to do so, to let any prey which had once entered its mouth escape. The poisonous snakes have a special poison fang in the maxilla of each side; these have a deep groove or canal running down them which transmits the poison from the poison gland. In the colu- brine snakes, such as the cobra, the poison fang is always erect, but in the viperine, such as our own adder and the rattlesnake, there is a mechanism by which the tooth is only erected when the jaws are opened for striking. At other times the teeth lie flat in the roof of the mouth.

In the lizards or Lacertilia the teeth usually consist of a series of pegs in the upper and lower jaw, each resembling the one in front of it; sometimes, as in the chameleon, they are anchylosed by their bases to the bone, but at others, as in the iguana, they arc fused by their sides to a ridge of bone which forms a low Wall on their lateral surface. In the former case the dentition is spoken of as “ acrodont,” in the latter as “ pleurodont.”

In the Crocodilia the teeth are fitted into definite sockets as in mammals and are not anchylosed with the jaws. This arrange­ment is spoken of as “ thecodont.”

Existing birds are toothless, but palaeontology shows that they originally had teeth of a reptilian character.

In all these lower vertebrates, then, the teeth are similar or nearly similar in character; at least they are not divided into definite incisor, canine, premolar and molar regions. Their dentition is therefore known as “ homodont.” Another characteristic is that in almost all of them there is an arrangement for a continuous succession of teeth, so that when one is lost another from behind takes its place, and to this arrangement the term “ polyphyodont ” is applied. With a few exceptions a homodont dentition is also polyphyodont.

In the Mammalia the different groups of teeth (incisor, canine, &c.) already noticed in man are found, and these animals are character­ized, with some exceptions, by having a “ heterodont ” as opposed to a homodont dentition. In the mammals too the polyphyodont or continuous succession of teeth is reduced to a “ diphyodont" dentition, which means that there is only one relay of teeth to replace the first set. In the marsupials the reduction of the suc­cession is carried still further, for only one premolar in each segment of the jaw is replaced, while in the toothed whales there is no succession at all. When one set has to do duty throughout life the dentition is called “ monophyodont.” There is a great deal of discussion as to how the complex back teeth of mammals with their numerous cusps were derived from the simple conical teeth which are generally assumed, though not by all, to have been the primitive arrangement. One simple way of accounting for the change is by the concrescence theory', namely that several conical homodont teeth have fused and so formed a single multitubercular tooth; but, although this process may be partly true, it does not account for all the facts at our disposal. Another theory, which is more favoured at the present time, is known as the “ tritubercular,” and is largely based on the researches of E. D. Cope and H. F. Osborn, two American palaeontologists. According to this theory a simple peg-like, or, as it is called, “ haplodont," tooth develops two addi­tional smaller pegs or cones, one in front and one behind the original main cone, possibly owing to the irritation of the teeth against which it bites in the other jaw. This is known as the triconodont stage, and it is found in some of the oldest extinct mammals. As a later adaptation it is found that the two small cones, the anterior of which is called the “ paracone ” and the posterior the “ metacone," become external to the original “ proto­cone ” in the upper jaw and internal in the lower.

The surface of the tooth has now a triangular shape with a cone at each angle, and this is the “ tritubercular tooth ” which is of very common occurrence among the ancestral mammals. Other cusps may be developed later, and so the quadricuspid and quinque­cuspid molar teeth of man and other mammals are accounted for. This theory, although in a brief outline it sounds feasible enough, has really many points of difficulty, and those who are interested in the subject will find a fuller account in C. S. Tomes’ *Dental Ana­tomy* (London, 1904), and in W. L. H. Duckworth’s *Morphology and Anthropology* (Cambridge, 1904), in both of which references to the original literature, which is now very voluminous, are given. Marett Tims (J. *Anal. and Phys.,* vol. xxxvii. p. 131) suggests that the evolution of the mammalian teeth is to be explained partly by the tritubercular and partly by the concrescence theory.

It is impossible, in the space assigned, to give even a brief review of mammalian odontology, but it may clear the ground for the special zoological articles if an attempt is made to define what is meant by the different classes of teeth.

*Incisor teeth* are those which in the upper jaw have their sockets in. the premaxillary bone; they are generally chisel-shaped, and with their opponents of the lower jaw act like scissors. They are specially well marked in the rodents, and in these animals the pulp throughout life continues to form fresh dentine, so that the teeth are ever growing, and it is absolutely necessary for their owners to be continually gnawing in order to wear them away at their cutting edges. The tusks of the elephant and the single tusk of the male narwhal are modified incisors, while in the ruminants the incisor teeth are wanting in the upper jaw.

The *canine tooth* is the first tooth behind the premaxillo-maxillary suture, provided it be not far behind it; it is almost always the first of the premaxillary series, speaking accurately,.which is elon­gated and sharply pointed. As its name implies it is well marked in dogs and other Carnivora, but is found in many other orders. It is the special offensive and defensive weapon of many mammals, and is greatly developed in some of the ungulates which are without horns, e.g., the musk deer. The tusks of the walrus and wild boar are canines. In many of the Insectivora, especially the mole, the canine is very hard to identify, as in these animals an incisor or a premolar may take on caniniform characters, or there may be no tooth at all with these characters.

The *premolar teeth* are those in the maxillary bone which are preceded by milk teeth. This definition, of course, includes the canine as a modified premolar, and so it should no doubt be con­sidered, though, if it is desired to keep it distinct, “ behind the canine ” must be added.

Unfortunately for an accurate definition the first premolar behind the canine is not always preceded by another tooth, and so it becomes an unsettled question whether, in these cases, the tooth is a retained milk tooth or a permanent one which has had no predecessor; it is probable, however, that the latter is the right interpretation.

The m*olar teeth* are those, behind the premolars, which are not preceded by temporary teeth. As was pointed out, in man’s denti­tion they are probably teeth of the first or milk dentition which appear late.

In front of the premolar teeth, and between them and the canine, if it be present, or the incisors, if it be absent, there is often a space called the “ diastema.” It is best marked in the orders of Rodentia and Ungulata, and in the horse is familiar as the place where the bit lies.

In recording the teeth of any particular mammal it saves time and space if a dental formula be used. This simply means setting down the number of each kind of tooth in one side of the upper and lower jaw in their order from before backward. Thus man’s formula would be, incisors 2/2, canines 1/1, premolars 2/2, molars 3/3. This is con­densed into 2.1.2.3./2.1.2.3

Some other types of dental formulae are—

**2.1.2.1** Catarrhinc (old world) monkeys . . . g'1 g

**2.I.3.3** Platyrhine (new world) monkeys . . . 2 1

x. 2.I.3.2

Marmosets ~~2.1.3~~Ί~~2~~

Most lemurs . ⅜^7^f⅛

nr 2∙1∙3∙3

or ■■■■■■■ 2.1.3.3

**2.I.3.3**

Insectivorous bats (full series) .... ⅛~,

(The upper incisors and both premolars may

be reduced by one)

Frugivorous bats ~~...... 2'1'3'⅞~~

(The molars may be reduced)

Insectivora (teeth variable and somewhat uncertain)

Hedgehog 5⅛3

m°" i⅛s

(Five different dental formulae have been assigned to this animal)

Carnivora—

Cat family (Felidae) ..... ~4~~

Dog family (Canidae) ) 3.1.4.2

Bear family (Ursidae) Ç .... 3-leiμ3 Civet family (Viverridae) ) 3.1.4.2

Racoon family (Procyonidae) ) ’ ' ' 3.1.4.2

Hyaena family (Hyaenidae) . . . "

Weasel family (Mustelidae) . . . ~~3∙Λ∙4∙J~~

Eared seal family (Otariidae) . . . 2 °^^2

Seal family (Phocidae) ~~.... 3∙-~~~~1~~~~.∙.4∙~~~~1~~

3.1.4.1

Walrus family (Trichechidac), adult . ~~. L∙4∙3-θ~~

In a young animal (probably) . . ^~~∙'^'2