last paper, Mr. Drinker thought it established that coal *in situ* cannot be burned *en masse*, but that the walls of carbonaceous slaty rock inclosing solid coal can be burned or calcined *in situ*. The mining engineers who discussed his paper seemed generally to be of opinion that the slates in the old fire were not actually burned, but that the carbonaceous matter in them was rather subjected to a process of distillation.

THE *Jornal de Sciencias mathematicas physicas e naturaes* (No. xxiv., December, 1878) contains the following papers:—On the oblique projection of a circle, by L. P. da Motta Pegado.—Contribuções ad floram mycologicam lusitanicam, by F. de Thumen.—Ornithological notes, by J. V. Barboza du Bocage.—On the birds of the Portuguese possessions in West Africa (continuation), by the same.—On electrical condensation and the condensing force, by A. A. de Pina Vidal.—On a new densimeter, by Virgilio Machado.

THE quarterly *Revue des Sciences naturelles* (tome vii. No. 4) contains the following original papers:—Morphological researches on the family of *Gramineae*, by D. A. Gordon.—Note on the genital organs and the propagation of some *Limacidae*, by S. Jourdain.—Observations on the destruction and the development of the ovigerous capsule of *Blatta orientalis*, by G. Duchamp.—Catalogue of the land and river molluscs of the Hérault department, by E. Dubrueil (continuation).—Note on the soil of Montpellier, by P. de Rouville.—Note on the Pyrenees of the Aude, by M. Leymerie.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, March 6.—"On the Characters of the Pelvis in the Mammalia, and the Conclusions respecting the Origin of Mammals which may be based on them." By Prof. Huxley, Sec. R.S., Professor of Natural History in the Royal School of Mines.

In the course of the following observations upon the typical characters and the modifications of the pelvis in the mammalia, it will be convenient to refer to certain straight lines, which may be drawn through anatomically definable regions of the pelvis, as *axes*. Of these I shall term a longitudinal line traversing the centre of the sacral vertebrae, the *sacral axis*; a second, drawn along the ilium, dorso-ventrally, through the middle of the sacral articulation and the centre of the acetabulum, will be termed the *iliac axis*; a third, passing through the junctions of the pubis and ischium above and below the obturator foramen, will be the *obturator axis*; while a fourth, traversing the union of the ilium, in front with the pubis, and behind with the ischium, will be the *iliopectineal axis*.

The least modified form of mammalian pelvis is to be seen, as might be expected, in the Monotremes, but there is a great difference between *Ornithorhynchus* and *Echidna* in this respect, the former being much less characteristically mammalian than the latter.

The distinctive features of the mammalian pelvis have been