Blue-winged Teal 1.37, Green-winged Teal 1.36, and so on through the herons, rails, tubinarines, vultures, grouse, owls, goatsuckers, ravens and crows, and thrushes, with equally well marked differences. The figures for these tables are taken from Ridgway.

I can do no more than record this law, no explanation of it occurring at the present time. To state that the caliber of the oviduct does not increase in proportion as the size of the bird increases, would only be putting it in another way. This law prevents us from comparing the eggs of some birds whose migrations differ in length, for it is the smaller bird generally, in the very longest journeys, that makes the longer migration (see Forest and Stream, October, 1922, p. 445); hence confusion in the results.

Returning to our first principle, the correlation of form of egg with extent of migration. It is obvious that it cannot be made out in such birds as swifts, swallows, terns, gulls, and others whose habits have fully developed their powers of flight independently of migration. That the ratio of length to short diameter indicates vigor in action appears to explain why, among passerine birds, the swallows' eggs are more elongated than others, why the swifts' and hummingbirds' eggs are notably elongated, for these are birds of unsurpassed volatile ability. The eggs of the diurnal birds of prey are more elongated than those of the softly flying owls, for the same reason. Among water-fowl, the expert divers that pursue fish under water, auks, loons, grebes and others, are distinguished from the ducks, geese, and swans by the elongate form of egg.

The eggs of owls are noted for their approach to the spherical form. It is in accordance with the two principles I have brought out that the closest approach to the sphere is found in the eggs of owls of smallest size and southerly distribution, namely, Elf Owl and Pigmy Owl.

Bridgeport, Connecticut, July 20, 1923.

SOME GEOGRAPHICAL NOTES ON THE CACTUS WREN

By GRIFFING BANCROFT

THE STATUS of the Cactus Wren of the San Diegan district, as indicated in the literature, has long been unsatisfactory. Authorities disagree so widely that they offer us no less than four distinct definitions. Bailey (Handbook of Birds of the Western United States, 1921 ed., p. 548) refers the Cactus Wren of this district to the form *Heleodytes brunneicapillus bryanti*. The most generally accepted name is *H. b. couesi*; to quote authorities here would be to name the majority of those who have written on the subject.

Two expedients have been adopted to account for the manifest difference between some coast birds and the apparently homogeneous form that spreads over six American and four Mexican states. From specimens collected it is argued that *bryanti* and *couesi* nest in the same localities near San Diego, and that *bryanti* ranges sparingly through the district. On the other hand, there has been a growing sentiment, led by Dr. J. Grinnell, to disavow as *bryanti*

all specimens collected in California. This strictly correct interpretation still involves the belief that the peculiarities of some of the southwestern California specimens are the result of "intergradation with *bryanti* somewhere below the International Line," and, because of that same belief, our San Diegan form has been refused the status of a distinct subspecies.

For the past four years I have made a special study of the distribution of the Cactus Wren south of the Mexican line. On the desert side, as is to be expected, it extends southward toward the Gulf of California in typical representations of pure *couesi*. On the Pacific Coast slope, however, I have been able to find but one area on which there are Cactus Wrens at all between San Telmo and the American line. This is a Lower Sonoran strip of irregular outline. Roughly speaking, twenty miles east of Tiajuana is its center, and it will run about five miles in every direction, and about the same distance below the line. Birds taken from this area are identical with the birds of southwestern California. Mr. Lawrence M. Huey, of the San Diego Natural History Society, recently took some specimens there with me and made a careful comparison especially for this article.

The Lower Sonoran zone of the northern part of the San Diegan District is perfectly isolated. To the east, it is true that a theoretical contact with the desert takes place in the narrow San Gorgonio Pass. The San Bernardino, San Jacinto, and Cuyamaca ranges account for the rest of the border. The north and west are bounded by the Upper Sonoran country around Santa Barbara and by the Pacific Ocean. To the south for a distance of 100 miles, plateaus of Upper Sonoran character, with elevations of from a thousand feet upward, run virtually to the coast, where they break to sea level in wild declivities and precipices.

There are three roads from California to Ensenada. One practically follows the coast and for a good part of its length runs through cholla cactus associations. But these associations are confined to a narrow strip very near the ocean. About twenty miles inland is a paralleling road; here, too, some cholla is encountered, but in small and isolated patches. The third road, running south from Campo, passes from valley to valley through the mountains. I have traveled them all many times, usually in the company of trained observers and always on the lookout for Cactus Wrens. As far as negative evidence may be considered proof, it is safe to say that, outside of the area mentioned, there are no Cactus Wrens in this part of Mexico north of Ensenada.

Ensenada is in a valley of some hundred square miles, surrounded by large hills. Here, too, is cholla in considerable abundance. The only road to the south over which an automobile can pass winds in and out among the hills and drops every now and then almost to sea level to cross the river beds. So it transverses all the life zones of the region. In seventy miles San Antonio del Mar is reached and we come again abruptly to a region where the plateaus begin to extend inland from the sea. We have never found Cactus Wrens here. I have talked with many residents who know every foot of that country, and who know the conspicuous nests of the birds well, and they all agree that they have never noticed them north of the San Telmo region.

When we do come to the wrens at San Telmo we find pure *bryanti*. Here three eggs is the normal set; I have never found more, and incubated two's

are not uncommon. We have nests heavily covered with small twigs in very marked contrast to the plain grass nests of *couesi*. As far as my small series will show there is no constant difference between the eggs of the two species; nor noticeably so in the size or shape of the nests, though those of *bryanti* will average larger. A typical nest, well dried, weighed 6¼ ounces and measured 11x8x7 inches. The nesting cavity measured 7½ inches from mouth to back. Very short grass is used, from necessity I presume. This is bound together with plant down and protected with a thick layer of small twigs and sometimes a bit of yucca fiber. On the inside the nesting cavity is lined with feathers all the way round and for the full length. On the bottom these reach a thickness of half an inch. Any small feathers the bird can find are used; her own predominate.

The range of *bryanti*, as far as we were able to follow it, might be given as from latitude 31° southward. Mr. Huey was with me in that country in April of this year, and we took specimens at San Quentin, El Rosario, and as far south as Santa Catarina Landing, latitude 29½°. He made a careful comparison of the skins and is my authority for saying that *bryanti* in pure form, and without a trace of intergradation with *affinis*, extends at least that far south.

From San Telmo *bryanti* ranges east until cut off by the foothills of San Pedro Martir Mountains. It follows the western edge of that range to the end, near San Quentin, and then spreads as near the Gulf of California as it finds conditions suitable. As there are no longer any mountains and the desert scarcely reaches an altitude of 2000 feet, the range of the bird undoubtedly extends to the gulf.

When the definite southern range of *bryanti* has been worked out, as well as the northern range of *affinis*, we will still have one point that will have to be cleared up before we can exactly describe the ranges of these birds. South from Mexicali, I have followed *couesi* down the strip that lies between the Hardy River and the Cocopah Mountains, as far as Mayore. Below Mayore we come to the Laguna Salada which I have crossed to La Bampa, and almost to the Gulf. Here we have a vast overflow country, practically devoid of vegetation, smooth as a floor, and extending far below La Bampa. San Pedro Martir Mountain approaches very close to the Gulf in the country below the mouth of the Hardy River. Somewhere along this stretch the range of *couesi* must be blocked by natural conditions, and that point may be Mayore.

The literature on the Cactus Wren is full of allusions to supposed points of intergradation. Yet each one of these points disappears when the effort is made to find the exact line. There is still a possibility of intergradation between *affinis* and *bryanti*, but it should not be assumed until it is proved. It is far more logical to expect to find a definite break, a strip not inhabited at all by *Heleodytes*.

Bryanti does not cross the California line. There is every evidence that it does not approach it closer than 150 miles. We have four distinct geographical areas inhabited by four distinct races of Cactus Wren, and it does seem as though we should have four sharply defined subspecies. Such a solution is definitely and substantially based on facts. The histories of all the other theories show that opinions and guesswork play too large a part. Accept iso-

lation of the district and the hypothesis of intergradation disappears. It is easy to believe that the fluctuations in type are due to the subspecies being still in a formative process. But it is not possible to imagine that *couesi* and *bryanti* could maintain their separate status in the same area.

San Diego, California, June 28, 1923.

DESCRIPTION OF A NEW GROUSE FROM SOUTHERN CALIFORNIA

By DONALD R. DICKEY and A. J. VAN ROSSEM

GROUSE have long been known to occur on Mount Pinos[1], in Kern and Ventura counties, California, but only recently have specimens become available for study. Comparison of the series secured during the last few years indicates a geographic variation of *Dendragapus obscurus* in the southwestern part of its range that is deemed worthy of subspecific recognition. The form may be known as follows:

Dendragapus obscurus howardi, new subspecies

Mount Pinos Grouse

Type.—Male adult; no. K 238, collection of Donald R. Dickey; Mount Pinos, Kern County, California; altitude 7500 feet; May 28, 1922; collected by A. J. van Rossem; original no. 6931.

Diagnosis.—Nearest to *Dendragapus obscurus sierrae*, but differing from that form in paler dorsal coloration, and in coarser and more conspicuous vermiculation and barring. Underparts darker, a brownish suffusion replacing the clearer gray of *sierrae*. The white median shafting and terminal pattern of the feathers of flanks and sides reduced in area and entirely lacking on anterior part of body, whereas in *sierrae* traces of this pattern extend forward to the shoulders. Wing slightly longer; tail decidedly longer and much more graduated, with terminal band averaging wider. Culmen, tarsus, and middle toe averaging slightly longer and decidedly heavier. Comparison has been based chiefly upon males, and only adult birds have been used in which the narrow-feathered and excessively graduated tail of the first winter has been fully replaced by the broad feathers of maturity. So far as observed, differentiation in the characters of the female parallels that of the male.

MEASUREMENTS

MALES

	Wing			Tail			Tail * graduation			Culmen from base			Tarsus			Middle toe without claw		
	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.	Min.	Max.	Av.
D. o. howardi	232.	246.	239.	176.	210.	189.	15.0	43.3	32.7	27.0	31.0	29.0	41.0	47.3	43.8	42.0	47.5	44.0
D. o. sierrae	221.	243.	234.	158.	185.	170.	5.5	35.0	21.3	26.8	31.0	29.0	40.5	45.5	43 0	40.5	46.3	43.3
							FEMALES											
D. o. howardi	209.	222.	216.	147.	159.	153.	15.5	26.5	20.6	27.0	30.8	28.8	38.0	41.3	39.9	37.3	41.4	39.4
D. o. sierrae	202.	225.	213.	125.	152.	137.	4.0	20.5	13.9	25.5	28.7	27.1	37.0	40.5	39.1	37.4	41.5	39.2

* Measurement from tip of shortest lateral rectrix to projected transverse line through tip of longest rectrix, with feathers of tail in normal 'closed' relation.

[1]Pac. Coast Avif., no. 11, 1915, p. 60; Bureau of Biological Survey, MS; etc.