BLACK DUCK BANDINGS AT THE AUSTIN ORNITHOLOGICAL RESEARCH STATION *(continued)*

BY JOSEPH A. HAGAR

PART IV

RECOVERIES OF SUMMER-BANDED BLACK DUCKS

There is an impression current among waterfowl banders, not usually formulated in exact terms but still rather widely held, that ducks banded on the breeding grounds either as juveniles or adults have a special value in determining the routes and other characteristics of migration. Like many another idea which takes root gradually without the benefit of critical examination from time to time, this has elements of sound truth, but is sometimes given a more general application than the facts warrant. Let us consider briefly its relation to Black Duck banding.

Looking at it first as an abstract theory, we may suspect that one reason for its origin and growth is the mere fact that so much of the sum total of banding has been done among the juveniles of colonial-nesting birds—gulls, terns, and herons, for instance. Since recoveries from these groups run above the average, it follows naturally that more is known about the movements of birds so banded than about species which do not lend themselves to mass operations on the breeding grounds; and from such data, there is an obvious temptation to generalize.

The real strength of the theory lies in the fact that all juvenile-banded birds have a known factor in their history—age—which is lacking for the great majority of birds banded by other means. Because any known factor increases the probability of correctly interpreting the data, birds banded as juveniles are to this extent more valuable than other banded birds. There is also a tendency for juveniles, because of high mortality during the first fall and winter, to supply a relatively large number of short-term recoveries, and these are useful not only for their volume, but because the more quickly a bird is recovered, the more safely it may be assumed that the route followed was direct.

Offsetting this latter advantage is the fact, now generally recognized, that young birds on first leaving their birthplace are likely to disperse in all directions, as if scattered by an explosion. It is supposed that some or most of them presently return to their hereditary range, but the final results of the process are much more obscure than the original scattering. In the meanwhile, recoveries of these juvenile vagrants at considerable distances from their starting point may unduly color the conclusions which we draw about the more stable adult population, and particularly if the adult population is essentially regional or inclined

to become sedentary. For example, it is clear from extended study of the Herring Gull that juvenile banding is the only approach to an understanding of the migration of young birds, but that adult trapping either at or away from the nest site would provide more quickly, and quite as accurately, the data necessary for general management of the breeding population.

Most of the game ducks, and specifically the prairie-breeding ducks, lend themselves at times to mass banding. Their breeding densities are often high, and when the cover is not too heavy, or in such exigencies as are caused by drouth, it has been possible to corral large numbers of young flappers for banding. Outbreaks of botulism have similarly facilitated the large-scale banding of adults. Released, both young and old are subject in varying degree to the advantages and disadvantages above-mentioned. Their mortality rate is exceptionally high because of shooting, which means that recoveries are numerous. The juveniles show the same tendency to erratic post-breeding-season dispersal as other birds, but the differences between the migrations of young ducks and old are apparently not great, so that vagrancy is less confusing in the records. There are, then, sound reasons for the belief that banding on the nesting grounds is the quick way to management data for most of the game ducks. It does not follow, however, that the same data cannot be obtained by alternative methods.

In the case of the Black Duck, the value of banding during the nesting season is not a material issue, because the opportunity for it scarcely exists. The bird is by nature a sparse and scattered breeder in relatively dense cover. The precocious young are so adept in avoiding capture that it is only occasionally possible to lay hands on two or three of a brood of flappers. The flightless adults in mid-summer are accomplished skulkers, by choice in brushy or wooded swamps; even a glimpse of one is exceptional. As a practical matter, and in terms of assembling a quantity of data within reasonable time limits, banding of Black Ducks during the breeding season is unprofitable. The nearest alternative is the trapping of moulted birds as soon as possible after they regain the power of flight, and if the recoveries are closely analyzed, the resulting data are quite as useful.

The Austin Station, in comparison with other banders, has been unusually successful with such post-moulting operations. Ducks originally banded in July and August make up more than 10% of the 5,515 bandings at the Station proper. In five years of the twelve, the percentage runs from 25% to 35%. Moreover, the timing of these big years is favorable; four of them were consecutive from 1934 to 1937, and thus prior to the intensive mid-winter trapping beginning in 1938, and the fifth was a check-up in 1941. In proportion to the number of Blacks on Cape Cod in July and August, the sample is as satisfactory as for any season of the year.

The recoveries from these birds agree in some respects, and in others disagree, with the usual ideas of Black Duck migration. On the whole their distribution is surprisingly similar to the distribution of recoveries from all Cape bandings. For these reasons, and particularly because they are the equivalent of nesting-season bandings for the other game ducks, it seems appropriate to analyze them as a unit, and to fill in the pertinent data rather fully.

DESCRIPTION OF DATA

A total of 572 Black Ducks have been banded by the Austin Station in July and August, all in the Dike Meadow traps.

With the exception of a single duck on the 18th, the July trappings were confined to the last week of the month. Grouped into 10-day periods, 14% of the total were banded on or before July 31, 14% between August 1 and 10, 38% between August 11 and 20, and the remaining 34% between August 21 and 31. The downward trend of the final period continues into September, and when the records are examined in detail, it appears that the only years in which September bandings exceeded those of August (see Table I, *Bird-Banding*, 17, no. 3, p. 108) were the years when operation of the traps was delayed or intermittent at the start of the season.

Putting all this another way, experience has shown that if the Blacks using the Dike Meadow are thoroughly trapped up before August 20, the number of additional new birds which will arrive before the middle or last of September is comparatively small. This fact, it seems to me, is of considerable significance in fixing the source of these summer-banded ducks on Cape Cod itself. Some of them may be from farther south, but the total cannot be large or there would be more southern recoveries after banding. It is hardly possible that any of them come from farther north, because the nesting season and therefore the moult are progressively later in the summer in that direction. Finally, the gathering of these ducks at the Station coincides very closely with the time when local-raised Blacks are known by specimens to be completing their wing-moult, and are more commonly seen at twilight and dawn passing to and from their feeding grounds. I conclude, therefore, that the bulk of these summer birds must have nested or been raised not very far away, and that it is the upswing in the number of new birds in the traps during the last half of September, after a distinct lull of three or four weeks, which signifies the arrival of the first migrants from the Maritime Provinces.

Looking now to the recoveries from these 572 Blacks, the records show that 34 of them have been killed away from Cape Cod—24 north of Massachusetts, four south, and six on the mainland of the state itself not very far from the coast. Table IX classifies them by place and term

TABLE IX

RECOVERIES OF BLACK DUCKS BANDED JULY-AUGUST AT AUSTIN STATION

Place of recovery	Recovered same fall	Recovered in later seasons	Total recoveries	% of banded birds recovered
Northward:				
Maine	4	4	8	
New Brunswick	2	5	7	
Pr. Edward I.	—	1	1	
Nova Scotia	—	4	4	
Quebec	1	2	3	
Ontario	1	—	1	
Total north	8	16	24	4.2
Southward:				
Long Island	1	—	1	
New Jersey	1	1	2	
Virginia	1	—	1	
Total south	3	1	4	0.7
Massachusetts:				
North and northwest of Station	1	1	2	0.3
West and southwest of Station	3	1	4	0.7

of recovery, and in the last column, computes the rate of recovery for each major group. It will be seen at once that the northward rate of recovery, 4.2, is very nearly the same as for all Cape-banded birds (Table IV, *l.c.*, p. 113), but the southward rate, 0.7, is a full third less than for all birds (Table VIII, *t.c.*, no. 4, p. 151). The ratio of same-season southward recoveries to those of later seasons is 3 to 1, a normal relationship in the circumstances, but almost the reverse of the ratio for all southward recoveries (*l.c.*, p. 148). Note also that eight of the 24 birds recovered north of Massachusetts were killed during the same autumn in which they were originally banded.

In the text figure on page 23 these recoveries of summer-banded Blacks are plotted in diagrammatic form, with symbols for same-season, first-spring, and later-season records. Several further points are thus thrown into relief:—first, the same northeast-southwest trend noted previously for all Cape-banded ducks; second, the fact that the point of mean dispersion for later-season recoveries lies well to the east of that for same-season records; and third, the rather remarkable recovery from Fort Chimo, Ungava.

Taking table and diagram together, it appears that the recoveries from these summer-banded Blacks fall into three categories which are important enough for separate discussion.

SAME-SEASON NORTHWARD RECOVERIES

The complete records of the eight same-season recoveries north of Massachusetts, and of the one bird killed on the mainland, are as follows:

BANDED:	RECOVERED:	
1. 1935—Aug. 15; 2 rpts. to Aug. 25	Nov. 26	Kingston, Ontario
2. 1936—July 23; 1 rpt. July 25	Sept. 15	Fredericton, N. B.
3. 1936—Aug. 4; 3 rpts. to Aug. 9	Oct. 20	Central Cambridge, N. B.
4. 1936—Aug. 18; 1 rpt. Aug. 21	Sept. 6	near Montreal, Quebec
5. 1936—Aug. 31	Oct. 23	Jonesport, Maine
6. 1937—July 29	Oct. 29	Wakefield, Mass.
7. 1937—July 29	Oct. 13	Bath, Maine
8. 1937—July 30; 1 rpt. Aug. 7	Oct. 30	Blue Hill Bay, Maine
9. 1941—Aug. 21; 2 rpts. to Aug. 29	Oct. 6	Boothbay Harbor, Maine

In addition to this list, the Austin files contain a few instances of ducks banded after September 1 which supplied same-season recoveries to the north. Strictly speaking, they are outside the scope of this section, but since they, too, may be of Cape origin, and in order to have the whole picture of erratic migration at once, it seems proper to introduce them, parenthetically, at this point. Three of them, recovered in Nova Scotia in mid-winter, have already been discussed in another connection (*t.c.*, no. 3, p. 120). Five others are as follows:

BANDED:	RECOVERED:	
1. 1932—Oct. 11	Oct. 22	Mt. Desert, Maine
2. 1932—Oct. 24	Oct. 26	Merrymeeting Bay, Maine
3. 1932—Oct. 24	Nov. 25	Swan Island, Maine
4. 1932—Oct. 25	Nov. 5	Brunswick, Maine
5. 1940—Oct. 12	Oct. 16	Ipswich, Mass.

Finally, there is the unique case of a duck trapped at the Station in five out of six years, but finally recovered at the end of a vagrant flight 70 miles west-northwest. It was first banded September 17, 1933 and repeated eight times to November 22; returned September 23, 1934 and repeated once on October 31; returned September 9, 1935 and repeated on October 8 and November 29; returned November 9, 1937 and spent the winter to January 24; returned August 11, 1938; and was killed at Needham, Massachusetts, October 28, 1938.

Perhaps the first thing to say of these records is that, although they fail of really prime significance, they are extremely interesting. They invite long speculation as to why and how they were made.

Did the Kingston, Ontario, bird originally go northeast to New Brunswick and thence, in the course of three months, drift southwest up the St. Lawrence to the point of capture? Did the Montreal bird, with a 16-day interval between banding and recovery, go more directly? Why

was dispersal, with the exception of these two ducks, so narrowly north-northeast? What was the extent of the association between the two ducks which were in the trap together on July 29, 1937, and were then recovered 16 days apart at Bath, Maine, and Wakefield, Massachusetts; did they leave the Cape separately, or were they together in Maine, and the second return to Wakefield after the first was killed? The 1932 recoveries suggest a substantial movement from the Cape, and yet what were the real relationships, for the Mt. Desert duck was dead before the other three were banded at the Station? Incidentally, was there any connection between these Maine birds and the fact that a duck which was with them in the trap on October 24 was killed at Provincetown on October 27—one of only seven same-season recoveries on the Cape north of Wellfleet during the whole twelve years of banding?

These are only six of the many questions that come to mind as you study the records. In the end it is not possible to pick out any important pattern, for the details of these recoveries are more erratic than orderly. They confirm the existence of post-breeding-season dispersal from Cape Cod, but here, unexpectedly, they have one aspect of regularity at the very point where by theory they should be random, for their distribution is strongly directive, toward Maine and central New Brunswick. On the evidence of the 6-year-old Needham recovery, vagrancy is not confined to young birds, and the recoveries in late fall and early winter, particularly in Nova Scotia, introduce the possibility that it goes on sporadically during a considerable part of the year.

Yet because it is erratic, and lacks volume, it cannot be considered important.

LATER-SEASON NORTHWARD RECOVERIES

In contrast to the group of records just discussed, the noticeable characteristic of the 16 later-season recoveries north of Massachusetts is their conformity. There are none from Newfoundland, but with this exception, their distribution is very much the same as for all northward recoveries (Map I, *t.c.*, no. 3). The parallel includes even the bird first banded on the Cape in August, and recovered from a muskrat trap at Central Blissville, Sunbury County, New Brunswick, on April 28 of the following spring.

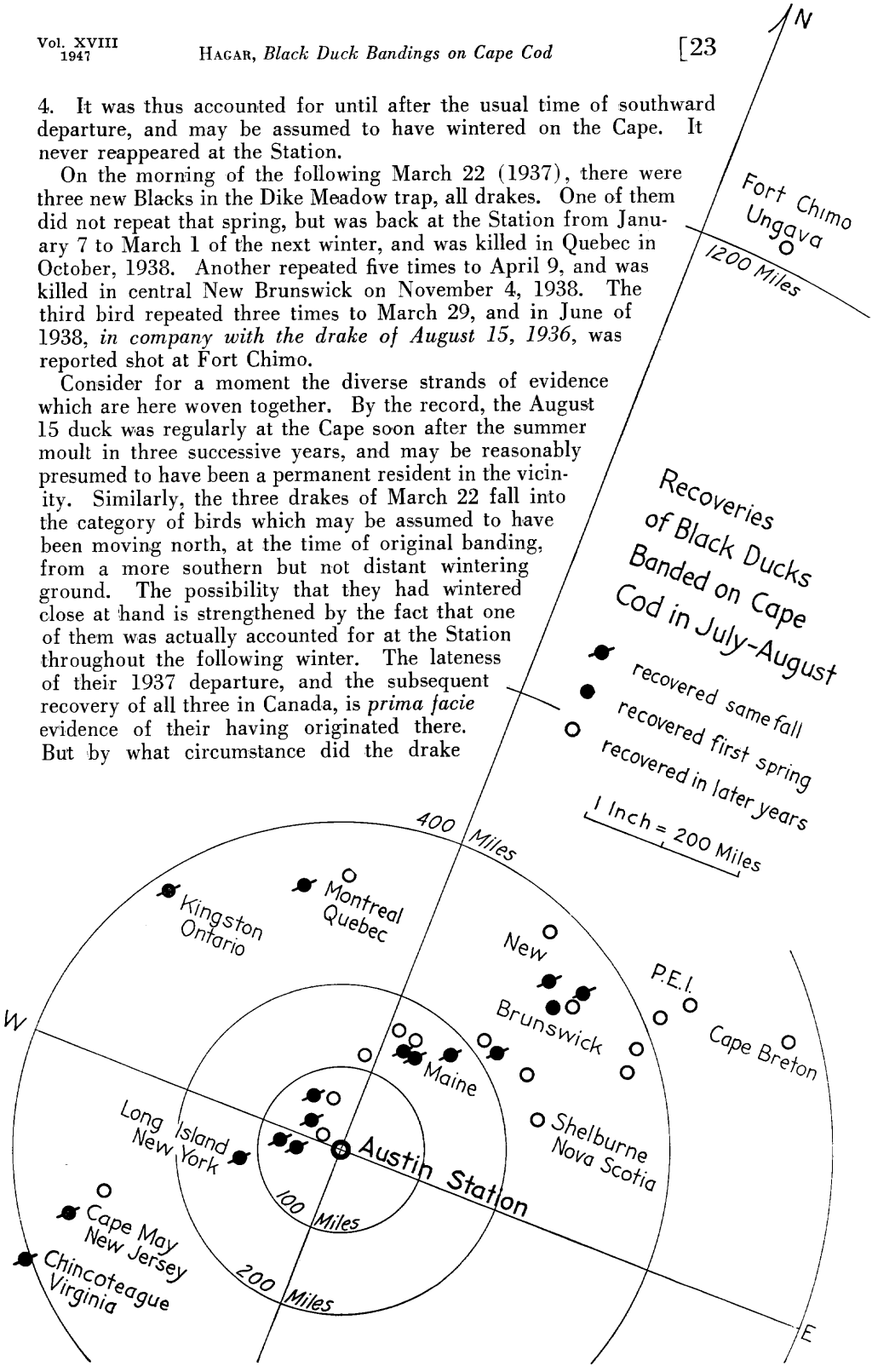
The Fort Chimo record is worth giving in full, not only for its immediate interest but because it is so good an example of the striking contrasts which appear among these summer-banded Blacks.

On August 15, 1936, there were only two new birds in the Dike Meadow trap, a duck and a drake. The duck was not retaken that season, but made single reappearances in the same trap on August 25, 1937 and August 11, 1938. The drake, following a different pattern, was in the traps 22 times during the autumn, with the last entry on December

4. It was thus accounted for until after the usual time of southward departure, and may be assumed to have wintered on the Cape. It never reappeared at the Station.

On the morning of the following March 22 (1937), there were three new Blacks in the Dike Meadow trap, all drakes. One of them did not repeat that spring, but was back at the Station from January 7 to March 1 of the next winter, and was killed in Quebec in October, 1938. Another repeated five times to April 9, and was killed in central New Brunswick on November 4, 1938. The third bird repeated three times to March 29, and in June of 1938, *in company with the drake of August 15, 1936*, was reported shot at Fort Chimo.

Consider for a moment the diverse strands of evidence which are here woven together. By the record, the August 15 duck was regularly at the Cape soon after the summer moult in three successive years, and may be reasonably presumed to have been a permanent resident in the vicinity. Similarly, the three drakes of March 22 fall into the category of birds which may be assumed to have been moving north, at the time of original banding, from a more southern but not distant wintering ground. The possibility that they had wintered close at hand is strengthened by the fact that one of them was actually accounted for at the Station throughout the following winter. The lateness of their 1937 departure, and the subsequent recovery of all three in Canada, is *prima facie* evidence of their having originated there. But by what circumstance did the drake



which was first trapped at the Station on August 15 turn up at Fort Chimo, the northernmost point of recovery for Cape-banded Black Ducks?

There are two major possibilities. This August bird may have been adult in 1936, and merely failed to go north at the usual time. Or it may have been actually raised on the Cape, and during its first winter have formed a sufficiently strong association with ducks of Canadian origin to go north with them in the spring.

Any conclusion is speculative, but the second alternative is not improbable, and in fact is considerably strengthened by the number of other later-season records from eastern Canada. If true, it would supply an adequate explanation of the fact that summer-banded Blacks from the Cape, in spite of the mortality from shooting during their first autumn, still have a rate of later-season northward recovery which approaches that of birds banded in the dead of winter after the shooting season is over.

SOUTHWARD RECOVERIES

The southward recoveries of summer-banded Blacks—four outside of Massachusetts, four more in Plymouth and Bristol counties—are too few in number to need much comment. The six same-season records have already been cited (*l.c.*, no. 4, pp. 154 and 156, and Map III). The two later-season recoveries were both from 1941 bandings; the first, trapped August 4, was shot in October, 1943, at Plymouth, and the second, trapped August 29 and repeating at the Station until January 22, was killed on the New Jersey coast in mid-October of the next year. For all eight, the pattern of distribution is essentially the same as for other southern recoveries.

I have shown previously (*l.c.*, pp. 153 and 157) that the volume of southward migration is to be gauged not only by the number of actual southward recoveries, but by the number of banded ducks which are retrapped on Cape Cod after the close of fall migration—*i.e.*, after December 1 of a normal year. Applying this second test, it appears that summer-banded Blacks have much the same winter distribution on the Cape as all Blacks. Of the 572 birds in the summer sample, 24% were recorded in the traps at the Station proper during some part of their first winter. For the 138 birds banded during August, 1941, the figure was 36%. These percentages, by the experience of trapping operations in Nauset marsh and Pleasant Bay, mean that the bulk of the sample still alive after the shooting season may be presumed to have wintered within a 15-mile radius south and southwest of the Station.

Not only is their distribution similar, but these ducks show behavior patterns which are identical with those of fall and winter-banded birds. The most casual reading of the records is enough to supply evidence of

this. For example, the summer ducks fall into the characteristic patterns of repeating at the traps:—a few are regular boarders, some repeat irregularly and at considerable intervals, others disappear soon after their original banding but come back at the close of the shooting season, while still others, never recorded during autumn and winter, reappear for a few days in February or early March in the customary mode for ducks which are known to have wintered at Nauset or Brewster, and are on their way north. Again, some of the summer-banded ducks which return to the traps the second and third seasons arrive in early August, but a surprising number show up for the first time in October and November, as if they were coming in with the new birds from the Maritime Provinces.

These are small things by themselves, but in the long run they point strongly to the conclusion that the summer-banded ducks are wintering on the Cape, and acting like an integral part of the whole population.

The sparsity of southward recoveries carries an important implication with respect to post-breeding-season dispersal. Since the rate of southward recovery for summer-banded birds is even lower than for all birds, it is impossible that any substantial number of ducks raised on Cape Cod are making a vagrant migration to the north and presently returning to a more southern winter range. They may return to the Cape itself without being distinguishable in the records, but for them to go farther south would raise their recovery rate above that for birds banded at all seasons.

The point may be carried a step further. Theoretically, the rate of southward recovery for summer-banded ducks should be higher than that for all birds, because it must cover both random post-breeding-season dispersal and true migration. Since it is actually lower, we have one more bit of evidence that in this particular case summer dispersal is not random, and that Black Ducks trapped on Cape Cod in August are, if anything, somewhat more sedentary than those trapped in fall and winter.

CONCLUSIONS

Looking back, now, to weigh the broad trend of the evidence, it appears that the real significance of the returns and recoveries from these summer-banded Black Ducks lies in their close similarity to the returns and recoveries from all the Blacks banded on Cape Cod at any season.

Northward vagrancy is a conspicuous factor with these birds because of its imaginative appeal, but it is clearly too limited in volume and reach to have major importance. Whatever purpose it may serve, few

ducks go beyond the limits of their regional group, and even these are presumably compensated by similar movements from other regions. Vagrancy is therefore a minor consideration in local or regional management, which must deal with the main body of a population rather than its erratic offshoots.

Aside from vagrancy, these Black Ducks banded in summer show the same patterns of recovery northward, southward, and on the Cape itself, as all Cape-banded Blacks. This is certainly important. A sample of six hundred ducks is too small by itself to serve as the basis for any sweeping conclusions, but when it is as compact as the one in hand, and proves on analysis to show much the same trends as a larger sample previously analyzed, each set of findings reinforces the other.

In the present case, the recoveries from these summer-banded ducks are the third and final indication that on Cape Cod we are dealing with a regional maritime population of Black Ducks having its principal affiliations to the northeast in Canada.

(To Be Concluded)

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TWO NATIVE BIRD TRAPS OF PANAMA

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Two kinds of traps are frequently used for capturing small birds in the Republic of Panama. Honey creepers, finches, tanagers, parakeets, and some members of the oriole family are taken in these devices for sale as cage birds. The most common type, called the *tapa* (meaning lid or cover), is found in practically every village throughout the Isthmus. The *churuco* (stirrup) is used principally by the natives of Colon Province, although it is known, at least by name, in other regions. Both models are light, compact, simple to operate, and could be modified very easily for use at bird-banding stations in the United States.

The *churuco* and *tapa* are constructed from the wood of a species of palm *(Bactris minor* Jacq.), called *caña brava* (wild cane) in the Republic, and no metal fasteners are employed. The heavy members of the traps, such as the framework, are fashioned from sections of cane poles about 1¼ inches in diameter. These pieces are lap-jointed at all corners and the members pinned together with small dowels. An arrangement of parallel bars, set perpendicular to the framework, encloses the cage. The bars are cut from sections of cane and placed into holes bored through the heavy frame members. Each bar is about