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## KINDLEIA A NEW GENUS OF CICHLID FISHES FROM THE UPPER CRETACEOUS OF ALBERTA\*

By DAVID STARR JORDAN

### ABSTRACT

*Kindleia* a new genus of fossil fishes, apparently allied to *Priscacara* Cope, but distinguished by the long jaws, with large blunt teeth in sockets is described. Named for Edward M. Kindle.

Type:—*Kindleia fragosa* Jordan new species, Cat. No. 8533, Geological Survey of Canada.



THE writer has received from Edward M. Kindle, Chief of the Division of Palæontology of the Geological Survey of Canada, several fragments, 60 to 70 in number, of a species of fish found by Mr. Charles M. Sternberg, in an ancient, dried-up pond of Upper Cretaceous age about 100 miles south west of Edmonton in the Province of Alberta. The locality is thus indicated by Mr. Sternberg:

"Upper Cretaceous about 150 feet below top of Edmonton beds, Locality, S.E.  $\frac{1}{4}$  section 31, T. 34, R. 21 west of 4th principal meridian. Northwest of Rumsey, Alberta, 20 feet above uppermost of the two coal seams (Thompson Seam No. 12, Allan & Sanderson report)".

The collector of this material states that "all of the specimens, numbering more than sixty, were found at the same level in sandy clay within a very small area and a careful search of the same horizon a few yards distant revealed no sign of any bones of this fish, which seems to indicate that it had been trapped in a small pond, the drying up of which caused death. Associated with the species described were two other species of fish, viz. *Myledophus bipartitus* Cope and *Diphyodus longirostria* Lambe. Disassociated bones of the crocodile, turtle, champsosaurs and several genera of dinosaurs were also found in the fish bed as well as in the surrounding rocks. Most of the dinosaurs which have been collected from the Edmonton formation come from a lower level than this fish bed, yet most of the genera seem to be represented in this and higher strata†"

A series of fragments which have been photographed is here presented. The bones preserved

are very fragile. A part of the lower jaw (5) shows a long bone, moderately curved and provided with sockets for fourteen teeth. Another fragment (11) shows two of these teeth, large, thick at base, pyramidal in form, narrowed and bluntish at tip, set in sockets. A longer fragment (14), perhaps part of set pre-maxillary, is not curved and one end is toothless and angularly bent. This shows the marks or sockets of about 15 teeth, these much smaller than the teeth in (5) and no doubt belonging to a much smaller fish. Three other bones, (6) (8) and (9) each a broken fragment, seem to represent parts of the united lower pharyngeals, characteristic of all *Cichlid* fishes. These are marked by long, even, blunt teeth in sockets, not narrowed at tip. Two fragments have larger teeth than the others and must have belonged, with the jaw bone first mentioned, to a different individual. Two other fragments are marked by blunt vermicular ridges, very irregular and close-set. In one of these (2) these markings are very much coarser than in the other (1) and these probably indicate an older fish of the same species.

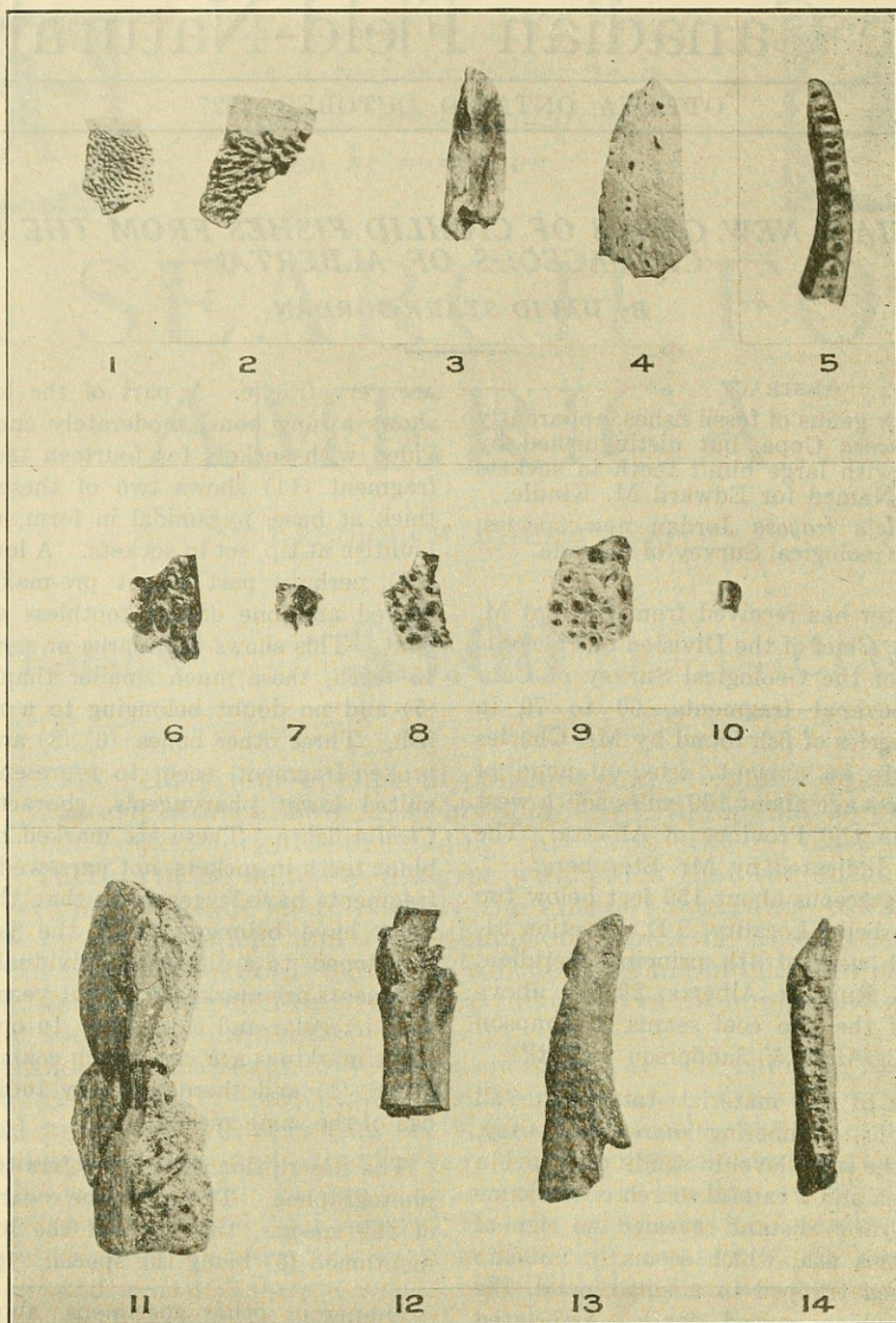
The description thus far refers to the series as photographed. These may be regarded as typical of the species, the bone of the lower jaw first mentioned (5) being the special type.

Numerous other specimens, about 60 in all, have been sent to me from the original locality. These belonged to at least three different individuals of the same species, distinguishable mainly by the size of the bones and of the sockets of the implanted teeth. These are in a single row except in one rather large example which shows an irregular second row, the very deep bone in which they are implanted being sharp edged on its base away from the teeth, both sides being marked by very low, irregular, zigzag edges. In all other fragments the sides of the jaw are smooth, and in all the lower edge of the lower jaw is acute. In all cases there is an irregular series of small foramina on the outer edge of the jaw (shown in 4) these vary in size and number (4) being the least

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†Verbal statement by C.M. Sternberg.





## EXPLANATION OF PLATE

Fig. 1-14—*Kindleia fragosa* n. sp. Natural size.

- |            |   |                  |   |
|------------|---|------------------|---|
| Figs. 1, 2 | Head armature.  | Figs. 6, 7, 8, 9 | Fragments of united lower pharyngeals.                |
| " 3, 4, 5  | Inferior, exterior and superior views of lower jaw shown by three separate specimens. | " 10             | Tooth from lower pharyngeal.                          |
| " 5        | Holotype or special type.   | " 11             | Fragment of lower jaw.                                |
|            |   | " 12, 13, 14     | Internal, External and inferior views of pre-maxillæ. |



regular. In one fragment not figured, the teeth are more than twice as wide as in (5) which with (2) and (6) may have belonged to a much larger fish. The markings shown in (1) and (2) are repeated in several other fragments and are evidently part of the armature of the head, but just where they are placed is uncertain. They hardly seem to be opercular bones. The fragments here photographed represent the various kinds of bones, and so may be taken as typical.

Some 60 other fragments have also been received from Mr. Sternberg. These represent all the types shown in the plate indicating no important differences. The deep lower jaw, sharp edged below, is well shown, as are also the oblong evenly blunt teeth of the pharyngeals. The surface markings of (1) and (2) are well shown on various other fragments. These seem to mark sculpture on external bones but we fail to locate them. They much resemble head-sculpture of certain marine cat-fishes.

It is very remarkable that with so many fragments of *Kindleia fragosa* there is none belonging to the vertebral column and that there is no trace of any of the fins. The dentition is quite unlike

that of any other fossil fish known to me. I place the new genus temporarily with the *Chichlidae*, because it has the lower pharyngeals united, and it is apparently a fresh water form. Both these characters are found in all the Cichlidae which abound in the streams of tropical America and Africa. But in all the Cichlids known to me the teeth are small and in more than one row and the bones of the head show no coarse granulations.

Of this enormous group, but one genus, *Priscacara* Cope (type *P. serrata* Cope) has been recognized as fossil. It differs from all the others in having teeth on the vomer "which like the jaw teeth are minute and simply conical," the jaws themselves much shorter than in *Kindleia*. On account of the presence of vomerine teeth, *Priscacara* has been lately taken as the type of a distinct family *Priscacaridae*. Six species of *Priscacars* are described from the Eocene (Green River Shales) of the state of Wyoming and a few neighbouring localities (Twin River, Manti.) A seventh species, (*P. liops*, Cope) is type of the genus *Cockerellites* Jordan, which differs from the others in the longer soft dorsal.

## HUNGARIAN PARTRIDGE vs. SHARP-TAILED GROUSE

By P. A. TAVERNER



EVER since the successful acclimatization of the Gray or Hungarian partridge on the west the battle has raged among sportsmen and naturalists as to the wisdom of the introduction. In general, the sportsman has lined up with the pros and the naturalist and nature lover with the cons. Both are probably a little prejudiced, one in favor of adding any sporting possibility to his opportunities, the other against disturbing the status quo or doing anything to interfere with native forms that he studies and is familiar with. Probably as far as prejudice goes, the honors are even.

The sportsman usually looks upon the naturalist as an impractical doctrinaire and the naturalist regards the usual type of sportsman as short sighted, superficial, ill-informed on the fundamentals of biological association and ignorant of what has happened outside of his own experience. There may be more than a modicum of truth in both these views. The naturalist may be overly cautious but it is easily demonstrable that the ordinary run of shooters know no more of the game they hunt than is necessary to outwit it at certain limited seasons of the year; in fact, with a few exceptions, they rarely know even the names of

the species they shoot. There are certain brilliant exceptions on both sides of the question but taking it by and large, I think this reflects the general line-up and weight of authority.

One fact is self-evident, had the cautious naturalist of the present been in control in the past we might have escaped some of the devastating pests that now plague this once clean and comparatively pestless country. Practically all of our serious pests and plagues are introduced ones. Potato-bug, Gypsy-Moth, Corn-Borer, Sow and Russian Thistle, Black-head, Tuberculosis, Smallpox, English Sparrow, Starling, Rat, House mouse, Cockroach, and a thousand and one other ills that afflict our civilization are not indigenous to the country but introduced, often fortuitously in company with more desirable acquisitions. Many valuable importations have been veritable Pandora's boxes, releasing from control a multitude of evils and retaining but a single hope. It is the knowledge of these things and the realization of their application to present practice that makes the naturalist fearful of further unconsidered experiments carrying the same results. He has some grounds for his warnings and certainly cannot be dismissed as an ignorant alarmist.





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