

BIBLIOGRAPHY OF OTOLITHS

By Robert B. Campbell

The following bibliography of otoliths is taken principally from "Fossilium Catalogus" published by W. Junk of Berlin. In the United States articles can be found in the New York Public Library and the John Crerar Library at Chicago. Both these institutions will supply photograms of articles requested. The abbreviations are

N.Y.P.L. – PTX – New York Public Library,
Class Mark PTX.
Crerar – John Crerar Library, Chicago, Illinois.

1. Bagg, R. M., Pliocene and Pleistocene foraminifera from southern California: U. S. Geol. Survey Bull. 513, p. 150, pl. 28, fig. 13, 1912. Illustrations of several otoliths in the San Pedro sands (Pliocene) from Timms Point, California, are offered.
2. Bassoli, G. G., 1906, Otoliti fossili dell' Emilia: Rivista italiana di Paliontologia, vol. 12, pp. 36-57, pls. 1,2.

O. (Berycidarum).....Pliocene, Italy
O. (Berycidarum) pulcher.....
Middle, Miocene, Pliocene, Italy
O. (Berycidarum) splendidus.....middle Miocene, Italy
O. (Berycidarum) sulcatus.....Miocene, Italy

- O. (Berycidarum) tuberculatus
Pliocene, Miocene, Italy
- O. (Hoplostethus) ingens.....Miocene, Italy
- O. (Hoplostethus) levis.....Miocene, Italy
- O. (Hoplostethus) orbicularis.....Miocene, Italy
- O. (Hoplostethus) perforatus.....Miocene, Italy
- O. (Hoplostethus) praemediterraneans.....Neogene, Italy
- O. (Carangidarum) americanus.....Miocene, Italy
- O. (Carangidarum) inflatus.....Miocene, Italy
- O. (Cepola) praeerubescens.....Miocene, Pliocene, Italy
- O. (Fierasfer) posterus.....Miocene, Italy
- O. (Tadus) elegans.....Miocene, Italy
- O. (Merluccius) praeesculentus.....Miocene, Italy
- O. (Physics) elegans.....Neogene, Italy
- O. (Lophius) unicus.....Miocene, Italy
- O. (Tobius) vicinalis.....Neogene, Italy
- O. (Hymenocephalus) labiatus.....Pliocene, Italy
- O. (Macrurus) arthaberi
- O. (Macrurus) arthaberooides.....Neogene, Italy
- O. (Macrurus) contortus..Miocene, Pliocene, Italy
- O. (Macrurus) ellipticus.....Miocene, Italy
- O. (Macrurus) gracilis.....Miocene, Italy
- O. (Macrurus) maximus.....Miocene, Italy
- O. (Macrurus) novus.....Miocene, Italy
- O. (Macrurus) ornatus.....Miocene, Pliocene, Italy
- O. (Macrurus) ornatus (var. apicata)
Miocene, Pliocene, Italy
- O. (Macrurus) toulai.....Miocene, Italy
- O. (Macrurus) trolli.....Miocene, Italy
- O. (Ophidiidarum) difformis (var. acutangulus)
Miocene, Italy
- O. (Ophidiidarum) gibbus.....Miocene, Italy
- O. (Ophidium) appendiculatus.....Miocene, Italy
- O. (Ophidium) magnus.....Miocene, Italy
- O. (Ophidium) pantanelli.....Miocene, Italy
- O. (Ophidium) parvulus.....Pliocene, Italy
- O. (Ophidium) pulcher.....Miocene, Italy
- O. (Ophidium) saxolensis.....Pliocene, Italy
- O. (Labrax) lucidus.....Miocene, Italy
- O. (Percidarum) arcuatus.....Miocene, Italy
- O. (Citharis) schuberti.....Miocene, Italy
- O. (Platessa) lobatus.....Neogene, Italy
- O. (Pleuronectidarum) acuminatus.....Miocene, Italy
- O. (Pleuronectus) acuminatus.....Miocene, Italy

O. (*Solea*) *kokeni*.....Miocene, Italy

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Bassoli, G. G., 1906—Concluded.

O. (*Solea*) *patens*.....Miocene, Italy
O. (*Corvina*) *gibberulus*.....Miocene, Italy
O. (*Sciaena*) *speciosus*.....Miocene, Italy
O. (*Hemiramphus*) *italicus*.....Miocene, Italy
O. (*Scopelus*) *sulcatus*.....Miocene, Italy
O. (*Scopelus*) *tuberculatus*.....Miocene, Italy
O. (*Arius*) *germanicus*.....Miocene, Italy
O. (*Chrysophrys*) *doderleini*.....Miocene, Italy
O. (*Dentex*) *nobilis*.....Miocene, Italy
O. (*Dentex*) *speronatus*.....Miocene, Italy
O. (*Pagellus*) *gregarius*.....Miocene, Italy
O. (*Sparidarum*) *fragilis*.....Pliocene, Italy
O. (*Sparidarum*) *mutinensis*.....Neogene, Italy
O. (*Gonostom*) *fragilis*.....Pliocene, Italy
O. (*Trachimus*) *miocenicus*.....Miocene, Italy
O. (*Peristedian*) *clarus*.....Neogene, Italy
O. (*Trigla*) *mirabilis*.....Miocene, Italy
O. (*Brotulidarum*) *patanelli*.....Neogene, Italy

3. Bassoli, G. G., 1909, Otoliti fossili dei Pesci: Atti
Della Societa dei Naturalisti e Matematici di
Modena, ser. 4, vol. 12, pp. 39-45, 7 figs. (CRERAR).

O. (*Berycidarum*) *kokeni*
O. (*Berycidarum*) *latus*.....Tertiary, Italy
O. (*Berycidarum*) *major*.....Tertiary, Italy
O. (*Berycidarum*) *orbicularis*.....Tertiary, Italy
O. (*Blennius*) *praeocellaris*.....Miocene, Italy
O. (*Carangidarum*) *americanus*.....Tertiary, Italy
O. (*Carangidarum*) *americanus*.....Miocene, Italy
O. (*Cepola*) *praerubescens*
O. (*Tadidarum*) *meyeri*.....Tertiary, Italy
O. (*Physics*) *elegans*
O. (*Physics*) *tenuis*
O. (*Raniceps*) *latisulcatus*
O. (*Tobius*) *intimus*
O. (*Tobius*) *praeclarus*
O. (*Tobius*) *vicinalis* (O. *Praeclarus*)
O. (*Hymenocephalus*) *labiatus*
O. (*Macrurus*) *dimidiatus*.....Eocene, France
O. (*Macrurus*) *ellipticus*

O. (*Macrurus*) *gracilis*

Bassoli, G. G., 1909—Concluded

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O. (*Macrurus*) *praetrachyrhynchus*
O. (*Macrurus*) *rotundatus*
O. (*Macrurus*) *toulai*
O. (*Macrurus*) *trolli*.....Pliocene, Italy
O. (*Monocentris*) *subrotundatus*
O. (*Ophidiidarum*) *biformis*
O. (*Ophidium*) *grignonensis*.....Eocene, France
O. (*Ophidium*) *pantanelli*
O. (*Percidarum*) *arcuatus*
O. (*Percidarum*) *maguntinus*
O. (*Pleuronectidarum*) *acuminatus*
O. (*Pleuronectus*) *acuminatus*
O. (*Corvina*) *gibberulus*
O. (*Sciaena*) *irregularis*
O. (*Sciaena*) *speciosus*.....Miocene, Italy
O. (*Scopelus*) *latus*.....Tertiary, Italy
O. (*Scopelus*) *kokeni*
O. (*Scopelus*) *orbicularis*.....Tertiary, Italy
O. (*Arius*) *anglicus*
O. (*Arius*) *danicus*
O. (*Chrysophrys*) *doderleini*
O. (*Dentex*) *speranatus*.....Oligocene, Germany
O. (*Oblada*) *praemelanura*.....Tertiary, Italy
O. (*Trachinus*) *zibinicus*.....Tertiary, Italy
O. (*Brotulidarum*) *pantanelli*.....Oligocene, Germany

4. Beneden, P. J. van, Recherches sur quelques poissons fossiles de Belgique: Bulletins de l'Academie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, Brussels, ser. 2, vol. 31 pp. 493-518, pls. 1-3, 1871 (NYPL – EM; CRERAR).

O. (*Gadus*) *elegans*.....Pliocene, Belgium
O. (*Dentex*) *laekeniensis* (Lutetien), Belgium

5. Clark, W. B. and Martin, G. C., 1901, Maryland Geol. Survey, Eocene, pp. 113-115, pl. 12, figs. 4-6.

Notes occurrence in Nanjemoy formation and briefly
Discusses otoliths (after Koken).

6. Higgins, E. T., 1867, On otoliths or earbones of fishes:
Abstract in Quarterly Journal Microscopic Science,
N. S. 7, pp. 226-227.
7. Higgins, E. T., 1868, On the otoliths of fish and their
value as a test in verifying recent and fossil
fishes: Jour. Linn. Soc. London, pp. 157-166, Abstract
in Geological Magazine 4, 161-162.
8. Ihering, H. von, 1891, Bemerkungen ober die zoologisch-
systematische Bedeutung der Fisch-Otolithen: Sitz.
Gesell. Naturf. Fremde, Berlin, pp. 23-26,
9. Koken, E., 1884, Ueber Fischotolithen, insosondere ober
diejenigen der norddeutschen Oligocanablagerungen:
Zeit. Deutsch. Geol. Gesell., vol. 36, pp. 500-565,
pls. 9-12 (NYPL—PTX; CRERAR).

This is Koken's first work on this subject and
furnishes the best basis for the study of fish
otoliths.

- O. (Hoplostethus) ingens. Lower Oligocene, north Germany
- O. (Gadidarum) acutangulus.....
.....lower Oligocene, north Germany
- O. (Gadidarum) difformis.....
.....middle Oligocene, north Germany
- O. (Gadidarum) elegans
- O. (Gadidarum) latisulcatus.....
.....lower Oligocene, north Germany
- O. (Gadidarum) planus.....Oligocene, Germany
- O. (Gado) saba.....
Lower and middle Oligocene, north Germany
- O. (Gadi) tuberculosis. Middle Oligocene, north Germany
- O. (Gadus) elegans
- O. (Gadus) simplex
- O. (Merluccius) emarginatus.....Oligocene, north Germany
- O. (Morrhua) faba.....Oligocene, Germany
- O. (Raniceps) latisulcatus lower Oligocene, Germany
- O. (Raniceps) planus
- O. (Raniceps) tuberculosis

Koken, E., 1884—Concluded

- O. (*Monocentris*) *subrotundatus*...
lower Oligocene, north Germany
- O. (*Ophidiidarum*) *difformis*
- O. (*Ophidiidarum*) *difformis* (var. *acutangulus*)
- O. (*Percidarum*) *varians*
- O. (*Solea*) *lenticularis*.....upper Oligocene, Germany
- O. (*Sciaena*) *speciesus*
- O. (*Sciaenidarum*) *elongatus*..... middle Oligocene, north
 Germany
- O. (*Sciaenidarum*) *gibberulus*.....Oligocene, north Germany
- O. (*Sciaenidarum*) *irregularis*.....
upper Oligocene, north Germany
- O. (*Sciaenidarum*) *irregularis*.....
upper Oligocene, north Germany
- O. (*Apogoninarum*) *ingens*.....
lower Oligocene, north Germany
- O. (*Apogoninarum*) *subrotundus*.....
middle Oligocene, north Germany
- O. (*Arius*) *crassus*.....Eocene, England
- O. (*Arius*) *germanicus*
- O. (*Sparidarum*) *sollingensis*.....middle Oligocene, Germany
- O. (*Trachinus*) *biscissus*.....middle Oligocene and
 upper Oligocene.....north Germany
- O. (*Trachinus*) *mutabilis*.....middle Oligocene and
 upper Oligocene.....north Germany
- O. (*Trigla*) *ellipticus*.....
middle Oligocene, north Germany
- O. (*Incertae sedis*) *crassus*.....Oligocene, Germany
- O. (*Incertae sedis*) *crassus*.....Eocene, England
- O. (*Incertae sedis*) *minor*
- O. (*Incertae sedis*) *minor*.....
upper Oligocene, north Germany
- O. (*Incertae sedis*) *umbonatus*.....lower Oligocene
 and middle Oligocene, Germany; Miocene, Belgium
- O. (*Sciaena*) *irregularis*.....
upper Oligocene, north Germany

10. Koken, E., 15, Ueber eine Paleocene Fauna von Kopenhagen: Abh. Kon. Gesell. Wiss., Gottingen, vol. 32, pp. 1-128, 5 pls.; Otolithen, by E. Koken, pp. 113-116, pl. 5, figs. 22-29 (N.Y.P.L.—EE; CRERAR).

- O. (*Hoplostethus*) *laciniatus*.....Paleocene, Copenhagen
 O. (*Hoplostethus*) *lowleyi*
 O. (*Hoplostethus*) *pisanus*.....Pliocene, Italy
 O. (*Gadidarum*) *ponderosus*.....Paleocene, Copenhagen
 O. (*Merluccius*) *balticus*.....Paleocene, Copenhagen
 O. (*Monocentris*) *integer*.....Paleocene, Copenhagen
 O. (*Apogoninarum*) *integer*.....Paleocene, Copenhagen
 O. (*Apogoninarum*) *laciniatus*.....Paleocene, Copenhagen
 O. (*Arius*) *danicus*.....Paleocene, Copenhagen
 O. (*Trachinus*) *seelandicus*.....Paleocene, Copenhagen
 O. (*Incertae sedis*) *conchaeformis*.....Paleocene, Copenhagen
 O. (*Incertae sedis*) *crassus*.....Paleocene, Copenhagen
 O. (*Incertae sedis*) *robustus*

11. Koken, E., 188, Neue Untersuchungen an tiaren Fischotolithen, pt. 1: Zeit. Deut. Geol. Sell., vol. 40, pp., 274-305, pls. 17-19,(N.Y.P.L.—PTA; CRERAR).

I In this paper Koken describes and discusses
 Twenty-three otoliths from Mississippi and Alabama.

- O. (*Conger*) *brevior*.....Tertiary, North America
 O. (*Carangidarum*) *americanus*.....
older Tertiary, North America
 O. (*Cepola*) *comes*.....older Tertiary, North America
 O. (*Cottidarum*) *sulcatus*.....older Tertiary, North America
 O. (*Gadidarum*) *elevatus*.....older Tertiary, North America
 O. (*Gadidarum*) *meyeri*..... older Tertiary, North America
 O. (*Gadidarum*) *mucronatus*...
 older Tertiary, North America
 O. (*Monocentris*) *hospes*..... older Tertiary, North America
 O. (*Mugilidarum*) *debilis*.....
 older Tertiary, North America
 O. (*Platessa*) *sector*..... older Tertiary, North America
 O. (*Solea*) *glaber*..... older Tertiary, North America
 O. (*Sciaenidarum*) *claybornensis*.....
 older Tertiary, North America
 O. (*Sciaenidarum*) *decipiens*.....Miocene, Moravia
 O. (*Sciaenidarum*) *eporredctus*.....
 older Tertiary, North America

- O. (*Sciaenidarum*) *gemma*..... older Tertiary, North America
- O. (*Sciaenidarum*) *intermedius*.....
..... older Tertiary, North America

Koken, E., 188—Concluded.

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- O. (*Sciaenidarum*) *radicans*.....
..... older Tertiary, North America
- O. (*Sciaenidarum*) *similis*..... older Tertiary, North America
- O. (*Apogonidarum*) *hospes*..... older Tertiary, North America
- O. (*Pagellus*) *elongatus*..... older Tertiary, North America
- O. (*Spariderum*) *insultus*..... older Tertiary, North America
- O. (*Trachinus*) *laevigatus*.....
..... older Tertiary, North America
- O. (*Trigla*) *cor*..... older Tertiary, North America
- O. (*Incertae sedis*) *umbonatus*.....
..... older Tertiary, North America

12. Koken, E., 19, Fossile Fisch Otolithen: Sitz. Gesell.
Naturf. Fremde, Berlin, pp. 117-124 (CRERAR).

13. Koken, E., 191, Neue Untersuchungen an tertiären Fisch-
otolithen, Pt. II; Zeit. Deutsch. Geol. Gesell.,
vol. 43, pp. 77-270, pls. 1-10 (N.Y.P.D.—PTA; CRERAR).

- O. (*Aronus*) *primas*.....middle Oligocene, Germany
- O. (*Berycidarum*) *austriacus*.....
.....Miocene, Transylvania, Romania
- O. (*Berycidarum*) *debilis*.....Miocene, Holstein
- O. (*Berycidarum*) *mediteraneus*
- O. (*Berycidarum*) *niglectus*.....
lower Oligocene and middle Oligocene, Germany
- O. (*Berycidarum*) *parvulus*.....middle Oligocene, Germany
- O. (*Berycidarum*) *rhenanus*.....
lower Miocene, middle Oligocene, Germany
- O. (*Berycidarum*) *supracretaceus*.....
Obersenan, upper Bavaria
- O. (*Beryx*) *lunabergensis*...Miocene, north Germany
- O. (*Hoplostethus*) *ingens*
- O. (*Hoplostethus*) *laciniatus*
- O. (*Hoplostethus*) *nettelblatti*.....
.....upper Oligocene, Germany
- O. (*Hoplostethus*) *ostiolatus*.....
.....middle Oligocene, south Germany
- O. (*Clupea*) *testic*.....upper Oligocene, north Germany
- O. (*Fierasfer*) *nuntius*.....middle Oligocene, Germany
- O. (*Berycidarum*) *geron*.....
.....middle and upper Oligocene, Germany

Koken, E., 191—Continued

- O. (*Fierasfer*) *posterus*...upper Oligocene, Germany
 O. (*Gadidarum*) *ponderosus*
 O. (*Gadus*) *elegans*.....
 Oligocene and Miocene, Germany; Pliocene, England
 O. (*Gadus*) *simplex*.....Oligocene, north Germany
 O. (*Gadus*) *spectabilis*.....Miocene, Holstein
 O. (*Gadus*) *tenuis*.....Miocene, southern France, Austria
 O. (*Gadus*) *venustus*.....Miocene, Holstein
 O. (*Merlangus*) *cognatus*.....Miocene, Holstein
 O. (*Merlangus*) *spatulatus*.....upper Oligocene, Germany
 O. (*Merlangus*) *vulgaris* var. *suffolkensis*...
 Pliocene, England
 O. (*Merluccius*) *attenuatus*.....
 upper Oligocene, north Germany
 O. (*Merluccius*) *balticus*
 O. (*Merluccius*) *emarginatus*
 O. (*Merluccius*) *miocenicus*.....Miocene, Holstein
 O. (*Merluccius*) *obtusus*.....upper Oligocene, Germany
 O. (*Morrhua*) *faba*
 O. (*Morrhua*) *latus*.....Miocene, north Germany
 O. (*Morrhua*) *sollingensis*.....middle Oligocene, Sollingen
 O. (*Phycis*) *tenuis*.....Miocene, southern France, Germany
 O. (*Raniceps*) *latisulcatus*
 O. (*Raniceps*) *planus*
 middle Oligocene, upper Oligocene, north Germany
 O. (*Raniceps*) *tuberculosis*.....Oligocene, middle Germany
 O. (*Gobiidarum*) *dispar*.....Miocene, south Germany
 O. (*Gobius*) *francofurtanus*.....
 lower Miocene, south Germany
 O. (*Gobius*) *vicinalis*.....Miocene, Germany
 O. (*Macruridarum*) *singularis*.....
 lower Oligocene, north Germany
 O. (*Macrurus*) *praecursor*.....Pliocene, Italy
 O. (*Monocentris*) *hospes*
 O. (*Monocentris*) *integer*
 O. (*Monocentris*) *subrotundatus*
 O. (*Ophidiidarum*) *boettgeri*.....
 upper Oligocene, north Germany
 O. (*Ophidiidarum*) *difformis*.....
 middle Oligocene, north Germany
 O. (*Ophidiidarum*) *difformis*, var. *acutangulus*....
 lower Oligocene, north Germany
 O. (*Ophidiidarum*) *difformis*, var. *Hermsdarfensis*.....

.....middle Oligocene, north Germany

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Kokens, E., 1891—Continued

- O. (Ophidiidarum) *difformis*, var. *Joachamica*....
.....middle Oligocene, Germany
- O. (Ophidiidarum) *difformis*, var. *Vestuta*...
.....lower Oligocene, north Germany
- O. (Ophidiidarum) *hilgenacfi*....
.....lower Oligocene, north Germany
- O. (Ophidiidarum) *hybridus*.....middle Oligocene, Germany
- O. (Ophidiidarum) *marchicus*...
.....middle Oligocene, north Germany
- O. (Ophidiidarum) *obotritus*....
.....upper Oligocene, north Germany
- O. (Ophidiidarum) *occultus*.....Oligocene, Germany
- O. (Ophidiidarum) *saponicus*
- O. (Percidarum) *aequalis*.....
.....lower Miocene, south Germany
- O. (Percidarum) *frequens*.....upper Oligocene, Germany
- O. (Percidarum) *moguntinus*....
.....lower Miocene, Mainz Basin, Germany
- O. (Percidarum) *plebejus*.....middle Oligocene, Germany
- O. (Percidarum) *varians*.....middle Oligocene, Germany
- O. (Platessa) *sector*.....lower Oligocene, north Germany
- O. (Pleuronectidarum) *acuminatus*.....
.....middle Oligocene, south Germany
- O. (Pleuronectus) *acuminatus*.....
.....middle Oligocene, south Germany
- O. (Rhombus) *rhenanus*.....middle Oligocene, Germany
- O. (Solea) *approximatus*.....Miocene, Holstein
- O. (Solea) *guestfalicus*.....upper Oligocene, Germany
- O. (Solea) *lenticularis*
- O. (Corvina) *gibberulus*.....upper Oligocene, north Germany
- O. (Sciaena) *amplus*.....upper Oligocene, Germany
- O. (Sciaena) *holsaticus*.....Miocene, Holstein
- O. (Sciaena) *irregularis*....
.....upper Oligocene, Miocene, Germany
- O. (Sciaena) *kirchbergensis*.....
.....middle Miocene, south Germany
- O. (Sciaena) *meridionalis*.....Miocene, Italy
- O. (Sciaena) *obtusus*.....upper Oligocene, Germany
- O. (Sciaena) *ovatus*.....upper Oligocene, Germany
- O. (Sciaena) *speciosus*.....upper Oligocene, north Germany
- O. (Sciaenidarum) *insignis*....
.....middle Oligocene, south Germany
- O. (Sciaenidarum) *ovatus*.....upper Oligocene, Germany
- O. (Scombridarum) *thynnoides*.....middle Oligocene, Germany

- O. (Scopelus) austriacus
- O. (Scopelus) debilis.....Miocene, Holstein
- O. (Scopelus) mediterraneus....

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Koken, E., 1891—Concluded

- O. (Serranus) noetlingi.....upper Oligocene, north Germany
- O. (Arius) crassus
- O. (Arius) banicus
- O. (Arius) germanicus.....
 -lower Oligocene, middle Oligocene, Germany
- O. (Arius) vangaoni.....middle Oligocene, south Germany
- O. (Dentex) nobilis.....Miocene, north Germany
- O. (Pagellus) gregarius.....
 -middle Oligocene, upper Oligocene, Germany
- O. (Sparidarum) gregarius.....
 -middle Oligocene, upper Oligocene, Germany
- O. (Gonostoma) parvulus.....middle Oligocene, Germany
- O. (Trachinus) mutabilis
- O. (Trachinus) seelandicus
- O. (Trachinus) verus.....upper Oligocene, Germany
- O. (Peristedian) personatus.....middle Oligocene, Germany
- O. (Trigla) adjurnetus.....middle Oligocene, north Germany
- O. (Ellipticus)
- O. (Incertae sedis) bohmi
- O. (Incertae sedis) conchaeformis
- O. (Incertae sedis) fallax.....
 -upper Oligocene, north Germany
- O. (Incertae sedis) galtinus.....middle Gault, Germany
- O. (Incertae sedis) hassovicus.....
 -middle Oligocene, south Germany
- O. (Incertae sedis) lunaburgensis.....
 -Miocene, north Germany
- O. (Incertae sedis) minor.....
 -middle Oligocene, upper Oligocene, Germany
- O. (Incertae sedis) robusuts.....
 -upper Oligocene, north Germany
- O. (Incertae sedis) umbonatus

14. Koken, E., and Bohm, J., 1891, Die Kreidebildungen des Furborgs and Sulzbergs bei Siegsdorf in Oberbayerr: Palaeontographica, vol. 38, pp. 1-106; Otolithen, by E. Koken, pp. 37-41, text figs. 1-3 (N.Y.P.I.—PTA; CRERAR).

- O. (Macruridarum) bavaricus

15. Lawlay, R., 1876, Nuovi studi sopra ai pesci ed altri
Vertebrati fossili delle colline Toscane: Firenze
1876, 122 pp., 51 pls.
- O. (*Macrurus*) *praetrachyrhynchus*.....Pliocene, Italy
 - O. (*Sciaena*) *pecchioli*.....Pliocene, Italy
 - O. (*Umbrina*) *pecchioli*.....Pliocene, Italy
16. Leriche, M., 1902, Les Poissons paleocenes, della Bel-
gique: Momoires du Musee royal d’Histoire Naturelle
de Belgique, Brussels, vol. 2, pp. 1-48, 3 pls.
(CRERAR).
- O. (*Monocentris*) *interger*.....lower Landenien,
Belgium
 - O. (*Arius*) *danicus*.....Landenien, Belgium
17. Leriche, M., 1905, Les poissons eocenes de la Belgique:
Memoires du Musee royal d’Histoire naturelle de
Belgique, Brussels, vol. 3, pp. 1-228, 12 pls. (CRERAR)
- O. (*Hoplostethus*) *hexagonalis*
 - O. (*Percidarum*) *kokeni*
 - O. (*Sparidarum*) *rutoti*
18. Leriche, M., 1906, Contribution a l’etude des poissons
fossiles du nord de la France et des regions voisines:
These, Lille, no. 16, 430 pp., with atlas, also
Memoires de la Societe geolgoique du Nora, vol. 5,
Memoire no. 1 (N.Y.P.L.—PTA; CRERAR).
- O. (*Hoplostethus*) *hexagonalis*.....Eocene, Belgium
 - O. (*Gadus*) *spectrbilis*.....Neogene, Brittany, France
 - O. (*Monocentris*) *integer*
 - O. (*Percidarum*) *kokeni*
 - O. (*Percidarum*) *kokeni*
 - O. (*Sciaena*) sp.....Neogene, western France
 - O. (*Arius*) *danicus*
 - O. (*Sparidarum*) *rutoti*.....Eocene, (Lutetien), Belgium

19. Leriche, M., 1906, Note preliminaire sur les Poissons des Fraune Neogenes de la Eretagne, de l'Anjou eu de la Touraine: Annales de la Societe Geologique du Nord, vol. 35, pp. 290-321, 1906 (N.Y.P.L.—PTA; CRERAR).
20. Leriche, M., 1906, Note sur les Vertebres Eocenes de la Loire-inferieure. Bulletin Societe des Sciences naturelles de l'ouest de la France, 2me serie, vol. 6, Nantes 1906, pp. 179-183 (CRERAR).
- O. (Percidarum) kokeni.....Eocene, Belbium, France
21. Leriche, E., 1907, Sur la Faune ichtyologique de l'aquitaniien marin des environs de Montpellier: Comptes randus de l'association francaise pour l'avercement des sciences, vol. 35, Tryon, pp. 352-356 (N.Y.P.L.—EN; CRERAR).
- O. (Sciaenidarum) manchi.....Aquitaniien, southern France
22. Leriche, M., 190, Note sur des Poissons paleocenes et eocenes des environs de Reims (Marne): Ann. Soc. Geol. Du Nord, vol. 37, pp. 229-265, 4 pls. (N.Y.P.L.—PTA; CRERAR).
- O. (Gadus) balticus.....Landenien, northern France
 O. (Merlusorus) balticus.....Landenien, northern France
 O. (Dentex) tardenensis.....Ypresein, France
 O. (Pagellus) remensis.....Landenien, northern France
23. Leriche, M., 1910, Les poissons oligocenes de la Belgique: Mem. Du Mus. Roy. Hist. nat. Belgique, Brussels, vol. 5 pp. 251-264, 15 pls (CRERAR).
- O. (Tadi) faba.....Oligocene, Belgium
 O. (Morrhua) faba.....Oligocene, Belgium
 O. (Macrurus) latisulcus.....Oligocene, Belgium
 O. (Macrurus) sp.....Oligocene, Belgium
 O. (Ophidadarum) acutangulus.....Oligocene, Belgium
 O. (Ophidadarum) difformis (var. acutangulus)....

-Oligocene, Belgium
 O. (*Incertae sedis*) *umbonatus* var, *Rupeliansis*...
Oligocene, Belgium
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24. Lorenthey, I., 1906, *Beitrage zur Fauna und stratigraphischen Lage der pannonischen Schichten in der Umgehung des Balatonsees: Resultate der wissenschaftlichen Erforschung des Balatonsees*, vol. 1, pt. 1, Pal. Anhang, 216 pp., 2 pls.

- O. (*Sciaena*) *irregularis*.....Pliocene, Hungary
 O. (*Sciaenidarum*) *loczyi* (*O. Pannonicus*)....
Pliocene, Hungary
 O. (*Sciaenidarum*) cf. *Loczyi*.....Pliocene, Hungary
 O. (*Sciaenidarum*) *pannonicus*.....Pliocene, Hungary
 O. (*Sciaenidarum*) *schunberti*.....Pliocene, Hungary
 O. (*Sciaenidarum*) *subsimilis*.....Pliocene, Hungary

25. Malling K. C., und Gronwall, K. A., 1909, *En Fauna i Bronholms lias: Meddelelser fra Dansk geologisk Forening*, vol. 3, no. 15, pp. 271-314, 2 pls. (CRERAR)

- O. (*Incertae sedis*) *bornholmmiense*.....
middle Lias, Bornholm
 O. (*Incertae sedis*) *spec*.....Middle Lias, Bornholm

26. Newton, E. T., 1882, *The Vertebrata of the Forest Bed Series of Norfolk and Suffolk: Memoir of the Geological Survey of England and Wales*, London, 144 pp., 2 pls (N.Y.P.L.—PTB).

- O. (*Gadus*) *pollachius*
 O. (*Acerina*) *vulgaris*

27. Newton, E. T., 1889, *A Contribution to the History of Eocene Siluroid Fishes: Proc. Zool. Soc. London for 1869pl. 21*, (N.Y.P.L.—QGA; CRERAR).

- O. (*Arius*) *baroni*.....Recent, Madagascar
 O. (*Arius*) *crassus*.....upper Eocene, (Bartomien), England
 O. (*Arius*) *spec*..... upper Eocene, England

28. Newton, E. T., 1891, The Vertebrata of the Pliocene Deposits of Great Britain: Mem. Geol. Survey of England and Wales, London, 137 pp., 10 plds (N.Y.P.L.—PTB),

O. (<i>Gadus</i>) <i>elegans</i>	Pliocene, England
O. (<i>Gadus</i>) <i>luscus</i>	Pliocene, Pleistocene, England
O. (<i>Gadus</i>) <i>merlangus</i>	Pliocene, England
O. (<i>Gadus</i>) <i>minutes</i>	Pliocene, England
O. (<i>Gadus</i>) <i>pollachius</i>	Pliocene, England
O. (<i>Gadus</i>) <i>pseudaeglefinus</i>	Pliocene, England
O. (<i>Gadus</i>) <i>virens</i>	Pliocene, England
O. (<i>Acerina</i>) <i>vulgaris</i>	Pliocene, England

29. Posthumus, O., 1923, Bydrage tot de kennis der Tertiare Vischfauna van Nederland. Oligocene en Miocene Otolithen uit het Peelgebied en van Winterswyk: Verhard. Geol.-Mynbenwk. GENoot, voor Ned. En Kol., vol. 7, pp. 279-117, 1 pl. (CRERAR).

O. (<i>Clupea</i>) <i>testis</i>	Miocene, Germany
O. (<i>Clupea</i>) <i>priemi</i>upper Oligocene, middle Miocene, Germany
O. (<i>Fierasfer</i>) <i>muntius</i>upper Oligocene, middle Miocene, Germany
O. (<i>Gadus</i>) <i>elegans</i>	Oligocene, Miocene, Germany
O. (<i>Merlangus</i>) <i>cognatus</i>	Oligocene, Germany
O. (<i>Merluccius</i>) <i>emarginatus</i>	Miocene, Germany
O. (<i>Phycis</i>) <i>elongates</i>	Miocene, Germany
O. (<i>Mooius</i>) <i>elegans</i>	Miocene, Germany
O. (<i>Hymenocephalus</i>) <i>asymmetricus</i>	Miocene, Germany
O. (<i>Hymenocephalus</i>) <i>brinki</i>	Miocene, Germany
O. (<i>Hymenocephalus</i>) <i>dubius</i>	Miocene, Germany
O. (<i>Hymenocephalus</i>) <i>globosus</i>	Miocene, Germany
O. (<i>Jymenocephalus</i>) <i>medius</i>	Miocene, Germany
O. (<i>Hymenocephalus</i>) <i>ovalis</i>	Miocene, Germany
O. (<i>Macrurus</i>) <i>debilis</i>	Miocene, Germany
O. (<i>Macrurus</i>) <i>ellipticus</i>	middle Miocene, Germany
O. (<i>Macrurus</i>) <i>pusillus</i>	Miocene, Germany
O. (<i>Ophidiidarum</i>) <i>semiglobosus</i>	middle Miocene, Germany
O. (<i>Ophidiidarum</i>) <i>swalmensis</i>	middle Miocene, Germany
O. (<i>Centropristic</i>) <i>integer</i>	Miocene, Germany
O. (<i>Percidarum</i>) <i>acuminatus</i>	Miocene, Germany
O. (<i>Percidarum</i>) <i>frequens</i>	Miocene, Germany

O. (Percidarum) liesselensis.....Miocene, Germany

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Posthumus, O., 1923—Concluded.

- O. (Percidarum) limburgensis.....Miocene, Germany
- O. (Percidarum) plebejus.....Germany
- O. (Rhombus) rhenanus.....middle Miocene, Germany
- O. (Solea) approximatus.....middle Miocene, Germany
- O. (Sciaenidarum) staringi.....Miocene, Germany
- O. (Scopelus) austriacus.....
.....upper Oligocene, middle Oligocene, Germany
- O. (Scopelus) pulcher.....
.....upper Oligocene, middle Oligocene, Germany
- O. (Sercanus) noetligni.....Miocene, Germany
- O. (Dentex) nobilis.....Oligocene, Miocene, Germany
- O. (Gonostoma ?) angustus.....Oligocene, upper Germany
- O. (Gonostoma) fragilis.....middle Miocene, Germany
- O. (Gonostoma) parvulus.....
.....upper Oligocene, middle Oligocene, Germany
- O. (Trachinus) matabilis.....
.....upper Oligocene, middle Oligocene, Germany
- O. (Trigla) rhombicus.....Miocene, Germany
- O. (Trigla) rhombicus.....Miocene, Germany
- O. (Incertae sedis) mariae.....Miocene, Germany
- O. (Incertae sedis) peelensis.....Miocene, Germany

30. Priem, F., 1906, Sur les poissons fossils du Stampien
du Bassin parisien: Bull. Soc. Geol. France, ser.4,
vol. 6, pp. 196-205, 1 pl. (N.Y.P.L.—PTA; CRERAR).

- O. (Conger) papointi.....Eocene (Ypresian), Paris Basin
- O. (Berycidarus) boolei.....
.....Eocene (Lutetian), northern France
- O. (Hoplostethus) sauvagel.....Eocene, (Lutetian), France
- O. (Monocentris) lemoinei.....Eocene, northern France
- O. (Ophidiidarum) kokeni.....Eocene, Paris Basin
- O. (Percidarum) angustus.....
.....Eocene (Lutetian), Paris Basin
- O. (Percidarum) concavus
- O. (Percidarum) obtusus.....Eocene, Paris Basin
- O. (Scombridarum) lamberti.....
.....Oligocene (Stampien), northern France
- O. (Scopelus) orbicularis
- O. (Apogoninarum) boulei.....
.....Eocene (Lutetian), northern France
- O. (Apogoninarum) orbicularis

Priem, F., 1906—Concluded

- O. (Serranus) bourdati
- O. (Serranus) spec.....Eocene (Lutetien), Paris Basin
- O. (Arius) lerichei.....Eocene (Ypresien), northern France
- O. (Siluridarum) incertus.....
.....Eocene (Ypresien), northern France
- O. (Dentex) dubius.....Eocene (Lutetien), Paris Basin
- O. (Sparidarum) lemoinei.....Eocene, northern France
- O. (Sparidarum) sauragei.....Eocene (Lutetien), France
- O. (Trachinus) thevenini.....Eocene, Paris Basin

31. Priem, F., 1906, Sur les Otolithes des Poissons Eocenes du Bassin Parisien: Bull. Soc. Geol. France, ser. 4, vol. 6, pp. 265-280, 51 figs. (N.Y.P.L.—PTA; CRERAR).

- O. (Incertae sedis) spec.....Eocene, northern France

32. Priem, F., 1907, Rectifications de nomenclature: Revue Critique de Palaeozoologie, vol. 11, p. 268 (N.Y.P.L.—PXA; CRERAR).

- O. (Monocentric) lemoninei

33. Priem, F., 190, Etude des poissons fossils du Bassin Parisien: Publications des Annales de Paleontologie, 141 pp., 5 pls. (CRERAR).

- O. (Clupeidarum) neocomiensis.....Neocene, northern France
- O. (Gadidarum) moloti.....Paris Basin
- O. (Merluccius) balticus—(O. Moloti).....Paris Basin
- O. (Monocentris) integer.....Paris Basin
- O. (Monocentris) lemoinei.....
.....Paleocene (Iandenien), northern France
- O. (Arius) lerichei
- O. (Trachinus) bellevoeyei.....Paris Basin

34. Priem, F., 1911, Sur des Otolithes de Poissons fossils
des terrains tertiaires superieures de France: Bull.
Soc. Geol. France, ser. 4, vol. 11, pp. 39-40, 9 figs.
(N.Y.P.L.—PTA; CRERAR).

- O. (Berydidarum) bouryi.....Eocene (Barton), England
- O. (Berycidarum) incertus.....
.....Eocene (Lutetien, Paris Basin)
- O. (Hoplostethus) sauvagei.....Eocene
- O. (Nonocentris) bellovacinus.....(Lutetien), Paris Basin
- O. (Percidarum) concavus
- O. (Solea) cottreai.....
.....Miocene (Helvetien Inf.), southern France
- O. (Sciaenidarum) pyrenaicus.....
.....Miocene (Helvetien), southern France

35. Priem, F., 1911, Etude des poissons fossils du Bassin
Parisien (Supplement): Annales de Paleontologie,
pp. 1-44 (CRERAR).

- O. (Ophidiidarum) difformis.....Eocene, Paris Basin
- O. (Ophidiidarum) off. Kekeni.....
.....Eocene (Lutetien), Paris Basin
- O. (Ophidiidarum) regularis.....
.....Eocene (Lutetien), Paris Basin
- O. (Percidarum) acutus.....Eocene (Lutetien), Paris Basin
- O. (Percidarum) acutus.....Eocene (Lutetien), Paris Basin
- O. (Percidarum) aequalis, var. Burdigalensis.....
.....southern France
- O. (Percidarum) kokeni
- O. (Sciaena) ovatus var. Grossouvrei.....
.....Miocene, western France
- O. (Sciaena) pecchioli var. Cosmanni.....
.....Miocene (Helvetien), southern France
- O. (Sciaenidarum) corii var. Cosmanni
.....Miocene (Helvetien), southern France
- O. (Scopelus) austriacus (O. Pulcher). Pliocene, Corsica
- O. (Scopelus) orbicularis.....
.....Eocene (Ypresien), northern France
- O. (Scopelus) pulcher
- O. (Apogoninarum) orbicularis.....
.....Eocene (Ypresien), northern France
- O. (Serranus) bourdoti
- O. (Sparidarum) rutoti.....Eocene (Lutetien), Paris Basin
- O. (Trachinus) janeti..Eocene (Lutetien), Paris Basin
- O. (Trachinus) thevenini.....

36. Priem, F., 1913, Sur des Otolithes eocenes de France et d'Angleterre: Bul. Soc. France, ser. 4, vol. 12, pp. 246-250, 12 figs. (N.Y.P.L.—PTA; CRERAR).

O. (Percidarum) bartonensis.....Eocene, (Barton), England
O. (Percidarum) cottreani
O. (Percidarum) sp.....Eocene (Barton), England
O. (Scopelus) biarritziensis..Eocene (Barton),...
.....southern France

37. Priem, F., 1913, Sur des Otolithes de l'eocene du Contentin et de Bretagne: Bulletin de la societe geologique de France, ser. 4, vol. 12, pp. 151-158, 13 figs. (N.Y.P.L.—PTA; CRERAR).

O. (Hoplostethus) bambergi.....
.....Eocene (Lutetien), western France
O. (Ophidiidarum) kokeni
O. (Percidarum) acutus.....
.....Eocene (Lutetien), western France
O. (Percidarum) angustus.....
.....Eocene (Lutetien), western France
O. (Percidarum) concavus
O. (Percidarum) concavus
.....Eocene (Lutetien), western France
O. (Percidarum) cottraus.....
.....Eocene (Lutetien), western France
O. (Percidarum) kokeni.....
.....Eocene, Paris Basin and western France
O. (Serranus) bourdati.....
.....Eocene, Paris Basin and western France
O. (Sparidarum) elongatus.....
.....Eocene (Lutetien), western France
O. (Sparidarum) priemi (O. elongatus).....
.....Eocene (Lutetien), France
O. (Sparidarum) simplex.....
.....Eocene (Lutetien), western France

38. Prochazka, V. J., 1893, Das Miocan von Solowitz in Mahren und dessen Fauna: Sitz. Bohm. Franz-Joseph Akad. II, Jarhg. 1893, No. 24

The forms listed below are from the province indicated in Czecho-Slovakia.

- O. (Berycidarum) fragilis.....Miocene, Moravia
 O. (Berycidarum) insolectus.....Miocene, Moravia
 O. (Berycidarum) kokeni.....Miocene, Moravia
 O. (Berycidarum) moravicus.....Miocene, Bohemia
 O. (Berycidarum) pulcher.....Miocene, Moravia
 O. (Berycidarum) splendidus.....Miocene, Moravia
 O. (Scopelus) austriacus
 O. (Scopelus) kokeni
 O. (Scopelus) mediterraneus.....Miocene, Moravia
 O. (Scopelus) pulcher.....Miocene, Moravia
 O. (Scopelus) splendidus.....Miocene, Moravia
 O. (Gonostoma) fragilis.....Miocene, Moravia

39. Prochazda, V., J., 1893, Das Miocan von Kralie nachst Namest in Mahren: Sitz. Kon. bohm. Gesell. Wiss. Jahr. 1893, No. 16, 16 pp., 2 pls. (CRERAR).

- O. (Gadus) communis
 O. (Gobius) lepidus.....Miocene, Moravia
 O. (Hymenocephalus) labiatus.....Miocene, Moravia
 O. (Beryx) lunaburgensis (O. Bellus).....Miocene, Moravia
 O. (Gobius) intimus.....Miocene, Moravia
 O. (Gobius) praeolarus...
 O. (Gobius) pretiosus.....Miocene, Moravia
 O. (Gobius) vicinalis (O. Praeclarus).....Miocene, Moravia
 O. (Gobius) vicinalis (O. Lepidus).....Miocene, Moravia
 O. (Ophidiidarum) sinister.....Miocene, Moravia
 O. (Percidarum) opinatus.....Miocene, Bohemia
 O. (Serranus) insignis
 O. (Box) insignis
 O. (Smaris) elegans.....Miocene, Bohemia
 O. (Sparidarum) elegans.....Miocene, Bohemia
 O. (Incertae sedis) bellus.....Miocene, Moravia

40. Prochazka, V. J., 1900, Das Ostbohmische Miocan: Archiv f, naturwiss. Landesdurchforschung Bohmens, vol. 10, pt. 2, 172 pp. (CRERAR).

All forms listed are from the provinces indicated in Czecho-Slovakia.

- O. (Berycidarum) fragilis.....Miocene, Moravia
 O. (Berycidarum) kokeni.....Miocene, Moravia
 O. (Berycidarum) moravicus.....Miocene, Bohemia
 O. (Berycidarum) pulcher.....
 O. (Gobius) bohemicus.....Miocene, Bohemia
 O. (Gobius) elegans.....Miocene, Bohemia
 O. (Gobius) frici.....Miocene, Bohemia
 O. (Gobius) intemeis.....Miocene, Bohemia
 O. (Gobius) intemeis (O. Rudolticencis-Miocene, Bohemia
 O. (Gobius) praeclarus.....Miocene, Bohemia, Moravia
 O. (Gobius) pretiosus (O. Bohemicus)
 O. (Gobius) pretiosus (O. Frici)
 O. (Gobius) rudolticensis.....Miocene, Bohemia
 O. (Gobius) vicinalis.....Miocene, Bohemia
 O. (Scopelus) austriacus (O. Moravicus).....
Miocene, Moravia
 O. (Scopelus) kokeni.....Miocene, Moravia
 O. (Serranus) insignis.....Miocene, Moravia
 O. (Box?) insignis....Miocene, Moravia, Bohemia
 O. (Incertae sedis) formosus.....Miocene, Bohemia

41. Rutot, A., 1876, Description de la faune de l'Oligocene inferieur de Belgique (Terrain Tongrein inferieur de Dumont): Mem. Ann. Soc. Roy. \ool. Et malacol. Belgique, vol. 11, pp. 7-67, 4 pls. (N.Y.P.L.—AHN).

42. Rzehak, A., 1893, Die Fauna der Oncophora-Schichten Mahrens: Verhandl. Des naturforschenden Vereins in Brunn, vol. 31, Abhandlungen, pp. 142-193, 2 pls. (N.Y.P.L.—EE).

- O. (Berycidarum) pulcher.....Miocene, Moravia
 O. (Macrurus) kokeni.....Miocene, Moravia
 O. (Percidarum) applanatus.....Miocene, Moravia

O. (Percidarum) moguntinus.....Miocene, Moravia

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Rzehak, A., 1893—Concluded

O. (Scopelus) pulcher.....Miocene, Moravia
O. (Incertae sedis) crassirostris.....Miocene, Moravia
O. (Incertae sedis) curvirostris.....Miocene, Moravia
O. (Incertae sedis) solitarius).....Miocene, Moravia

43. Schubert, R. J., 1901, Die Fischotolithen des osterreichisch-ungarischen Tertiars; I. Die Sciaeniden: Jahr. Kaiserlich-koniglichen Geol. Reichsanstalt, Vienna, 1902, Vol. 51, pp. 301-316, 10 pls. (N.Y.P.L.—PTA; CRERAR).

O. (Corvina) cirrhosoides.....Miocene, Hungary
O. (Corvina) gibberulus- Miocene, Lower Austria, Moravia
O. (Corvina) spec.....Miocene, Moravia
O. (Pogonias?) depressus.....Miocene, Moravia
O. (Pogonias) gemmoides.....Miocene, Moravia
O. (Pogonias) kittli..... Miocene, Moravia
O. (Sciaena) angulatus.....
.....Pliocene, Lower Austria; Miocene, Hungary
O. (Sciaena) compactus.....Miocene, Upper Austria
O. (Sciaena?) excissus.....Pliocene, Lower Austria
O. (Sciaena) gracilis..... Miocene, Moravia
O. (Sciaena) irregularis.....
.....Pliocene, Austria; Miocene, Hungary
O. (Sciaena) irregularis var. angulata.....
.....Pliocene, Lower Austria
O. (Sciaena) kokeni.....
.....Pliocene, Lower Austria; Miocene, Hungary
O. (Sciaena) levis.....
.....Pliocene, Lower Austria; Miocene, Hungary
O. (Sciaena) pecchioli..... Miocene, Moravia
O. (Sciaena) pecchioli var. abrupt.....Miocene, Bohemia
O. (Sciaena) off. speciosus.....Miocene, Hungary
O. (Sciaena?) telleri.....Pliocene, Lower Austria
O. (Sciaena?) teller
O. (Sciaena?) teller.....
.....Pliocene, Lower Austria; Miocene, Hungary
O. Sciaena?) teller (O. off. speciosus).....
.....Miocene, Hungary
O. (Sciaenidarum) off. claybornensis.....
.....Pliocene, Lower Austria; Miocene, Hungary
O. (Sciaenidarum) corii..... Miocene, Moravia
O. (Sciaenidarum) corii var. abrupt.....Miocene, Bohemia

O. (*Sciaenidarum*) *corii* var. *simplex*..... Miocene, Moravia

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Schubert, R. J., 1901—Concluded

- O. (*Sciaenidarum*) *depressus*..... Miocene, Moravia
- O. (*Sciaenidarum*) *dubius*.....Miocene, Lower Austria
- O. (*Sciaenidarum*) *fuchsia*
- O. (*Sciaenidarum*) *gemmoides*..... Miocene, Moravia
- O. (*Sciaenidarum*) *gracilis*..... Miocene, Moravia
- O. (*Sciaenidarum*) *kittli*..... Miocene, Moravia
- O. (*Sciaenidarum*) *kokeni*.....Pliocene, lower Austria
- O. (*Sciaenidarum*) *subgemma*..... Miocene, Moravia
- O. (*Sciaenidarum*) *subsimilis*.....Hungary, Miocene, Moravia
- O. (*Sciaenidarum*) *subsimilis*.....
.....Lower Austria; Miocene, Hungary
- O. (*Umbrina*) *plenus*.....Pliocene, Lower Austria

44. Schubert, R. J., 1905, Die Fischotolithen des osterreichisch-ungarischen Tertiars; II. Macruriden und Beryciden: Jahrb. k.-k. geol. Reichsanst., Vienna, vol. 55, pp. 613-638, 2 pls. (N.Y.P.L.—PTA; CRERAR).

- O. (*Berycidarum*) *austriacus*.....Miocene, Austria, Czecho-Slovakia (Moravia and Bohemia), Hungary, Roumania (Transylvania), Yugo-Slovia (Bosnia)
- O. (*Berycidarum*) *fragilis*.....Miocene, Lower Austria
- O. (*Berycidarum*) *kokeni*.....Miocene, Austria, Czecho-Slovakia (Moravia and Bohemia), Hungary, Roumania (Transylvania)
- O. (*Berycidarum*) *major*.....Miocene, Hungary
- O. (*Berycidarum*) *mediterraneus*.....
.....Miocene, Lower Austria, Hungary
- O. (*Berycidarum*) *pulcher*.....Miocene, Lower Austria, Czecho-Slovakia (Bohemia), Hungary
- O. (*Berycidarum*) *splendidus*.....Miocene, Lower Austria
- O. (*Berycidarum*) *tenuis*.....Miocene, Lower Austria
- O. (*Hoplostethus*) *levis*..... Miocene, Moravia
- O. (*Hoplostethus*) *praemediterraneus*..... Miocene, Moravia
- O. (*Hymenocephalus*) *austriacus*.....Miocene, Hungary
- O. (*Hymenocephalus*) *labiatus*.....
.....Miocene, Lower Austria, Moravia
- O. (*Macrurus*) *angustus*.....Miocene, Hungary
- O. (*Macrurus*) *arthaberi*.....
.....Miocene, Lower Austria, Hungary
- O. (*Macrurus*) *crassus*.....Miocene, Hungary

O. (*Clupea*) *testis*.....Miocene, Lower Austria

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Schubert, R. J., 1906—Continued

- O. (*Cottidarum*) *sulcatoides*.....Miocene, Lower Austria
O. (*Fierasfer* ?) *boratschensis*.....Miocene, Moravia
O. (*Fierasfer*) *muntius*.....Miocene, Lower Austria
O. (*Fierasfer*) *posterus*.....Miocene, Lower Austria
O. (*Gadidarum*) *minusculus*.....
.....Miocene, Lower Austria, Hungary
O. (*Gadus*) *elegans*.....Miocene, Lower Austria, Moravia
O. (*Merluccius*) *praeesculentus*.....
.....Miocene, Lower Austria, Hungary
O. (*Phycis*) *tenuis*.....Miocene, Lower Austria, Hungary
O. (*Ranicys*) *latisulcatus* (var. *pansramensis*)
O. (*Crenilabris*) *simplexissimus*.....Miocene, Hungary
O. (*Gobius*) *elegans*
O. (*Gobius*) *entimus*.....Miocene, Lower Austria, Hungary
O. (*Gobius*) *pretiosus*.....Miocene, Lower Austria,
Hungary, Pliocene, Lower Austria
O. (*Gobius*) *teller*.....
Miocene, Lower Austria, Hungary; Pliocene, Italy
O. (*Gobius*) *vicinalis*.....Miocene, Lower Austria,
Czecho-Slovakia (Moravia), Hungary, Yugo-Slovia
(Carniola), Roumania (Transylvania).
O. (*Hymenocephalus*) *austriacus*
O. (*Hymenocephalus*) *labiatus*
O. (*Macrurus*) *angustus*
O. (*Macrurus*) *arthaberi*
O. (*Macrurus*) *crassus*
O. (*Macrurus*) *ellipticus*
O. (*Macrurus*) *elongatus*
O. (*Macrurus*) *gracilis*
O. (*Macrurus*) *hansfuchsi*
O. (*Macrurus*) *kokeni*
O. (*Macrurus*) *praetrachyrhynchus*
O. (*Macrurus*) *rotundatus*
O. (*Macrurus*) *loulai*
O. (*Macrurus*) *trolli*
O. (*Magil* ?) *dissimilar*.....Miocene, Lower Austria
O. (*Mugil*) *similis*.....Miocene, Lower Austria
O. (*Ophidiidarum*) *dimidiatus*.....
.....upper Eocene, (Basin), England
O. (*Ophiddidarum*) *occultoides*.....Miocene, Moravia
O. (*Centropristis*) *integer*.....Miocene, Lower Austria
O. (*Percidarum*) *applanatus*
O. (*Percidarum*) *arcuatus*.....Miocene, Moravia
O. (*Percidarum*) *maguntinus*

- O. (*Dentex*) *latior*.....Miocene, Lower Austria, Moravia
- O. (*Dentex*) *nobilis*.....Miocene, Lower Austria
- O. (*Dentex*) *pansramensis* (inc. sedis)

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- O. (*Dentex*) *subnobilis*.....
.....Miocene, Hungary; Pliocene, Lower Austria
- O. (*Pagellus*) *gragarius*.....;.....Miocene, Lower Austria
- O. (*Smris* ?) *elegans*.....Miocene, Lower Austria
- O. (*Sparidarum*) *voslauensis*.....Miocene, Lower Austria
- O. (*Sphyraena*) *hansfuchsi*.....Miocene, Lower Austria
- O. (*Gonostonia* ?) *fragilis*
- O. (*Trachinus*) *mutabilis*.....Miocene, Lower Austria
- O. (*Trigla*) *asperoides*.....Miocene, Lower Austria
- O. (*Trigla*) *rhombicus*.....Miocene, Lower Austria
- O. (*Brotulidarum*) *niederleisensis*.....
.....Miocene, Lower Austria
- O. (*Brotulidarum*) *pantanelli*.....
.....Miocene, Lower Austria, Moravia
- O. (*Brotulidarum*) *rzehaki*.....Miocene, Moravia
- O. (*Incertae sedis*) *crassirostris*
- O. (*Incertae sedis*) *curvirostris*
- O. (*Incertae sedis*) *lunaburgensis*.....Miocene, Moravia
- O. (*Incertae sedis*) *solitarius*

46. Schubert, R. J., 1908, Die Fischotolithen des Pausramer Mergels: Zeit. Mahr. Landesmuseums, Bunn, vol. 8, pp. 102-120, 1 pl. (CRERAR).

- O. (*Xenodermichtys* ?) *catulus*.....Miocene, Moravia
- O. (*Beryx*) *lunaburgensis*.....Miocene, Moravia
- O. (*Merluccius*) *emarginatus*.....Miocene, Moravia
- O. (*Raniceps*) *latisulcatus* var. *pausramensis*.....
.....Miocene, Moravia
- O. (*Macrurus*) *toulai*.....Miocene, Moravia
- O. (*Ophidiidarum*) *approximatoides*.....Miocene, Moravia
- O. (*Ophidiidarum*) *major*.....Miocene, Moravia
- O. (*Percidarum*) *opinatus*.....
- O. (*Pleuronectidarum*) *subrostratus*.....Miocene, Moravia
- O. (*Sciaenidarum* ?) *matoschi*.....Miocene, Moravia
- O. (*Scopelus*) *austriacus*.....Miocene, Moravia
- O. (*Arius*) *moravicus*.....Miocene, Moravia
- O. (*Dentex*) *pausramensis*.....Miocene, Moravia
- O. (*Gonostoma* ?) *subdenudatus*.....Miocene, Moravia
- O. (*Sternoptychidarum*) *polzi*.....Miocene, Moravia
- O. (*Trigla*) *rhombicus*.....Miocene, Moravia

- O. (Brotulidarum) rzehaki.....Miocene, Moravia
- O. (Incertae sedis) mariae.....Miocene, Moravia
- O. (Incertae sedis) minor.....Miocene, Moravia

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47. Schubert, R. J., 1910, Ueber Foraminiferen und einen Fischotolithen aus, dem fossilen Globigerinenschlamm Von neu-Guinea: Verh. K.-k. geol. Reichsanstalt, pp. 318-328, 3 figs. (N.Y.P.L.—PTB; CRERAR).

- O. (Scopelus) papuensis.....Tertiary, New Guinea

48. Schubert, R. J., 1912, Die Fischfauna des Schliermergels von Bingia Fargerri bei Fangario in Sardinien: Verh. k.-k. geol. Reichsanstalt, pp. 160-165, 3 figs. (N.Y.P.L.—PTB; CRERAR).

- O. (Xenodermichtys ?) catulus.....Miocene, Sardinia
- O. (Hoplostethus) ingens.....Miocene, Sardinia
- O. (Hoplostethus) praemediterraneus.....Miocene, Sardinia
- O. (Cepola) prae-rubescens.....Miocene, Hungary
- O. (Cepola) vadaszi.....Miocene, Hungary
- O. (Gadidarum) minusculus.....Miocene, Hungary
- O. (Gobius) intencus.....Miocene, Sardinia
- O. (Gobius) teller.....Miocene, Hungary
- O. (Macrurus) gracilis.....Miocene, Sardinia
- O. (Ophidiidarum) major.....Miocene, Sardinia
- O. (Pleuronectidarum ?) fangariensis.....Miocene, Sardinia
- O. (Pleuronectus) acuminatus.....Miocene, Sardinia
- O. (Scopelus) austriacus.....Miocene, Sardinia
- O. (Scopelus) mediterraneus.....Miocene, Sardinia
- O. (Scopelus) tenuis.....Miocene, Sardinia
- O. (Dentex) latior.....Miocene, Sardinia
- O. (Dentex) spononatus.....Miocene, Sardinia
- O. (Sparidarum) mutinensis.....Miocene, Sardinia
- O. (Brotulidarum) pantanelli.....Miocene, Sardinia
- O. (Incertae sedis) lovisatoi.....Miocene, Hungary

49. Schubert, R. J., 1912, Die Fischotolithen der Ungarischen Tertiaablagerungen: Mitteil. Aus des Jahrb. K. Ungar. Geol. Reichsanstalt, Budapest, vol. 20, pp. 117-139 20 figs. (N.Y.P.L.—PTB; CRERAR).

- O. (Xenodermichtys ?) catulus.....Miocene, Hungary
- O. (Hoplostethus) lawleyi.....Miocene, Hungary
- O. (Hoplostethus) praemediterraneus.....Miocene, Hungary

- O. (*Gadus*) *elegans*.....Miocene, Hungary
- O. (*Gadus*) *minusculoides*.....Miocene, Hungary
- O. (*Crenilabris*) *simplicissimus*

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- O. (*Gobius*) *intimus*.....Miocene, Hungry
- O. (*Gobius*) *pretiosus*.....Miocene, Hungary
- O. (*Gobius*) *vicinalis*.....Miocene, Hungary
- O. (*Hymenocephalus*) *austriacus*.....Miocene, Hungary
- O. (*Hymenocephalus*) *labiatus*.....Miocene, Hungary
- O. (*Macrurus*) *angustus*.....Miocene, Hungary
- O. (*Macrurus*) *arthaberi*.....Miocene, Hungary
- O. (*Macrurus*) *crassus*.....Miocene, Hungary
- O. (*Macrurus*) *ellipticus*.....Miocene, Hungary
- O. (*Macrurus*) *elongatus*.....Miocene, Hungary
- O. (*Macrurus*) *hansfuchsi*.....Miocene, Hungary
- O. (*Monocentris*) *ortus*.....Miocene, Hungary
- O. (*Mugilidarum*) *kornyensis*.....Miocene, Hungary
- O. (*Percidarum*) *arcuatus*.....Miocene, Hungary
- O. (*Percidarum*) *hungaricus*.....Older Tertiary, Hungary
- O. (*Percidarum*) *kosdensis*.....Tertiary, Hungary
- O. (*Percidarum*) *ocsensis*.....Tertiary, Hungary
- O. (*Pleuronectidarum*) *hunyadensis*.....Miocene, Hungary
- O. (*Pleuronectus*) *acuminatus*.....Miocene, Hungary
- O. (*Solea*) *tenuis*
- O. (*Corvina*) *gibberulus*.....Miocene, Hungry
- O. (*Corvina*) *cirrhosoides*.....Miocene, Hungary
- O. (*Pogonias* ?) *depressus*.....Miocene, Hungary
- O. (*Pogonias* ?) *gemmoides*.....Miocene, Hungary
- O. (*Sciaena*) *pecchioli*.....Miocene, Hungary
- O. (*Sciaena*) *teller*.....Miocene, Hungary
- O. (*Sciaenidarum*) *schuberti*
- O. (*Sciaenidarum*) *subsimilis*.....Miocene, Hungary
- O. (*Scopelus*) *austriacus*.....Miocene, Hungary
- O. (*Scopelus*) *kokeni*.....Miocene, Hungary
- O. (*Scopelus*) *mediterraneus*.....Miocene, Hungary
- O. (*Scopelus*) *mediterraneus* var. *gracilis*.....
.....Miocene, Hungary
- O. (*Scopelus*) *tenuis*.....Miocene, Hungary
- O. (*Scopelus*) n. sp.?.....Miocene, Hungary
- O. (*Apogon* ?) *ribicensis*.....Miocene, Hungary
- O. (*Box* ?) *insignis*.....Miocene, Hungary
- O. (*Chrysophrys*) *doderleini*.....Miocene, Hungary
- O. (*Dentex*) *nobilis*.....Miocene, Hungary
- O. (*Dentex*) *subnobilis*.....Miocene, Hungary
- O. (*Pogellus*) *gregarius*.....Miocene, Hungary
- O. (*Smaris* ?) *elegans*.....Miocene, Hungary
- O. (*Sparidarum*) *pomaszensis*.....Miocene, Hungary
- O. (*Brotulidarum*) *rzhaki*.....Miocene, Hungary

- O. (Incertae sedis) austriacus.....Miocene, Hungary
- O. (Incertae sedis) hynyadensis.....Miocene, Hungary
- O. (Incertae sedis) lapugyensis.....Miocene, Hungary

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50. Schubert, R. J., 1916, Oberocane Otolithen von Barton-Cliff bei Christchurch (Hampshire): Jahrb. k.-k. Geol. Reichsanstalt, Vienna, vol. 65, pp. 277-289, 1 pl. (N.Y.P.L.—PTA; CRERAR).

- O. (Berycidarum) bouryi.....Eocene, (Barton), England
- O. (Beryx) bartonensis.....upper Eocene (Barton), England
- O. (merluccius) shepherdii.....
.....upper Eocene (Barton), England
- O. (Monocentris) bellovacinus.....
.....upper Eocene (Barton), England
- O. (Monocentris) lerichei.....
.....upper Eocene (Barton), England
- O. (Ophidiidarum) subregularis.....
..... upper Eocene (Barton), England
- O. (Ophidiidarum) weltoni.....
..... upper Eocene (Barton), England
- O. (Percidarum) bartonensis
- O. (Sciaenidarum) priemi.....upper Eocene, England
- O. (Arius) crassus..... upper Eocene (Barton), England
- O. (Arius) newtoni 1..... upper Eocene (Barton), England
- O. (Arius) parvas..... upper Eocene (Barton), England
- O. (Pagellus) gregarious..... upper Eocene (Barton), England
- O. (Trachinus) janeti..... upper Eocene (Barton), England
- O. (Brotulidarum) rzehaki.....
..... upper Eocene (Barton), England

51. Sismonda, E., 1849, Descrizione dei pesci e dei crostacei Fossili nel Piemonte: Mem. Reale Accad. Sci. Torino, ser. 2, vol. 10, pls. 1, 2: Otolithen, pp. 53-54, pl. 2, figs. 60-71 (N.Y.P.L.—ER; CRERAR).

- O. (Berycidarum) major

52. Stolley, E., 1910, Ueber mesozoische Fischotolithen aus Norddeutschland: Dritter Jahresbericht des Niedersächsischen Geologischen Vereins, Hanover, pp. 246-258, pl. 7 (CRERAR).

- O. (Incertae sedis) ahlumensis
- O. (Incertae sedis) bornkolmiensis
- O. (Incertae sedis) neocomiensis

- O. (Incertae sedis) trigonalis
- O. (Incertae sedis) spec.

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53. Stolley, E., 1912, Ergänzende Bemerkungen zu dem Aufsatz über mesozoische Fischotolithen: Fünfter Jahresbericht des Niedersächsischen geologischen Vereins, pp. 21-23, (CRERAR).

- O. (Incertae sedis) ahlumensis

54. Toulou, F., 1899, Ueber den marinen Tegel von Neudorf an der March (Deveny-Ujfalu) in Ungarn: Verhandl. Des Vereins für Natur- und Heilkunde zu Pressburg, N.F., vol. 11, Jahrg. 1899, pp. 1-30, 14 figs.

- O. (Xenodermichtys ?) cotulus..younger Tertiary, Panama
- O. (Macrurus) kokeni
- O. (Macrurus) toulou (O. kokeni)

55. Toulou, F., 1909, Eine Jungtertiäre Fauna von Gatun am Panamakanal: Jahrb. K.-k. geol. Reichsanstalt, Vienna, vol. 58, pp. 673-760, 4 pls. (N.Y.P.L.—PTA; CRERAR).

- O. (Gobius) gatunensis.....younger Tertiary, Panama
- O. (Gobius) vicinalis....younger Tertiary, Panama
- O. (Macrurus) gatunensis...younger Tertiary, Panama
- O. (Eques) gatunensis....younger Tertiary, Panama

56. Wollemin, A., 1903, Die Fauna des mittleren Gaults von Algermissen: Jahrb. königl. Preussischen Geol. Landesanstalt f. 1903, Berlin, vol. 14, pp. 22-43, 2 pls. (N.Y.P.L.—PTA; CRERAR).

- O. (Sparidarum) correa....middle Gault, north Germany

57. Woodward, A. S., 1889, Catalogue of the fossil Fishes in the British Museum, London, pt. 1, 464 pp., 27 pls. (N.Y.P.L.—PXW; CRERAR).

- O. (Arius) crassus