The population of the Caucasus, which in 1858 was only 4,526,-000, had in 1880 risen to 5,870,000, the immigration of Cossacks and Russian peasants more than counterbalancing the emigration, while all districts have a regular excess of births over deaths. The Russian element is now in excess of any other, consisting of 1,410,-000, while the Georgians are but 1,150,000 in number, and the Lesghiens and mountaineers have diminished since 1858 from 1,400,-000 to 1,050,000.

Lukoma, the principal island in Lake Nyassa, though only four and a half miles long and two and a half wide, contains 2,500 inhabitants. Ula, or witchcraft, of the kind described with much graphic force by Mr. Rider Haggard in one of his earlier works, prevails and is a great curse in the island.

Herr Aug. Fitzau (*Deutsche Geographische Blatter*) gives an account of the West African seaboard between Morocco and the Senegal. Though Arabic is the prevalent language, he believes that the old Hamitic or Berber is still the chief ethnic element. The writer describes in detail the coast between Agadir and St. Louis.

Count Teleki has ascended Mt. Kenia to a height of 15,000 feet, and believes its elevation to be greater than that of Kilima-njaro. Corrections made by Dr. H. Heyer himself in the barometrical observations taken during his ascent of Kilima-njaro prove that he did not reach within 820 feet of the summit of the mountain.

Petermann's *Mitteilungen* (Part 5) gives an account of a partial exploration of the small and little-known group of the Nanusa Islands, seven in number, and situated in 4.35 N. Lat., and 127.5 E. Long. Only three of the islets—Karaton, Mengampit, and Onrata—are inhabited, and the total population is about 1,000. All the islands are girt by reefs, and the only good anchorage is on the east side of Karaton. Mengampit has a hill, 800 feet high, in its centre, and is well wooded, but Karaton is flat.

GEOLOGY AND PALÆONTOLOGY.

THE EXTINCT SCLERODERMS.—By reason of the deviation from copy of the note on "Some Extinct Scleroderms" in the AMERICAN NATURALIST for May, 1888, p. 448, it might be inferred that there were more extinct genera of Balistids than are really known. The genera are (1) *Balistomorphus* Gill (=*Acanthoderma* Ag. 1843, not Cantraine 1835) and (2) *Bucklandium* Koenig (=*Glyptocephalus* Ag. 1843, *fide* Pictet, not Gottsche 1835).

The part of Professor Zittel's valuable "Handbuch der Palæontologie" (III. Band, 2. Lief.) describing the Teleost fishes, has recently appeared. The correlation between the morphology and systematic relations of existing and extinct fishes has been obscured and sometimes contradicted by the adoption of the very misleading and unscientific classification of Günther. The anachronistic idea that there is near relationship between Plectognath and Ganoid, fishes is consequently likewise still adhered to.[1] This idea has been so thoroughly exploded by several writers and its fundamental error is so obvious to any one who considers the evidence and compares the structural characteristics of the various types, that surprise must be felt that so intelligent a palæontologist as Professor Zittel clings to it. There can be little, if any, doubt to any competent observer who compares the skeletons and other parts of Scleroderm fishes with the Teuthidids and Siganids that the views of Dareste, Cope and others are correct, that the Scleroderms have originated from the same stock as the Teuthidids, and that consequently they are removed further than most fishes, and further even than the related Teuthidoidea, from the Ganoids. The genus *Protobalistum* is adopted by Professor Zittel with the expanded limits recently assigned to it by Baron de Zigno. To those who adopt Dr. Günther's views of the classificatory value of characters, the demonstration of the erroneous association of the forms embraced under the genus is easy. The relative size of the spinous and soft portions of the dorsal furniture are regarded by Dr. Günther as of *more than family* value, as in the case of his *Acanthopterygii perciformes, A. cotto-scombriformes, and A. blenniiformes.* Now, just such differences as have been used to separate those groups are found between the two fishes referred to the genus *Protobalistum* by Baron de Zigno and Professor Zittel. The *P. imperiale* has the spinous dorsal *much longer* than the soft, while the *P. Omboni* has the spinous dorsal *much shorter* than the soft. Therefore the differentiation of the two species not only generically but as family types follows. It is not even certain that the typical *Protobalistum* is a true Scleroderm.

The diagnostic characters of the several families of Scleroderms are as follows :—

PROTOBALISTIDÆ.—Scleroderms[2] with the spinous dorsal very elongated and composed mostly of long spines separated by consid-

[1] "Diese.....Fische zeichnen sich besonders durch ihre eigenthümliche, bald aus harten rhomboidischen Schuppen, bald aus knöchernen Schildern, Stacheln oder Platten bestehende Hautbedeckung, sowie durch die innige Verwachsung der meisten Kopfknochen aus. Agassiz rechnete sie noch zu den Ganoiden, mit denen sie in der That mancherlei Uebereinstimmung aufweisen." Zittel, op. cit., p. 257.

[2] It is possible that the Protobalistids may prove to be not Scleroderms but Acanthopterygians.

erable intervals, the soft dorsal short, and with ventrals atrophied or represented by weak spines.[1]

TRIACANTHIDÆ.—Scleroderms with the spinous dorsal very short and composed of a stout anterior spine and several approximated weak ones behind it, the soft dorsal oblong, and with ventrals represented by stout spines, and with or without weak axillar rays.

BALISTIDÆ.—Scleroderms with the spinous dorsal very short, being represented (1) by a stout spine with which a weaker posterior spine interlocks in erection (and often a third spine exists), or (2) by only a single slender spine; the soft dorsal long or oblong, and the ventrals wanting.

These characters are supplemented by important osteological ones for the last two at least.

The family Triacanthidæ was represented in the eocene seas of Europe by the genera *Acanthopleurus* (Ag.) and *Protacanthodes* (Gill). The affinity of the former to *Triacanthus* was remarked as long ago as 1859 by von Rath (*Zeitschr. deutsch. Geol. Ges.*, V. ii., pp. 130–132).

Other genera referred to the sub-order of Scleroderms (*e.g.*, *Blochius*, *Dercetis*, *Styracodus*, *Chilodus*, *Cœlorhynchus*, *Ancistrodon*) are quite remote from it.—*Theo. Gill.*

SECOND NOTE UPON ROMANOVSKY'S MATERIALEN ZUR GEOLOGIE VON TURKESTAN.—In the Tertiary, as in the Cretaceous, the absence of fossils renders it almost impossible to mark off stages, and even precludes the exact determination of the base of the group. It would appear that the continuity is complete, and that Eocene, Oligocene, Miocene, and Pliocene are all represented. The Nummilitic has been met with only upon the borders of the Aral Sea, where it is overlaid by the sandstones, clays, and limestones belonging to the Oligocene, which are surmounted by the Miocene limestones, and by the argillaceous beds of the Sarmatic stage; these last form the upper layer of the plateau of Ust-Urt. Conglomerates, which form heavy beds in the mountains, are gradually replaced by rocks of finer grain as the distance from their feet increases. The Cretaceous strata of Turkestan contain important beds of phosphorite (mouth of the Syr-Daria), of gypsum (Tian-shan, Pamir), petroleum (Fergana), and sulphur (basin of the Amou-Daria); and the Tertiary has intercalations of salt and gypsum (Sangar, Samarcand), the thickness of which diminishes gradually towards the west.

The history of Turan during the recent geological periods has many features in common with that of the rest of Central Asia, and especially with that of Afghanistan. After the continental

[1] See de Zigno, p. 4; Am. Nat., 1888, p. 447, note.