Observations on the Nesting Behavior of an Unsuccessful Pair of Robins at Douglas Lake, Mich.

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1936

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On June 28, 1936 an incubating robin was discovered about four feet from the ground and about the same distance from the roof of my cabin. It was decided to study the nesting behavior of this bird to ascertain as far as possible the following things:

1. Whether there was any relation between the time of hatching of the eggs and the time the young birds left the nest. With this in mind all of the four eggs were numbered with water-proof ink.

2. To learn something of the food habits of the robin.

3. To study the relative functions of the male and female during the reproductive period of this species and observe how far the theory of territorialism could be applied to the species under observation.

The incubation habits were observed for three days when the nest was raided about eleven o'clock one night by a flying squirrel which destroyed all but one egg. The next morning the female returned and sat on this egg for a short time and then was only occassionally in evidence until a robin was seen building a nest about fifty yards west of the first mentioned site in a birch tree about fifteen feet from the ground. It can not be definitely stated that this second robin was the same bird that was unsuc-

cessful with the first nest, but there are certain things that lead me to believe that the birds were identical.

1. The male in both cases would allow no other robin other than his mate within fifty yards of the site of the nest. If the males select this site early in the spring these two would hardly have tolerated each other while the first nest was in existence.

2. The female in both cases drank at the same hydrant, and the builder of the second nest secured her mud there, which was within twenty-five feet of the site of the first nest.

Nest Building

The female robin, whether identical or not, was first seen building a nest which I shall call number 2 on July 7(six days after the other was destroyed). During the next three days both birds worked on the nest usually until about eight o'clock A.M., then no more activity was observed until the next morning.

During July 11 the birds were observed to be working on a third nest about twenty-five feet away and at about the same height in a similar tree. Rags were taken from nest number 2 to add to number 3. Mud was added during July 12 in considerable quantities. Herrick(1935) gives an account of the forming of the nest of the robin and states that with each visit there is a regular alternation of turning in the nest with wings cupped over its edge. During twelve consecutive visits by this robin eight were clockwise and four counter-clockwise, and in this case, at least, there seemed to be no such regularity in behavior. Two days later, July 14, building was still proceeding on nest number 3. The afternoon of that day, however, the female was discovered sitting on the fully constructed nest number 4. All four of these nests were within a

few feet of roofs of houses which made them easily accessible and easily discovered by flying squirrels which use such trees in passing from roof to roof or by purely arboreal routes from one street to another. Examination of nests numbers 2,3,4 showed the first two empty, and the last with one egg on which the female sat all day July 15. Multiple nests are not uncommon with robins. Smith (1915) records one pair that built five nests and laid eggs in three of them before abandoning all of them. Herrick (1935) gives accounts of two more cases where 26 and 28 nests were built by each pair simultaneously, but does not say whether they were successful in raising a brood. These nests were built between the rafters in factories and Herrick (1935) believes that multiple nests do not occur under natural tree-building conditions and that the bird is only confused by the multiplicity of similar sites while constructing its nest on such sites. This could not have been the cause for building multiple nests in this case, since all the nests were differently situated in the different trees.

Incubation

When the female was flushed in the late afternoon on July 16, there were three eggs in the nest. She was seldom off the nest even during the hot weather when the temperature ranged about 103° F. At times she held her mouth agape and merely stood over the eggs. She was observed to leave the nest and fly toward the lake at 6.30 A.M., July 21. There seemed to be no regularity in her manner as to direction of approach to the nest, nor of her direction of setting on it.

On July 25, eleven days after the first egg was discovered, one of the eggs hatched. No empty shells were in evidence. Berg-

told (1917) gives records which indicate the incubation time to be 13-14 days. It would seem from these records that the first egg had been in the nest 2-4 days before it was discovered and during the time both birds were working, in the morning at least, on nest number 3. Neither of the other eggs hatched although one piped July 26 but was missing from the nest in a few hours.

Brooding, Feeding, and Sanitation

Both parents fed and covered the young although at first the male gave the food to the female which sometimes ate it and sometimes passed a part or all of it to the young bird. The feeding was not at all regular. There were times when thirty minutes would lapse when no food was brought to the nest. There were other times when it was fed three times in five minutes. During the time the female was absent the male stayed at the nest; sometimes he merely sat on its edge or stood over the young with hanging wings. It was only when he was left for long periods of time that he actually set on the eggs and young bird as did the female. The male would often announce his approach to the nest with food by singing softly. The female would promptly leave and the food would be given to the young bird. Mousley (1926) noted a similar behavior on the part of the male yellow warbler. During the first five days the female usually covered the young during the male's absence though her brooding time became less as the bird became older.

During the periods when the nest was observed from the blind at an arms length no food other than caterpillars was given to the young. At first the parent bringing food announced its presence

by a low "gup" which caused the young bird to extend its neck for food. Later this response became conditioned and the instant the old bird touched the nest or even the limb which held it the nestling responded by extending its neck and head upward. Sometimes no food was brought and the head was held in place until it apparently fell because of exhaustion.

About one third of all the feedings were followed by defecation which in every instance only the female received and ate in each case. No feces were ever voided by the young bird over the side of the nest while the nest was being observed.

Growth, Development and Behavior

It seems best to present data bearing on growth in tabular and graphic form and discuss briefly development and behavior of the young bird day by day during its nine days of existence. Graph 1 presents all of the data pertaining to weight while graph 2 shows the data pertaining to measurements of the various anatomical features. (See plate 1, figures 1-4, and plate 2, figures 1-9).

1st. Day : When the young bird is hatched there is down along the capital, spinal, humeral and alar feather tracts. There is only a suggestion of down on the caudal tract.

2nd. Day: Pins are just beginning in the tail and wing primaries. The down has increased slightly on the tail.

3rd. Day : Figures 1 and 2, Plate 1 show the status of development of the feather tracts at this age.

4th. Day : Figures 3 and 4, Plate 1 show the relative development of the feather tracts up to this time and also over those

of the 3rd. day. At this stage the humeral and alar tracts become quite dark and the ventral tract extends itself both anteriorly and posteriorly much farther than on the previous day. New patches of feathers are present dorsally to the humeral tract, lateral to the ventral tract under the head and anterior to the ear.

5th. Day: The pins on the tibio-fibular leg begin to show clearly for the first time. The primaries and tail feathers are now over 1 mm. in length. The eyes open for the first time.

6th. Day: Aside from the phenomenal growth of the primaries there are blue pins showing under the sides of the bill, anus and under the tail which show an advance over the previous day.

7th. Day : The pins on all of the tracts are beginning to come through. The bird can rest on its tail and hold its head off the floor(Plate 2, fig. 8).

8th. Day : The primaries and secondaries of the wing begin to appear tesselated, resembling a minature paint brush. Rufous begins to appear on the outer fork of the ventral tract and white feathers appear on the inside fork (Plate 1, fig. 1). The bird gave one "Querk" so characteristic of young robins about ready to leave the nest.

9th. Day: Holds head up with yellow mouth wide open and squeels when handled. Somehow it got out of the nest and was being protected on the ground from a chipmunk by both old birds when it was discovered. It was returned to the nest and continued to chirp and rear up in the nest. It was observed to pick at its breast for several minutes, whether this was caused by mites which infested it or the unsheathing feathers or neither is not known. Some animal ate out its brains during the night ,

Protection

When the nest was disturbed both parent birds would fly screeching at the intruder and the male would occassionally snap his bill in a vicious manner. When the young bird was taken from the nest the male would usually sing until after its return: the female would often return to the nest and set on the egg which remained until the last. One or the other of the parents would return to the nest within 2 minutes after having been driven off to secure or return the young bird.

After the egg hatched it was never left unguarded and chipmunks, spermophiles or other species of birds were always watched closely by the brooding or guarding bird. Once while the male was brooding a commotion occurred at Miss Smith's robins nest which caused her birds to screech excitedly, He stood up in the nest and looked all about carefully and began singing. He sang again while it was his turn at the nest when another robin began "qupping" about sixty yards away. He could be heard singing sometime during each hour of the day somewhere between State Street and Upper Drive and between B and D streets(the nest being on State Street between B and C streets). At the time this study was made three other nests were in existence west of this one along State Street within three blocks. Roughly the territory occupied was about two blocks though neither bird was ever seen or heard on D street, but would occassionally come from the block west of it . Most of the singing took place either in the vicinity of the nest or along B street which I believe was the western limit

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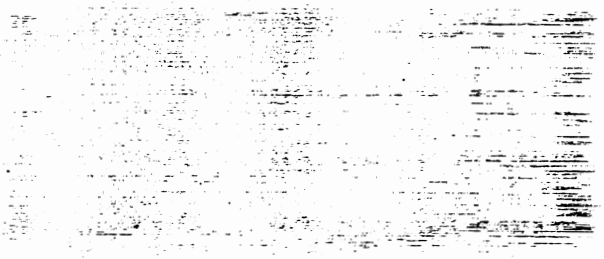


of the territory. During the building of the nest both parent birds were observed to chase another robin which flew directly over the tree where the nest was under construction.

During the night of August 1 the screeching of one of the parent birds announced that there was trouble at the nest. The next morning the young bird was found on the ground with its brains eaten out presumably by a flying squirrel. Neither of the parents paid any attention to the nest although they remained on their territory.

Summary and Conclusions

It is difficult in a study of a single nest to say which behavior traits are specific and which are merely individual. With this limitation in mind I should like to summarize this work and give my own interpretations of the data which have been presented.

1. The female does all of the incubating, most of the nest building, brooding and cares for the sanitation of the nest. The male aids in nest building, feeding, guarding the young and is largely defender of the territory. The song seems to be used largely as a means of warning other robins which might otherwise trespass on the territory.

2. Multiple nests are recorded for robins and in two cases known the parent birds were unsuccessful, probably because the drain is too heavy on the physical make up of the birds at a critical time and because the making of so many nests upsets the natural flow of instinctive behavior. This is indicated here by building a nest after one egg had already been laid in another nest, and delayed laying of two other eggs one of which was unfertile.

3. A reason for the lack of success on the part of this pair of robins may be found in the fact that all of the nests built were in trees between houses which would form the natural arboreal routes of flying squirrels - known raiders of bird's nests.

4. During growth the different parts of the bird develop at different rates and at different times.

Development of pterylae of the robin during the third (above) and fourth day (below).

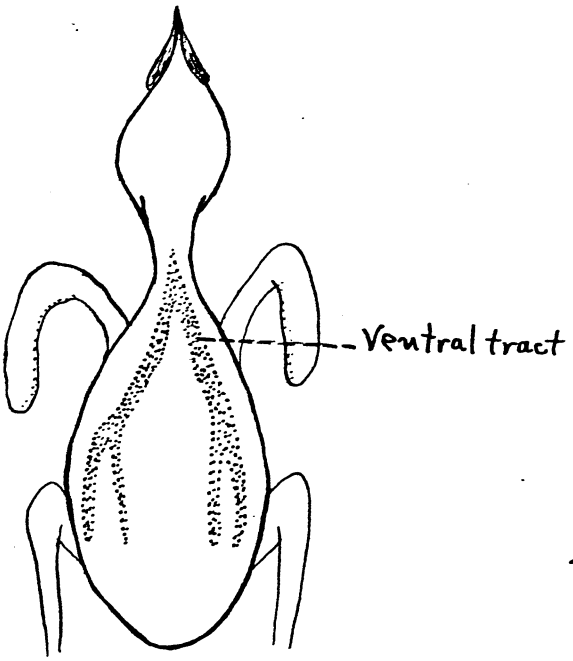


Fig. 1
3d day Ventral view

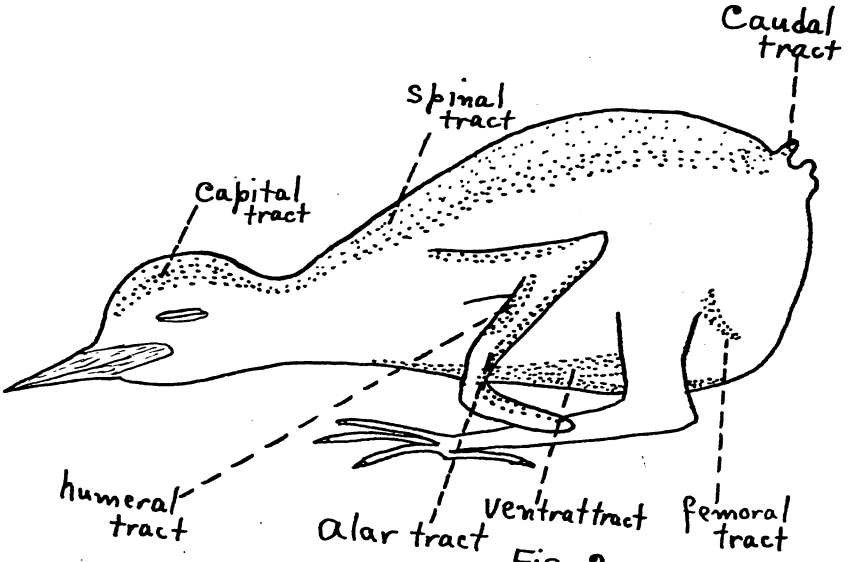


Fig. 2
3d day lateral view

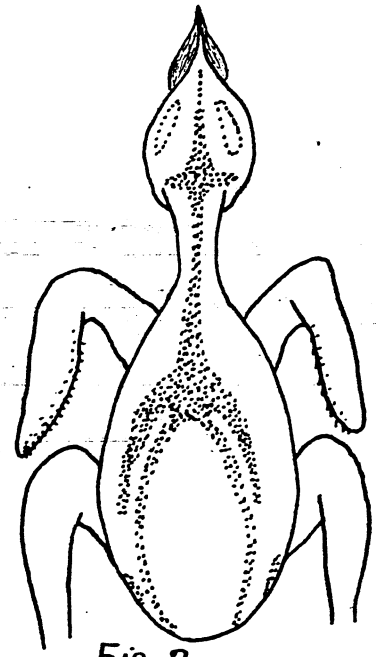


Fig. 3
4th day Ventral view

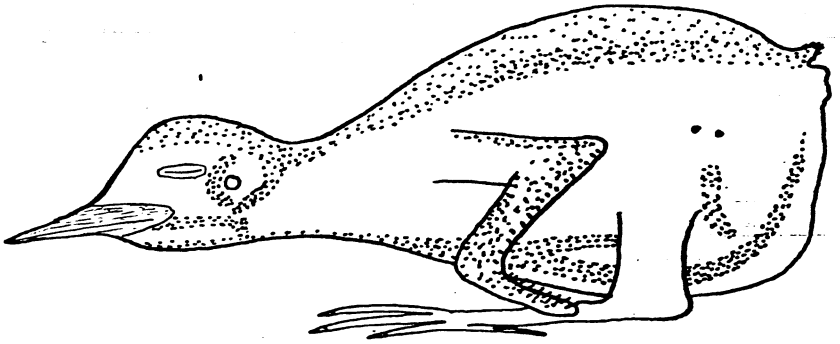


Fig. 4
4th day lateral view

Explanation of Plate 2

Figure 1. Arrow marks site of nest.

" 2. Robin's nest with one egg.

" 3. Female robin incubating.

" 4. Female robin arriving at nest without food, note extended head of young.

" 5. Young robin, 1 day old.

" 6. Young robin, 3 days old.

" 7. Young robin, 5 days old.

" 8. Young robin, 7 days old.

" 9. Young robin, 9 days old.

Plate 2

Life history photograph of the robin

Fig. 1

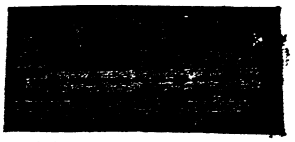


Fig. 5

Fig. 6

Fig. 2

Fig. 7

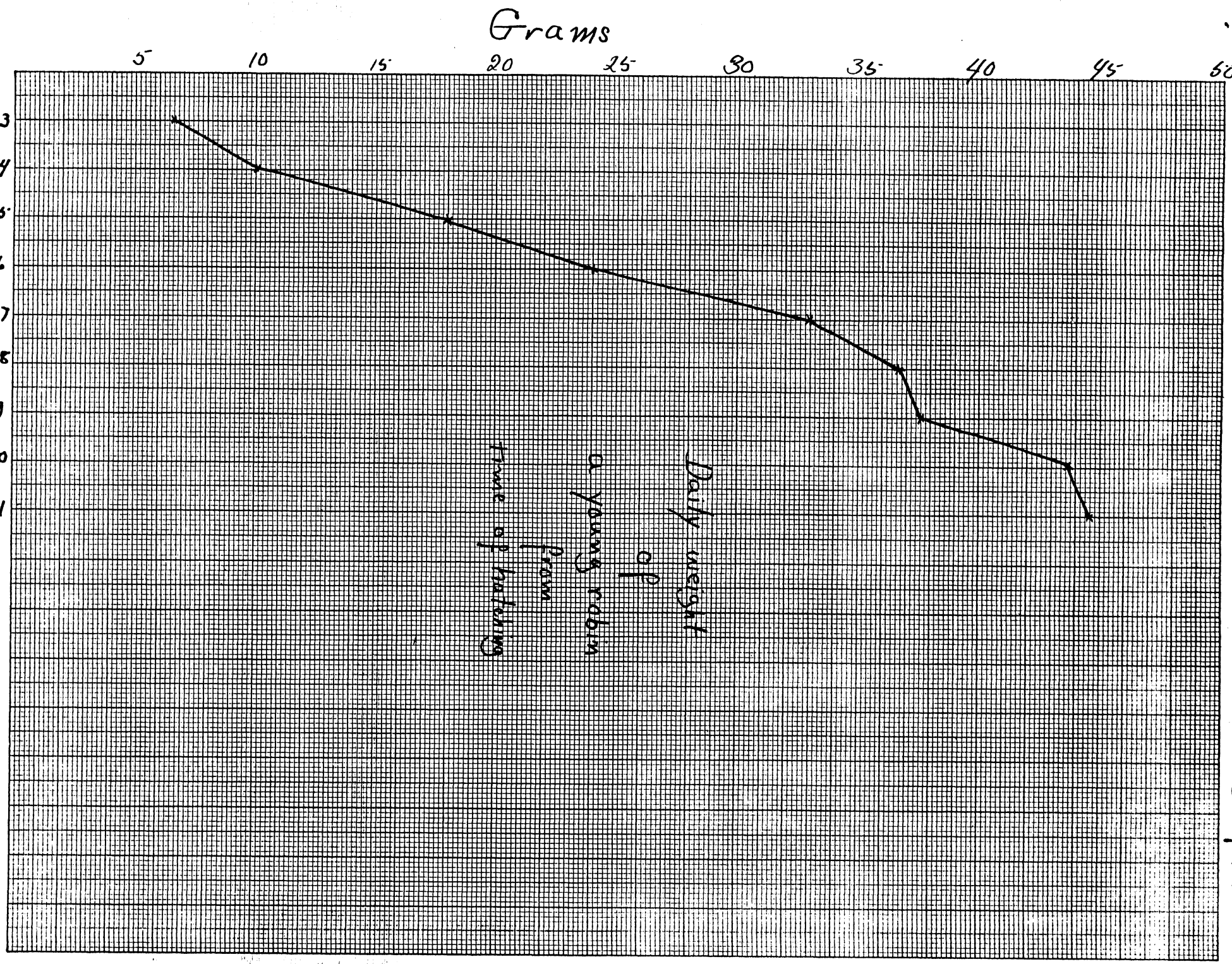
Fig. 3

Fig. 8

Fig. 4

Fig. 9

KEUFFEL & ESSER CO., N. Y. NO. 358-14
Millimeters, 10th lines heavy.



Graph 1

Graph 2

Showing anatomical measurements of a young robin for 9 days after hatching.

N.B. After "length" and "extent" each small square equals 1 m.m
In all of the other measurements five small squares equals 1 m.m