Cherry County, an area of about 126,000 acres. It is the intention to plant pines upon the hills and deciduous trees in the valleys, hoping thus to prove the possibility of foresting the sandhills and to induce private parties following its lead to aid the government in the work of reclaiming this region. The writer believes that here is a unique opportunity to study the development of a forest fauna from the beginning. These planted forests are by far greater in area than any forests ever planted before, and in them will be seen the gradual evolution of forest conditions, and, it may be assumed, the gradual development of a forest fauna, where absolutely no trace of such a fauna is to be found at the present time. The question suggests itself at once as to the possible origin of this fauna. Will it be derived from the pine-clad canyons of the north and west or will it come from the deciduous timber of the south and east? Will the pine growth receive its fauna from one direction and the deciduous forest in the valleys its from the other? If so, what will be the ultimate result? What will be the order of appearance of these forms and what will be the possible succession of dominant types which may exist one after the other in the evolution of this fauna from year to year? These are only a part of the problems that present themselves, the working out of which will be the labor of many years. During the past three years the author has been studying all of the conditions as they now exist in order to thoroughly familiarize himself with the ground, that the investigation may be followed through intelligently from the very beginning. How soon results may be attained and how important they will be the future must disclose.

Bound up in the study of the sandhill region and its fauna, though not directly connected with the investigation above outlined, is another problem which the author is also studying at the same time. In this region are many bodies of water differing in size, from mere pools to lakes even four or five miles in length, most of them fed from subterranean streams and with no outlet, lying in pockets between the hills. These vary from those containing the most beautifully clear, limpid, sweet water, full of animal and vegetable life, to those so strongly alkaline as to be incapable of supporting more than a limited fauna and flora and that made up of a very few species. The study of the distribution of life in lakes so widely different in chemical composition of the water, but in every other respect absolutely similar, promises extremely interesting results, not the least important of which will be the possible variation of the same species under these varying degrees of alkalinity.

It is three years since these investigations were begun. The first of these years was spent in a general survey of the region and in mapping the largest group of lakes, the second and third in a more critical study of lake conditions, the collecting of material, and the securing of a series of photographs. The work is to be continued during the present summer by the taking of water samples from as many lakes as possible for chemical analysis, by further study of the conditions in the lakes themselves and of the biological conditions in the region as a whole, and in the securing of additional photographs to illustrate them. The investigation is being carried on very largely at private expense, since there is no fund available in the state for the purpose; but the intention is to spend as much time as possible each year in the field, results being published from time to time as they may become complete so far as any given problem is concerned, or whenever the progress of investigation makes it possible to present definite results.

ROBERT H. WOLCOTT.
ZOOLOGICAL LABORATORY,
THE UNIVERSITY OF NEBRASKA.

THE MAILED CATFISHES OF SOUTH AMERICA.

IN the *Transactions* of the Zoological Society of London, Volume XVII., Part III., October, 1904, C. Tate Regan publishes a 'Monograph of the Fishes of the Family Loricariidæ.' The Loricariidæ are one of the families of Ostariophysi. They are found only in the rivers of South America, ranging from Panama to Montevideo. As understood by Regan the Loricariidæ are equivalent to the Loricariidæ and Argiidæ of Eigenmann.

They are characterized by their reduced maxillary, the absent symplectic and subopercu-lum, the union of supraoccipital and parietals to form a single parieto-occipital bone, the absence of parapophyses, the sessile ribs and the compressed caudal vertebræ. All but the Argiinæ are covered, in part at least, by bony plates.

Mr. Regan's paper is based on the material in the British Museum and the Paris Museums and the types in the Harvard collections. A total of 189 species are recognized, thirty-four of which are described as new.

The genera and sometimes the species are found widely distributed; two of the genera, *Chætostomus* and *Arges,* are confined to the Andes of Peru. A table gives the known geographical distribution of all the species. In this table the following systems are considered as units: (1) Western coast-streams of Peru and Ecuador; (2) Rio Magdalena system (with Panama); (3) Venezuela and Guiana; (4) Upper Amazon (the Amazon and its tributaries above its junction with the Yapura); (5) middle and lower Amazon; (6) Rio Paranahyba and Rio San Francisco and their tributaries, and smaller coast streams in their neighborhood; (7) Rio Parahyba, Rio Grande do Sul and other coast streams of southeastern Brazil; (8) Rio de La Plata and its tributaries.

Little need be said of this classification except that it has long been known that Rio Grande do Sul should be classed with the Rio de La Plata and that the coast streams from Rio de Janeiro to Bahia form a natural unit distinct from the rivers to the north or south. About fifty genera that are found both in the Amazon on the north and the La Plata on the south are absent from this area. The Rio Paranahyba should probably be classed with the Lower Amazon. The Pacific slope of Panama should be classed with western Peru and Ecuador. The number of species in these systems is, respectively, 15, 18, 35, 64, 42, 17, 29, 32. Approximately one third of all the species are found in the upper Amazon, while but half as many are found in the vast La Plata Basin.

Brief chapters on sexual differences and changes during growth introduce the systematic portion of the paper. The systematic paper makes a distinct advance over the last revision of this family by Eigenmann and Eigenmann* in so far as Regan takes into consideration the details of the skeleton of the various groups, and inasmuch as he had a much more abundant material, especially of the species grouped by Eigenmann under the generic names *Hemiancistrus* and *Chætostomus.*

Considerable difference exists between the two papers on account of the estimate placed on the importance of some characters. Regan accepts fewer genera.

For museum purposes and for purposes of general classification larger genera and fewer names are preferable, but for all more intimate discussions of variation, geographical distribution and genetic origin of faunas smaller units are vastly preferable. Regan's species are also museum species with little recognition of the biological significance of varieties. For instance, Eigenmann and Eigenmann accepted the *Plecostomus affinis* of Steindachner as a variety of *commersoni* (not of Val.) = *punctatus.* The parent, or type form, is from Rio Janeiro, Santa Cruz, Macacos, Itabapuana, Rio Parahyba, the variety *affinis* from Rio Janeiro, Mendez, the rios Mucuri, Parahyba, Muriahe, Doce and San Antonio. The variety *affinis* is more abundant than *punctatus,* 'over 50 specimens having been examined ranging from .13–.26 m.' A second variety was described, three specimens .30–.35 m., from São Matheos. Of these varieties Regan says:

> These varieties [based in one case on over fifty specimens] scarcely seem worth recognition; in all young specimens the spots are large and the lower surface of the head and abdomen partially naked, and the persistence of these features in the adult must be regarded as cases of individual variation only.

Of *Plecostomus lima atropinnis* Regan says: Eigenmann has given the name *P. lima atropinnis* to a specimen (presumably of this species) from Goyaz, with the fins uniformly

* 'A Revision of the South American Nematognathi,' Occasional papers, Cal. Acad. Sci., I., pp. 1–508, 1890.

dark brown." Regan considers this variety distinct from *lima* and names it *garmani*. Of course, if the variety *atropinnis* is distinct from the parent form it must go by the older name *atropinnis* and not *garmani*.

Eigenmann's genus, *Loricaria*, is divided as follows:

I. Teeth in the jaws in small or moderate number, not setiform; a more or less distinct orbital notch.

a. Snout rounded or pointed, not or not much, produced ..... *Loricaria*.

aa. Snout produced with a long rostrum, *Hemiodontichthys*.

II. Teeth in the jaws numerous, setiform; orbit circular, without distinct notch.

b. Dorsal opposite to the ventrals. *Oxyloricaria*.

Admitting that group I. is distinct from group II. there is no reason why the second group should not also be divided as group I. is, and, indeed, Regan does divide it as follows, but does not use generic or subgeneric names to designate the divisions:

b. Snout rounded or pointed, not produced as a rostrum.

bb. Snout produced, forming a distinct rostrum; sides of the head in the male, margined with bristles.

The group under *b* contains the type of Steindachner's genus *Harttia;* the second is the *Sturisoma* of Swainson.

The *Hemiodontichthys* of Regan contains two distinct generic types, the one with the snout expanded at the tip (the *Hemiodontichthys* of Bleeker), and the other with the snout simply pointed (the *Hemiodon* of Bleeker). *Hemiodon* being preoccupied, this genus may be termed *Reganella,* in recognition of this author's invaluable services in reviewing the group.

Arranging the respective genera or subgenera as far as possible opposite each other, a comparison of the results of Eigenmann in 1890 and of Regan in 1904 gives us the following.

Unfortunately there is nowhere in the paper any indication what species were used as the types of old or of new genera to help future reviewers and similarly there is nowhere with the synonymy and bibliography any indication

Families and Subfamilies. Genera. Subgenera.	No. of Species.	Families and Subfamilies. Genera. Subgenera.	No. of Species.
Argiidæ.		Argiinæ.	
Arges,	4	*Arges,*	19
Cyclopium,	2		
Astroblepus,	1	*Astroblepus,*	1
Loricariidæ.		Loricariidæ.	
Loricariinæ.		Loricariinæ.	
Farlowella,	6	*Farlowella,*	7
Hemiodontichthys,	1	*Hemiodontichthys,*	2
Loricaria,	30	*Loricaria,*	40
Hartia,	1	*Oxyloricaria*	10
Oxyropsis,	1		
Hypoptopominæ.		Hypoptopomatinæ.	
Hypoptopoma,	3	*Hypoptopoma,*	6
Hisonotus,	1		
Parotocinclus,	1		
Otocinclus,	2	*Otocinclus,*	9
Plecostominæ.			
Microlepidogaster,	1		
		Neoplecostominæ.	
Neoplecostomus,	2	*Neoplecostomus,*	1
		Plecostominæ.	
Plecostomus,	24	*Plecostomus* (*Plecostomus* 21) (*Pogonopoma* 3) (*Rhinelepis* 2)	26
Rhinelepis,	4		
Cochliodon,	1	*Panaque,*	4
Panaque,	3		
		Pseudacanthicus	31
		Ancistrus,	
Hemiancistrus,	18	(*Lasiancistrus* 4)	
Pterygoplichthys,	8	(*Ancistrus* 18)	
Parancistrus,	3	(*Parancistrus* 3)	
Pseudancistrus,	5	(*Pseudancistrus* 6)	
Delturus,	2		
Hemipsilichthys,	1	*Hemipsilichthys,*	1
Acanthicus,	2	*Acanthicus,*	1
Chætostomus,	20	*Chætostomus,*	15
Ancistrus,	8	*Xenocara,*	12
Total,	155		189

of the locality from which species were recorded to help future students of geographical distribution.

The rules of nomenclature adopted differ in principle from American usage. The first species, the well-known *Plecostomus plecostomus* Linnæus, appears by the later name, *P. guacari* Lacépède. *Cochliodon* Kner is rejected apparently on account of the use of *Cochlodon* D'Orbigny, while *Trichomycterus* is used, although it is a misspelling merely of *Thrichomycterus,* which is another genus. *Cyclopium* Swainson is rejected because 'his generic name, being derived from the genitive plural of *Cyclops,* is as inadmissible as would be that of *Silurorum.*' *Oxyloricaria* is used because the older *Sturisoma* is a 'nomen hybridum.' The writer would be very glad to be able to take back and make over the inelegant, barbarous or otherwise objectionable names he has inflicted upon respectable fishes, but, with his American confreres, he abides by the rule, both for himself and for others, that a name is a name no matter by whom conferred or however wonderfully made. How

dangerous it is to deviate from this rule is made evident by the fact that no less a classical scholar than Regan himself has mistaken the neuter adjective *Cyclopium* for the genitive plural of *Cyclops*. If, as Regan thinks, *Cyclopium* is not generically distinguishable from *Arges*, all the species should go by the older name *Cyclopium*.

The reason for shifting the name *Ancistrus* from *cirrhosus* as the type are not apparent and should have been distinctly stated. The name *Ancistrus* was proposed by Kner (Hypostomiden 272, 1853) for the following described species and one of them must be considered the type:

(*a*) Brachypteri: (1) *cirrhosus*, (2) *dolichopteri*, (3) *gymnorhynchus*, (4) *mystacinus*, (5) *pictus*, (6) *brachyurus*, (7) *scaphirhynchus*. To these described species Kner adds *medians* and *itacua*. Of *mystacinus* he says: "Diese Art scheint dem *Hyp. guacharote* Val. sehr nahe zu stehen, doch lässt sich bei der Ungenauigkeit der Beschreibung des letzten über die etwaige Gleichartigkeit beider nich sicher entscheiden."

(*b*) Macropteri: (1) *duodecimalis*, (2) *longimanus*, (3) *gibbiceps*, (4) *litturatus*.

It is to be emphasized that *guacharote* was known to him only from a description, considered too general for specific distinctions.

Gill ('Synopsis of the Freshwater Fishes of the Island of Trinidad,' 47) amended the genus *Ancistrus* by separating the species of group (*b*) under the new name *Pterygoplichthys*, saying: "The genus *Ancistrus* seems to have been framed with especial regard to those fishes to which the name is here restricted, and is by Dr. Kner divided into two sections, which correspond to *Ancistrus* and *Pterygoplichthys*, his section '*a*' answering to the former genus, and '*b*' to the latter." A more definite restriction to the species described by Kner could not be desired. The *Ancistrus* of Gill is identical with section '*a*' of the *Ancistrus* of Kner. Gill described some specimens from Trinidad as *Ancistrus guacharote* Val. This is the first formal introduction of *guacharote* to the genus *Ancistrus*. But Günther later maintained that the *guacharote* of Gill is not that of Valenciennes and named the former *trinitatis*. Regan has been unable to decide whether *trinitatis* is distinct from *guacharote* or not; nevertheless, it appears that on the fact that Gill described *guacharote* Regan has selected the latter as the type of the genus *Ancistrus*. Gill did not formally select *guacharote* as type, and if any inference is permitted it must certainly be that the first species described by Kner, *cirrhosus*, is the type—certainly not the *guacharote* or *trinitatis*, which was unknown to Kner. However, neither Kner nor Gill specifically indicated a type. Bleeker* formally selected *cirrhosus* as the type, and there seems to be no reason why *cirrhosus* should be placed anywhere than in the genus *Ancistrus*. Nevertheless, this species is placed in a new genus, *Xenocara*. *Guacharote*, on the other hand, is placed in the genus *Ancistrus*, and strange enough in a new subgenus, *Lasiancistrus*. There may be reasons for the ruling in these premises but they are not evident from a perusal of the paper. Regan's name *Xenocara* may be retained for those of the Ancistroids without tentacles.

Regan's monograph is so welcome a contribution and so enthusiastically conceived and executed that it is ungracious to differ with the author in the minor points indicated.

C. H. EIGENMANN.

CURRENT NOTES ON METEOROLOGY.

KITE-FLYING AT SEA: RECENT RESULTS.

THE results obtained by means of kite-flights from the Prince of Monaco's yacht during the summer of 1904 are discussed by Professor Hergesell in the *Comptes rendus*, Vol. CXL., p. 331. Twenty-five ascents were made, eight in the Mediterranean, one in the Baltic and sixteen in the Atlantic. In the region of the trades the adiabatic gradient, of 1° in 100 meters, is always found in the lowest strata, and is even exceeded, the thickness of this stratum being between 100 and 600 meters. The relative humidity rises from 70 per cent. or 80 per cent. at sea level to 95 per cent. or 100 per cent. Above this stratum the temperature rises quickly several degrees, and the humidity

* *Nederl. Tijdschr.*, I., 1863, 77.