



BAT RESEARCH NEWS

Volume 9: Numbers 1–4

1968

Original Issues Compiled by Dr. Wayne H. Davis, Editor, of *Bat Research News*

Copyright *Bat Research News*. All rights reserved. This material is protected by copyright and may not be reproduced, transmitted, posted on a Web site or a listserve, or disseminated in any form or by any means without prior written permission from the Publisher. The article is for individual use only.

Bat Research News is ISSN # 0005-6227.

BAT RESEARCH NEWS

Table of Contents for Volume 9, 1968

Volume 9: Number 1, January 1968

The Cover	1
Of Red Bats, Babies, Barbed Wire, & C	2
Here and There	4
On the Status of <i>Leptonycteris yerbabuena</i>	8
On the Status of <i>Myotis micronyx</i>	10
Data on Other Type Specimens, etc.	10
Recent Literature	11

Volume 9: Number 2, April 1968

The Cover	15
Permits to Net Bats out West	15
International Bat Research Conference	16
Caves to be Preserved!	17
Cave to be Lost!	18
Wyandotte Cave to be Lost Also	19
Status of <i>Leptonycteris yerbabuena</i>	19
Here and There	20
Recent Literature	22

BAT RESEARCH NEWS

Table of Contents for Volume 9, 1968 (cont.)

Volume 9: Number 3, July 1968

The Cover	29
Here and There	29
Subscriptions and Exchanges	29
Which Way Do the Bats Spiral from Caves	47
Red Bat Carries Young in Flight	47
Wyandotte Cave	47

Volume 9: Number 4, October 1968

The Cover	49
Where Do the <i>Myotis</i> of Northern Minnesota Spend the Winters?	51
Temperature and Humidity at an Indoor Winter Bat Roost	52
Here and There	53
Recent Literature	56

THE COVER

A typical tight cluster of Myotis sodalis hibernating in the Bat Cave, Carter Caves State Park, Kentucky. There are about 160 bats per square foot. The type of cluster is distinctive; once familiar with it, one can recognize the species from a distance.

Myotis sodalis is included on the list of rare and vanishing species of North American mammals. Although it is a common bat at this time, its habits are such that it is probably destined to perish within the next couple of decades. Apparently the entire population of the species winters in certain caves in the east-central United States. About 90% of them winter in about half a dozen caves. The bats gather in conspicuous clusters on the walls and ceilings. They use only the larger caves. As these caves become ever more popular with spelunkers and people who collect bats for various purposes, the bats seem destined to perish. Within the past 30 years they have become nearly extinct in Vermont and New York, and within the past 15 years they have disappeared from most of the caves in Pennsylvania, West Virginia, Virginia and Illinois. Good colonies remain only in a few caves in Kentucky, Tennessee and Missouri. In the past 4 years several of these have been destroyed by commercialization, air raid shelter work, and flooding behind dams. I think the only hope of survival of the species is in Mammoth Cave National Park. Here they might survive indefinitely if conservationists can remain alerted and stop any plans to run the tourists through the wild caves.

At Carter Caves the colony remains close to 100,000 individuals. This is truly remarkable, but I do not think it can continue. The bats here are more exposed than in any other colony I know. At one place a person can stand and see 40,000 bats, none of which are more than 10 feet above the ground. A person could destroy about 10,000 of these in a few minutes, using nothing but his hands to pull them from the low ceiling and let them fall into the water. This is exactly what happened 7 years ago. I have been expecting the same thing or worse ever since. This has become one of the most popular caves in the east. Located in a very nice state park which attracts many thousands of visitors, it is invaded by hundreds of people on any pleasant weekend in the fall or spring. Even in midwinter one can seldom make a weekend visit without encountering several parties in the cave. Since the bats use the cave mainly from October to April, and are gone throughout the summer, it might seem reasonable to close the cave during the time the bats are there. I think this could be arranged, but closing a cave is a difficult task. A committee of the National Speleological Society, which has been studying the problem of protecting caves, has found that it cannot be done by any present methods unless a resident caretaker is near the entrance. Gates are consistently blasted out. The gate installed at Bat Cave a few years ago by Ralph Ewers of the Cincinnati Natural History Museum was quickly circumvented by removing the top bar and crawling over the gate. Photo by Roger W. Barbour.

Bat Research News appears quarterly: January, April, July and October. Subscription rate is \$1.00 for two years. All back issues are available for \$3.00. Wayne H. Davis, Department of Zoology, University of Kentucky, Lexington, Kentucky 40506, U. S. A.

OF RED BATS, BABIES, BARBED WIRE, &C

Last time I wrote a couple of notes speculating about whether or not red bats or any other species carry their young while feeding and about why bats sometimes become impaled upon barbed wire. The readers' response was wonderful. I want to thank everybody who wrote regarding these matters and print the ideas and data supplied by each. This way we can get together all the scattered interesting gems that no one person could write about. Steve Humphrey sent me a color slide of a red bat impaled on a barb. I gave it to Roger Barbour to copy as a black and white. I will put it on the cover sometime and would also like to use it in our book. The letters I received follow:

Was interested in your comments in the last BRN on whether bats carry their young while feeding. I have paid particular attention to this in the red bat, of which I have shot numerous females during the breeding season. None of these has been carrying attached young, and I seriously doubt that they ever do. Further I have noticed that gravid red bats near term are quite easy to shoot when they are foraging at dusk. They do not fly as fast or as erratically as males or non-gravid females. This leads me to think that the extra weight burden of at least 3 young (the usual litter for red bats) would hamper efficient feeding.

As to other species I can add the following observation: On 12 June, 1962, a female Choeronycteris mexicana with an attached young weighing 5.9g was netted in Guadalupe Canyon, N. M. Both were dead in the net (having drowned), set over a small waterhole. We also flushed a female of this species carrying a large young from a cave nearby, and noted others carrying large attached young when we disturbed them in their daytime retreats.

I have noted that Eptesicus fuscus also will carry its attached young when disturbed in its daytime roost. Russell E. Mumford.

In reference to feeding bats carrying their young, I live in Stewart County, Tennessee, in a rural area with an REA "yard" (mercury vapor?) light in my front yard. During the warm months it attracts insects, which attract bats. Nearly every night through the warmer months bats may be seen working the light - flying back and forth beneath the light catching insects. I have banded bats in Tobacco Port Cave, about 9 miles north of my home, and occasionally I set mist nets under my yard light to try for band recoveries. In the summer of 1966 I netted a female Lasiurus borealis thusly, with young clinging to her. I did not record and do not recall the date or number of young (I am sure there were at least two young) involved, assuming the phenomenon to be of common occurrence. The bat was not banded, and after showing her to my wife and children, I tossed her into the air and away she flew, with young still attached. Maybe I can catch her again next year. David H. Snyder.

Have you seen the excellent photograph of a red bat carrying two young that appears in L. E. Rue's book Pictorial Guide to the Mammals of North America, the Thomas Crowell Co., N. Y.? Again the caption is unfortunate as it says that the bats feed while carrying their young. Edward N. Francq.

Ed. note: I am not familiar with the publication mentioned. I wonder if the picture may be the same as that on p 83 of the Mammals of Pennsylvania, 1966? This spectacular photograph of a red bat carrying two large young in flight is credited to Leonard Lee Rue III. I have studied this photograph. Although a pretty picture, I suspect that it is misleading. I suspect that it may have been staged by dropping the bat and snapping the picture as she spread her wings to break the fall. I doubt that the bat was in flight. If anyone knows the circumstances regarding this picture, and my evaluation is unfair, I would be glad to print a retraction.

I have noticed with interest your comments on the ability of bats to carry their young while on feeding flights. I am inclined to agree with you that the weight of the young would seriously interfere with adequate maneuvering in pursuit of insects. Certainly, the few cases of hoary bats burdened with nearly full-grown young that I have observed in recent years appeared unable to fly at all with their young.

On the other hand I still vividly remember watching one or more hoary bats feeding over a lake at Hopewell, Pa., more than 30 years ago. One with young was shot down as you will note in the enclosed Bulletin no. 13, by Earl L. Poole; and you will notice also a drawing depicting the situation. In case you do not have this bulletin, I will be glad to contribute it to your library. Charles E. Mohr.

Ed. note: The bulletin enclosed was Poole's Mammals of Berks County, Pennsylvania, 1932, Bull. Reading Public Museum & Art Gallery. Although it is a classic source of excellent natural history information on mammals, I had never seen a copy, and was delighted to get it. It is remarkable what all Poole and his young colleagues (Mohr and others) discovered about the mammals in those days. For instance Poole described August swarming at the caves. They netted (what kind of a net?) lots of pipistrelles, little brown bats, and M. keenii by blocking passageways with a net and capturing the bats as they entered. He noted that they caught far more bats than they ever found in the caves in winter. They also did some homing experiments with the bats captured.

The discussion of bats impaled on barbed wire was interesting (BRN, Oct. 1967), but I think you have missed a possible explanation of the phenomenon. Your suggestion that bats caught on the wire were involved in a food-catching maneuver is reasonable, but it is not necessary to conclude that the bats had mistaken a barb for a bug. Barbed wire fences are frequently used as sleeping perches by various kinds of insects. I can remember seeing large beetles and diurnal orthopterans sleeping on fences, and in years of grasshopper irruptions in western Oklahoma the fences may be liberally festooned with hoppers at night. It seems to me that a bat attempting to pick off a grasshopper sitting on a strand of barbed wire might easily become impaled on a nearby barb. Clarence J. McCoy, Jr.

I certainly enjoyed the October issue, especially the article on "Why bats impale on barbed wire". Keep up the excellent work.

While mist-netting this summer an interesting experience happened to me. On the way to my nets, which were sitting in a small creek, I noticed an object

hanging from the top strand of a barbed wire fence. As I got closer I saw that it was a red bat, Lasiurus borealis, hanging by its interfemoral membrane. I photographed and banded this bat. Wilbur J. Gunier.

I was interested in your comments on bats carrying their young while feeding, and I agree that it is probably not a normal behavior and that reported cases are likely to represent instances of bats transporting their young, or individuals that were disturbed at the roost and forced to fly before divesting themselves of their young.

When collecting red bats fairly regularly in southern Illinois some years ago, I shot specimens through the period of visible pregnancy, recent parturition and lactation without taking any carrying young, which indicated to me that this was not a commonplace event (Amer. Midl. Nat. 1958, 60: 230). James N. Layne.

I thought you might like the enclosed picture of a male red bat which my wife and I found on a fence south of Murphysboro, Jackson County, Illinois. This one differs from most cases of barbed wire impaling you cited in BRN 8:29. The barb did not penetrate the interfemoral membrane at all, but rather first penetrated the trailing edge of the wing membrane near the distal end of the fifth phalanx. The wingtip later was entangled in the same barb. Stephen R. Humphrey.

On November 10, 1967, an adult male Lasiurus borealis was found in the evening where he had impaled on an arm of a television antenna atop a house in Huntington, West Virginia. He was pierced through the interfemoral membrane near the proximal end of the femur. The bat survived and flew well when released on November 12. W. Gene Frum.

HERE AND THERE

Our book on the bats of the United States is in completed manuscript. It was sent to a reviewer before Christmas. If a favorable report is received on it, it will go to the publisher and will appear in the fall of this year or spring of 1969.

ARTHUR GREENHALL, at the Bird & Mammal Laboratories, U.S. National Museum, Washington, D.C. 20560, wants to announce that he has for distribution a supply of papers of a translation from the Polish of The Bats of Pulawy by Adam Krzanowski which appeared in Acta Theriologica 1: 87-108, 108, 1957. This paper has a good deal of information about the habits and local abundance of the various species.

D. S. THAKAR, Dept. of Zoology, University of Udaipur, Udaipur (Rajasthan), India, is trying to obtain a copy of a paper in Japanese by I. Tamura, entitled Comparative anatomical studies of the brainstem, with special reference to the reticular formation and its related nuclei of Chiroptera. Acta Inst. Anat. Niigata, 50: 65-98, with 41 illustrations, 1961. He was unable to get a reprint from the author, and asked if I could send him one. Although we have a pretty good library at the University of Kentucky, I have been unable to find this

journal on campus. Most of us are illiterate here and do not even read Japanese.

WILLIAM WIMSATT AND ADAM KRZANOWSKI have both responded to Dr. Thakar's plea in the last issue for references on the brain of bats. They listed the following:

- Mann, G. 1960. Neurobiologia de *Desmodus rotundus*. Invest. Zool. Chil. 6: 79-98.
 _____ 1961. *Bulbus olfactorius accessorius* in Chiroptera. J. Comp. Neurol. 116: 135-144.
- Schneider, R. 1957. Metrisch Untersuchungen am Grosshirn der Chiroptera. Anat. Anzeiger, Jena (Germany) 104:142-149.
 _____ 1957. Morphologische Untersuchungen am Gehirn der Chiroptera. Abhandl. Senckenberg. Naturforsch. Ges. 495: 1-92. Also Z. Saugetierk. 21: 182-183, 1957.
- Dechaseaux, C. 1956. Moulages endocraniens naturels de Microchiropteres fossiles. Ann. Paleont. 42: 117-137.
 _____ 1956. L'encephale des mammiferes volants. pp 51-58 Colloques Internat. C.N.R.S. vol 60, Problems actuels de Paleontologie. Publ. Centre Nat. Res. Sci.
- Edinger, T. 1964. Recent advances in paleoneurology. Progress in Brain Research. Amsterdam. 6: 147-160.
 _____ 1964. Midbrain exposure and overlap in mammals. Amer. Zoologist. 4:5-21.

STEPHEN HUMPHREY commented on the feeding habits of a Tadarida brasiliensis which he kept in a cage. It accepted, in descending order of preference: live June beetles, mealworms, and canned dog food. It would eat up to 12 June beetles at one sitting, always discarding the wings and wing covers. The bat consistently rejected live moths of all sizes. Humphrey mentioned his experience because studies on excreta of this species suggest that it feeds almost entirely on moths.

WILBUR GUNIER has been doing some homing studies with Myotis grisescens. He finds they return well from 60 and 90 miles. He has also been having good luck with his project of banding red bats for migration studies. He has received a \$57,000 grant from the U.S. office of education to set up a high school training program in field ecology and to establish an ecological museum.

JAMES HARDIN, MICHAEL HARVEY AND JAMES PERRY, all of whom are now teaching at Memphis State, have been doing some bat banding in the Tennessee caves. They have been working mainly with Myotis grisescens and M. keenii.

The OZARK UNDERGROUND LABORATORY has been established near Forsyth, Missouri. This consists of a fine cave with a good fauna, including an estimated 100,000 M. grisescens, and a couple of buildings. Trails have been built through the cave for easy access. A shaft has been sunk to provide easy access from the laboratory building. The natural entrance has been gated in an attempt to exclude spelunkers. For information regarding this facility write to Thomas Aley, box 61, Winona, Mo. 65588.

The CDC Veterinary Public Health Notes for September, 1967, notes an unusually high incidence of bat rabies in Vermont recently. Between August 1 and mid-September, 5 rabid bats were found from 4 counties. These were among 45 bats that were submitted for examination.

HAROLD HITCHCOCK says that the Vermont Department of Health is somewhat interested in the possibility of having him do a survey of bat rabies such as he did in Massachusetts a few years ago. Likely the recent cases suggest the possibility of an increase in the disease up there. Until recent years New England has seemed to be remarkably free of rabies as compared to other regions.

I have postponed my work on the taxonomic problems of the long-eared Myotis of the Northwest. When I started to gather up specimens to study, I learned that Seth Benson was still working on this problem. He had borrowed material in 1945 and still has it. Since he probably knows more about these animals and the problems involved, I am very glad to learn that he is actively working on the problem.

I can understand why it would take some time to work out the taxonomy of this group. I borrowed specimens from several museums, and the more I saw the more confused I became. I decided that to understand them I should try to become thoroughly familiar with them in the field. I hope to do a little collecting in Oregon next summer, and if Benson has not done anything with the group by the following year, I will try to spend the major part of the summer of 1969 in critical areas of Oregon, Washington and British Columbia.

JEREMY J. HATCH is interested in homing and navigation of bats. He plans to try some work with radios on Eptesicus fuscus. He is now working with Griffin, Barbour and I got a little equipment grant to build radios and buy receivers for an attempt at working out feeding range, duration of foraging, and choice of diurnal roosting sites of Lasiurus cinereus. We will do this in Colorado. We plan to test the equipment and methods with some of our local big brown bats before going west. The angle on all this, of course, is to get at the migration of hoary bats. We would like to tag migrants in Arizona and New Mexico, and work out their speed and movement patterns as they travel northward or wherever they go.

JAMES HEDGES sent me a series of clippings from Iowa newspapers. Seems that after a rabid bat bit somebody the local papers all ran stories on how to keep bats out of the house, and warnings of not to handle bats found on the ground.

Hedges has been mapping Iowa caves; has about 125 of them done. He can supply maps to those who need them in their work. His address is 8218 Sherrill, Hyattsville, Maryland.

IYAD NADER wrote about some of his recent collecting expeditions. He found a small colony of mouse-tailed bats, Rhinopoma hardwickei, 280 km W of Baghdad, Iraq. Six specimens were collected, and one was deposited in the collection of the Biological Research Center in Iraq.

An AP bulletin of August 31, 1967, reported death of bats at Carlsbad. It said that Philip van Cleave, Naturalist at Carlsbad Caverns National Park, noted a high number of deaths among the cavern bats. He said it was impossible to tell how many have died because of the fluctuation in population and the number of migrant bats which come into the cave. He said the cause seemed to be some sort of poisoning.

The CDC Veterinary Public Health Notes for October, 1967, reported that Dr. Paul Fenje, of the University of Toronto, has developed a new rabies vaccine for use in humans. It is produced from hamster kidney tissue in culture. Application has been made for license to use it on humans in Canada.

M. BROCK FENTON (Royal Ont. Mus., Toronto 5) has been working on swarming of bats in Canada, and has gathered quite a bit of information in the past two summers. He would like to discuss problems with others who are working on this subject.

RUSSELL E. MUMFORD spent the period of March 1 to September 1 in South Africa where he did some bat work, including some banding with Dr. J.A.J. Meester of the University of Pretoria. Their banding program was begun in 1960. It is concerned primarily with Miniopterus and Rhinolophus. Several species of the latter use the caves in that area. During the stay Russ was able to do a little bat collecting and become acquainted at first hand with some species new to him.

DAVID KERRIDGE is in the Biology Department of the University of Victoria (last issue I mistakenly put him at U.B.C.). He says he is having trouble finding bats out there. The local group of spelunkers find only an occasional bat in the caves. He thinks perhaps the bats winter above ground, as the winters are mild.

CLYDE SENGER visited the cave in southwestern Washington where he has been studying the bats for several years. On September 28 he found 10 Plecotus townsendii in the caves on Mt. St. Helens. There was one Myotis volans and one M. yumanensis in the cave torpid at 6°C. He set up a mist net at the cave at 2200 feet elevation where the temperature was 7°C, and caught one M. lucifugus. He also caught one of the long-eared things which he sent to me alive. It was a nice specimen of the undescribed race of Myotis thysanodes.

During the Thanksgiving holidays Senger visited the Mt. St. Helens area again. He saw no thysanodes this time, but found 6 M. volans and one M. yumanensis or young M. lucifugus in addition to numerous P. townsendii. All were torpid. He did not net, as it was snowing and freezing.

He saw 21 of 278 P. townsendii he had banded two years ago with the no. 2 bands. Only one of these had cut through the wing membrane, and one other had some swelling produced. On the other hand nearly half of the 28 recaptures from 210 P. townsendii banded last year with the bat series bands had cut through the membrane. However there did not seem to be significant swelling or scar tissue formation. He does not think the recapture ratios are indicative of survival, because the bats seem to move from one cave to another readily when disturbed, and he does not think he is sampling all the caves in the area. He says the damage from the bat series of bands worries him, but may not be too serious.

Two P. townsendii were seen one afternoon in Bat Cave at 1200 feet, and the next morning at Flow and Spider caves at 2800 feet, 4 miles away. The temperature at the higher caves had been near freezing all day as it was snowing, with 4 inches on the ground. Early in the evening it cleared and the temperature dropped from -1°C to -3.6°C overnight. Senger was surprised that the bats had moved so far under such conditions, and wonders how many fail to survive such movements when disturbed. Weight losses were measured for bats which had moved. A 12.76g male lost .46g; a 10.59g male lost .21g; and a 13.86g female lost .16g.

The CDC rabies summary for the second quarter (April through June) of 1967 was released in October. It showed 74 cases of rabies in bats for the quarter. On June 12 Rhode Island became the last of the old 48 to report a rabid bat.

The Tech Troglodyte Vol 5, no. 1 p 6-7, 1966, has an interesting note about the bats in a cave in Virginia. Pig Hole Cave, a popular cave with the VPI Cave Club was surveyed in the early 1940's. It was found that the back section of the cave was only 14 feet above (sic) ground; consequently a new entrance was dug. The 15 inch square hole produced was then lined with wood and drain tiles.

As one approaches the last hundred feet of this back section he becomes aware of large deposits of bat guano, sometimes 6 feet deep. However, very few bats are to be seen in the cave. The theory is advanced that at one time there were large colonies of bats in this area, but the opening of the new entrance caused the passage to dry out, thus forcing the bats to leave. Or perhaps it was a draft of varying temperatures that did it.

Two years ago several of the Tech cavers built a wooden cover for the new entrance, and the draft has been cut down considerably. Since that time there seem to be more bats in the back area. A count should be made to determine what significant changes may occur in years to come. Someone should count the bats about 4 times a year. Of course the season and time of day would be important. On February 26 the first count was made. There were 37 bats in the rear portion of the cave; these included small brown bats and social bats. There was a slight snow cover and temperature was in the low 20's.

Ed. note: This is certainly an interesting situation. I doubt that the hibernating bats had anything to do with the guano. The only bats living in the caves of Virginia which produce guano piles are Plecotus townsendii and Myotis grisescens, both of which are scarce and local, and unknown around Blacksburg. Perhaps they used to be in the cave but abandoned it long before the shaft was made. Possibly it is a fossil deposit. John Hall found a huge guano pile in Mammoth Cave, Ky., where fossil remains of Tadarida were found. Perhaps John would be interested in sifting this guano pile. The VPI cavers I have found are very helpful, and glad to join a scientific project. Their address is box 471, Blacksburg, Va. 24060.

ON THE STATUS OF LEPTONYCTERIS YERBABUENAE

In their review of the Genus Leptonycteris Davis and Carter (Proc. Biol. Soc. Wash. 75: 193-198, 1962) concluded that Leptonycteris yerbabuenae Martinez and Villa (An. Inst. Biol. Mex. 11: 291-361, 1940) is a synonym of

Leptonycteris nivalis. Although the series upon which the name verbabuenae is based was destroyed, they were able to determine this by the measurements given in the original description. Since Hoffmeister seems to have been the first to have described the smaller species of this bat found in the United States, Davis and Carter applied the name Leptonycteris sanborni Hoffmeister to this species.

However Villa, apparently unaware of the paper by Davis and Carter, resurrected the name verbabuenae, and used it for this species in his book on the bats of Mexico, published in 1967. Villa considered L. sanborni a synonym of L. verbabuenae. Therefore I decided I had to study the problem in order to decide which name to use in our book.

The two species are distinct and easily separable, as judged by the few specimens I have seen. The length of the third finger is noticeably different. Davis & Carter gave the range for 10 specimens of each species as 16.2-18.7mm for the 3rd phalynx of the third finger of L. nivalis, and 9.8-12.4 for L. sanborni. Length of the third finger ranged 107.1-115.3mm and 92.1-101.2mm, respectively. With such a difference one would think it would be easy to tell which species had been described by Martinez and Villa simply by looking at their measurements.

Martinez and Villa gave an excellent description of their animal. They had 91 specimens in the type series. They have 8 tables of measurements. They did statistical treatments of each measurement, and presented the mean, the first and third quartiles, the standard deviation, and the variance. The sexes differ in size and were tabulated separately.

Examination of the table of body measurements of females must lead one to the same conclusion reached by Davis and Carter. Although somewhat smaller they are clearly within the range of L. nivalis. The range from first to third quartile (i. e., including the middle 50% of the specimens) was 13.80-17.24mm for the 3rd phalynx, and 103.09-111.43mm for the length of the third finger.

However, the table for males gives quite a different picture. The comparable figures to those listed above for females are: 12.98-16.13 and 99.67-107.87mm. These figures and the averages given by Martinez and Villa fall about as close as you can get to being half way between the comparable figures for the two species as given by Davis & Carter.

Unfortunate circumstances limit the usefulness of the table of measurements in Davis & Carter for comparing to those in Martinez and Villa. The samples are so small that they do not show the difference in size of the sexes very well. Under L. sanborni one column is labeled females and the other is labeled females; I don't know which, if either, were males. The sample sizes are so small that they may not adequate size ranges for either sex to compare with Martinez and Villa.

Several possible explanations exist. Possibly the two forms intergrade in south-central Mexico, Martinez and Villa having described the intermediate population. Perhaps their 91 specimens included a substantial number of each species. Perhaps some of them were not fully grown.

After spending several hours studying this problem I have been unable to come to a decision. It seems to me that Martinez and Villa probably recognized that there are two kinds of Leptonycteris in Mexico. The question remains- did they describe the right one. I would appreciate hearing any ideas on this. W. H. Davis.

ON THE STATUS OF MYOTIS MICRONYX

I have long been suspicious of the single record of Myotis evotis from Mexico. The specimen is from Comondu, Baja California, elevation 700 feet. This is desert scrub and is far from the normal habitat of this species. This specimen was described by Nelson and Goldman as Myotis micronyx sp. nov. (Proc. Biol. Soc. Wash. 22:28, 1909). Miller and Allen synonymized it under M. evotis in 1928 (Bull. 144 U.S. Nat. Mus. p. 117). However, they also considered specimens from Perote, Veracruz and Los Masos, Jalisco, to be M. evotis, although these specimens are now recognized as a different species, which was described by Baker and Stains in 1955 as Myotis evotis auriculus. The same species was described 18 days later by Hoffmeister and Krutzsch, who also considered it a race of evotis. They examined the specimens from Veracruz and Jalisco, and considered them to be this form.

To Barbour and me it appeared likely that if the two specimens from Veracruz and Jalisco were M. auriculus, the one from Baja California likely would also be. The original description of it as being similar to M. evotis, but having much smaller ears, and a braincase higher, more inflated anteriorly, arching more abruptly from the rostrum, so closely fitted that of auriculus as given by Findley (J. Mamm. 41:16, 1960), that we felt rather confident that they must be the same, and that the name used by Nelson and Goldman would survive. To check on this I went to Washington in December and examined the type of Myotis micronyx. It is a Myotis evotis.

A point of interest about this specimen is that it was taken on November 8, 1905. M. evotis is one of the many species of common western bats whose winter range is unknown. Perhaps some of them migrate to Baja California. W. H. Davis.

DATA ON OTHER TYPE SPECIMENS, ETC.

While in Washington I took the opportunity to examine some other specimens I had wanted to see. I had been suspicious of the measurement of the forearm of the type of M. occultus as given in Miller and Allen. The 33.0mm is much smaller than that of any other in their sample, and much smaller than any I had ever measured. I noticed that both forearms on the type had been badly shattered; the measurement is meaningless.

While at it, I looked at the rest of the types of Myotis at USNM. Once a name gets into synonymy the type is rarely reexamined. I found little of interest though. The type of M. yumanensis lutosus is a juvenile taken July 17, 1892; it is listed in the Catalogue of Types (Poole & Schantz) as an adult. The "type" of Myotis oregonensis (4 types are listed; 3 as lost), which has been synonymized as Myotis californicus does not seem to be the latter species. The foot is too large, especially the claws; skull and molars are too large. It may be a M. yumanensis.

I also got an opportunity to examine one of the two specimens from Colorado which Findley and Jones found to be intermediate between Myotis lucifugus and M. occultus. This specimen, taken at the Conejos River, 8300 feet, on September 4, 1904, was a juvenile, as evidenced by the cartilagenous gap of 1.7mm between metacarpal and phalanx. The age would likely influence one of the inter-

mediate characteristics, the complete lack of a sagittal crest. The specimen is also somewhat intermediate in other characteristics, however.

I also saw a specimen from 4 mi E Mosca, Colorado. This is the other locality listed by Findley and Jones. This may not be the specimen they examined, however, for they list theirs as being at the University of Colorado. The specimen at the USNM from this locality is an alcoholic with skull removed. It was taken by Dick Stalling sometime in 1965. Mr. Stalling is a subscriber; perhaps I can find out from him something about this locality before we visit it next summer. We plan to visit these localities and collect good series of these bats.

RECENT LITERATURE

- AGRAWAL, V. 1966. Two new trematodes from the intestine of a yellow bat, Nycticeius kuhlii, from Lucknow, India. *Trans Am Microscop Soc.* 85: 559-563.
- ARATA, A. A., J. B. VAUGHN & M. E. THOMAS. 1967. Food habits of certain Colombian bats. *J. Mamm.* 48: 653-655.
- ATALIAH, S. I. & D. L. HARRISON. 1967. New records of rodents, bats and insectivores from the Arabian Peninsula. *J Zool Proc Zool Soc London.* 153: 311-319.
- BAKER, R. H. 1967. A new subspecies of pallid bat (Chiroptera: Vespertilionidae) from northeastern Mexico. *SW Nat.* 12: 329-330.
- BRADLEY, W. G. & M. J. O'FARRELL. 1967. The mastiff bat, Eumops perotis, in southern Nevada. *J. Mamm.* 48: 672.
- CABALLERO Y CABALLERO, E. 1964. Helminthos de la Republica de Panama. XXIV. Descripcion de tres especies de trematodos Lecithodendriidae que parasitan al murcielago Myotis nigricans nigricans (Schinz). *An Escuela Nac Cienc Biol Mex.* 13: 73-82.
- DE ALENCAR, R. & W. SUGAY. 1966. Hemograma de quiropteros hematofagos Desmodus rotundus: Subsídios a hematologia comparada. *Arq. Inst Biol.* 33: 81-89.
- DIERCKS, F. H., M. H. SHACKLETTE, H. B. KELLY, P.D. KLITE, S. W. THOMPSON AND C. M. KEENAN. 1967. Naturally occurring histoplasmosis among 935 bats collected in Panama and the Canal Zone July 1961- February 1963. *Am J Trop Med Hyg.* 14: 1069-1072.
- DRYER, R. L. & J. R. PALSRUD. 1966. Effects of arousal on ATP levels in bats (hypothermic storage) *Fed Proc.* 25: 1293-1296.
- DULIC, B. 1967. Comparative study of the chromosomes of the spleen of some European Rhinolophidae (Mammalia, Chiroptera) . *Bull Sci Conseil Acad RSF Yugoslov Sec A.* 12: 63-65.
- DWYER, P. D. 1965. Flight patterns of some Australian bats. *Vict Nat.* 82: 36-41.

- GOTTSCHANG, J. L. 1966. Occurrence of the hoary bat in Ohio. Ohio J. Sci. 66: 527-529.
- HAYS, H. A. & P. H. IRELAND. A big free-tailed bat (Tadarida macrotis) taken in southeastern Kansas. SW Nat. 12: 196.
- HERREID, C. F. II. 1967. Mortality statistics of young bats. Ecology. 48: 310-312.
- IRWIN, D. W. & R. J. BAKER. 1967. Additional records of bats from Arizona and Sonora. SW Nat 12: 195.
- IVANYAN, A. K. 1966. Sezonnaya periodika krovotoreniya u letuchikh myshei. Zh Evolyuts Biokhim Fiziol. 2: 339-346. Seasonal rhythm of hemopoiesis in bats.
- KIRK, G. 1967. Zur gegenwärtigen Lage des gesetzlichen Fledermausschutzes. Allg Forstzeitschrift. 28: no p no. on my reprint.
- KRZANOWSKI, A. 1957 (1956). The bats of Pulawy. List of species and biological observations. Sci Publ Foreign Coop Ctr Central Inst Sci Tech & Econ Information, Warsaw. Translation of paper in Acta Theriol. 1: 87-108.
- LAVAL, R. K. 1967. Records of bats from the southeastern United States. J Mamm. 48: 645-648.
- LICHT, P. & P. LETTNER. 1967. Physiological responses to high environmental temperatures in three species of Microchiropteran bats. Comp Biochem Physiol. 22: 371-387.
- MACHADO, C. E. 1966. Notas sobre Streblidae (Diptera) de Venezuela. I Las especies del genero Pterellipsis Coquillet. Acta Biol Venez. 5: 69-79.
- MARINKELLE, C. & E. GROSE. 1966. Importancia de los murcielagos para la salud publica, con especial referencia a las micosis zoonoticas. Antioquia Med. 16: 179-194.
- MICHAEL, A. D. & J. B. BIRCH. 1967. First Texas record of Plecotus rafinesquii. J Mamm. 48:672.
- MITCHELL, G. C. 1967. Population study of the funnel-eared bat (Natalus stramineus) in Sonora. SW Nat. 12: 172-175.
- MOHRES, F. P. & G. NEUWEILER. 1966. Die ultraschallorientierung der Grossblat-Fledermause (Chiroptera-Megadermatidae). Z vergl Physiol. 53: 195-227.
- MUNYER, E. A. 1967. A parturition date for the hoary bat, Lasiurus c. cinereus, in Illinois and notes on the newborn young. Trans Illinois Acad Sci. 60: 95-97.

- MUTERE, F. A. 1967. The breeding biology of equatorial vertebrates: reproduction in the fruit bat, Eidolon helvum, at latitude 0° 20' N. J Zool Proc Zool Soc London. 153: 153-161.
- O'FARRELL, M. J., W. G. BRADLEY & G. W. JONES. 1967. Fall and winter bat activity at a desert spring in southern Nevada. SW Nat. 12: 163-171.
- PACKARD, R. L. & F. W. JUDD. 1967. Two noteworthy records of bats from Chihuahua. SW Nat. 12: 330.
- PARADISO, J. L. & A. M. GREENHALL. 1967. Longevity records for American bats. Am Midl Nat. 78: 251-252.
- PHILLIPS, C. J. 1967. A new subspecies of horseshoe bat (Hipposideros diadema) from the Soloman Islands. Proc Biol Soc Wash. 80: 35-40.
- _____. 1967. A collection of bats from Laos. J Mamm. 48: 633-636.
- _____. 1967. Occurrence of the least horseshoe bat, Hipposideros cineraceus, in Sabah (North Borneo). J Mamm. 48:667-668.
- PIRLOT, P. 1964. Nota sobre la ecologia de ciertos quiropteros de la region del Rio Palmar, Venezuela. Kasmera. 1: 289-307.
- _____. 1967. Periodicite de la reproduction chez les chiropteres neotropicaux. Mammalia. 31: 361-366.
- PYE, A. 1967. The structure of the cochlea in Chiroptera III Microchiroptera: Phyllostomatoidea. J Morph. 121: 241-254.
- RADOVSKY, F. J. 1967. The Macronyssidae and Laelapidae (Acarina: Mesostigmata) parasitic on bats. Univ California Publ Entomol. 46: 1-288.
- ROEDER, J. K. 1967. Turning tendency of moths exposed to ultrasound while in stationary flight. J Insect Physiol. 13: 873-888.
- SCHULTZ, W. 1965. Studien uber den Magen-Darm-Kanal der Chiropteren. Ein Beitrag zum Problem der Homologisierung von Abschnitten des Säugetierdarms. Z Wiss Zool. 171: 241-391.
- SEALANDER, J. A. 1967. First record of small-footed myotis in Arkansas. J Mamm. 48: 666.
- STEBBINGS, R. E. 1967. Identification and distribution of bats of the genus Plecotus in England. J Zool Proc Zool Soc London. 153: 291-310.
- STRANDTMANN, R. W. 1962. Nycteriglyphus bifoliumn. sp., a new cavernicolous mite associated with bats (Chiroptera) (Acarina: Glycyphagidae). Acarologia. 4: 623-631.

- STUDIER, E. H. 1966. Studies on the mechanisms of ammonia tolerance of the guano bat. *J. Exp. Zool.* 163: 79-86.
- _____, L. R. BECK & R. G. LINDEBORG. 1967. Tolerance and initial metabolic response to ammonia intoxication in selected bats and rodents. *J. Mamm.* 48: 564-572.
- VAN TIEN, D. 1966. Notes sur une collection de petits mammiferes des regions de Thanhhoa, Nghe-an, Ha-tinh et Quang-binh (Centre Vietnam). *Zool. Anz.* 176: 428-437.
- VILLA, B. & W. LOPEZ-FORMENT. 1967. Cinco casos de depredacion de pequenos vertebrados en murcielagos de Mexico. *An Inst. Biol. Mex.* 37: 187-194.
- WAINBERG, R. L. & N. L. DEROSA. 1966. Sexual chromatin in South American bats. Its study and possible phylogenetic importance. *Acta Physiol. Latino Am.* 16: 257-265.
- WERNER, H. J. 1966. Observations on the facial glands of the guano bat Tadarida brasiliensis mexicana (Saussure). *Proc. Louisiana Acad. Sci.* 29: 156-160.
- WHITAKER, J. O., Jr. 1967. Hoary bat apparently hibernating in Indiana. *J. Mamm.* 48: 663.

From: Dr. Wayne H. Davis
 Department of Zoology
 University of Kentucky
 Lexington, Kentucky 40506
 U. S. A.



Red Bat Impaled on a Barbed Wire Fence

THE COVER

This male red bat was found impaled on a barbed wire fence south of Murphysboro, Jackson Co., Illinois by Stephen R. Humphrey. The barb penetrated the distal edge of the wing near the end of the fifth phalanx.

The cover picture is from a color slide which Humphrey sent me. Barbour made the black and white print from it. For a discussion of bats impaling on barbed wire see the last two issues of ERN.

Bat Research News appears quarterly: January, April, July and October. Subscription rate is \$1.00 for two years. All back issues are available for \$ 3.00. Wayne H. Davis, Department of Zoology, University of Kentucky, Lexington, Ky. 40506 U.S.A.

PERMITS TO NET BATS OUT WEST

During recent years there has been a trend toward legal protection of small mammals in some of the western states; scientific collector's permits are needed to set mouse traps. I would like to think that these policies have developed out of concern for a state's native wildlife, but knowing the attitudes of many ranchers toward range rodents and the political strength of the sheepmen in western states, I think it unlikely that this is a major factor. More likely it is an extension of the ever developing trend in all states to try to squeeze more money out of each visitor.

To find out what the laws are regarding netting bats in the western states I wrote to each one that I was planning to visit the state next summer to take bats in mist nets for use in scientific study. I asked if a permit was necessary. The following results were obtained:

ARIZONA: Permit required. Application blank asks for names of species to be collected as well as numbers and where. No fee is indicated.

CALIFORNIA: Permit required. Apparently state and federal bird banding permits are also necessary for one who wishes to net bats. Seven sheets of forms and literature were sent. Included was a flier of Information Pertaining to Scientific Collecting Permits. It lists the game animals of the state. These can be taken with a hunting license without permit during the open season with specific bag and possession limits and area and method restrictions. It also lists non-protected mammals which can be taken without a hunting license. Bats do not appear on either list. Perhaps they are not mammals. Application form asks for species and numbers to be collected, as well as the localities and methods of collecting. Fee is \$10.00.

COLORADO: Permit required. Form asks for types and numbers of animals to be collected as well as methods. List counties where you will be working. Specific dates (if known). A permittee must notify the Wildlife Conservation Officer in whose district he is going to collect, and, if specified on the permit, the chief warden in Denver. Notification must be at least 24 hours prior to collecting, and must include types of animals to be collected and the exact date and location collections are to be made. A new notification must be made for each trip into the field. Animals may

be held in captivity when so specified on the permit. Fee is \$1.00 plus amount of money necessary to purchase a hunting license.

IDAHO: No permit required.

MONTANA: No permit required; however they would like to know when and where the bat collecting will be done.

NEBRASKA: Permit required. Apparently no fee.

NEVADA: A permit for taking bats in mist nets was sent to me in response to my letter of inquiry.

NEW MEXICO: A permit to take bats was sent to me.

NORTH DAKOTA: No permit is necessary. They would appreciate it if the local game warden is informed where we are working so that he would not need spend unnecessary time investigating if local people report our operations to him.

OKLAHOMA: Permit required. Hunting license apparently required. List species to be taken. Two letters of recommendation are needed. Fee \$1.00.

OREGON: No objection to collecting bats; letter from the director authorizes me to do so.

SOUTH DAKOTA: Permit required. List species and numbers to be collected. Fee \$3.00.

TEXAS: Permit required. List species and numbers. Two letters of recommendation from recognized mammalogists. Application must be notarized. No fee.

UTAH. No permit needed.

WASHINGTON: No permit required.

WYOMING: A permit to net bats was sent to me.

INTERNATIONAL BAT RESEARCH CONFERENCE

The conference on bat research that was to have been held last July in Czechoslovakia has been rescheduled for September 5- 9, 1968. It will be at the Castle Hluboka, near Ceske Budejovice, South Bohemia. Dr. J. Gaisler, Institute of Vertebrate Zoology, Drobneho 28, Brno, Czechoslovakia, will be in charge. The program lists 42 contributors and titles of their papers. It looks like a remarkably excellent program. Unfortunately, I will be unable to attend; I wrote to NSF asking about funds and they replied that I need not bother to apply. They had no money for international travel. I dont know of any other source of money for such travel.

CAVES TO BE PRESERVED !

Two caves containing unique endemic species of animal life are to be saved from destruction thanks to the Nature Conservancy, the National Speleological Society, and all interested contributors.

Shelta Cave in Huntsville, Alabama, is probably second only to Mammoth Cave as the most significant cave in the United States to the biologist. It is the type locality for nine species of cave animals. It contains three species of blind crayfish and a blind fish in its stream system. It is the only locality for a species of blind shrimp. It contains a cave salamander and a colony of Myotis grisescens as well as many species of widely distributed cave endemic invertebrates. One of our graduate students, John Cooper, is working on his PhD dissertation problem on the ecology of this cave system.

Last year a Huntsville supermarket, buoyed with a booming business and needing space for more parking, decided to fill in the cave and make an asphalt parking area. Local efforts by a conservationist to raise the \$10,000 needed to buy the land to save the cave were not successful, but an appeal to the Nature Conservancy was not too late. The Conservancy advanced the money to the National Speleological Society from their revolving loan fund. The NSS is now soliciting money from its members and other interested individuals to try to pay off the loan and save the cave. I have contributed substantially to this fund and hope that you will too. Make checks payable to the NSS Shelta Cave Fund and send them to John Cooper, Dept. of Zoology, University of Kentucky, Lexington 40506.

Ezell's Cave, in the city of San Marcos, Texas, is the type locality of the wierd blind salamander Typhlomolge rathbuni. This remarkable creature is known only from the cave and a deep well nearby. The cave is also the only known locality for a blind Palaemonetes shrimp. It used to contain a colony of the common cave bat Myotis velifer, but these have long abandoned it. Perhaps with protection they may come back. Their guano is probably significant in the food chain of the cave life.

The Texas chapter of the Nature Conservancy is buying Ezell's Cave; you would feel good if you would help the blind by sending a contribution to: The Nature Conservancy, Texas Chapter, 909 Reliance Life Building, Dallas, Texas, 75201. Contributions to both these causes are tax deductible.

About three years ago I made an important decision for myself about giving money to causes. I had been giving money when asked to the various health drives and the United Fund, etc. I had not been giving to the conservation causes, although I felt badly each time I threw an appeal into the basket. I rationalized by thinking the number of such causes was endless. Then one day I decided that the human oriented funds, though worthy, are well supported on a broad base, whereas conservation has few people to tap (how many in your town give to United Fund; how many to NC?); my money can do more good elsewhere. Next time I was asked to help the Unitarian Church I wrote out a check for \$100 to the Nature Conservancy. Since that time I have never failed to contribute to any conservation fund when solicited, and I have given nothing to human causes except population control. Exception is that I have not yet brought myself to turn away the little neighbor ladies who ring my bell soliciting for research funds for some wierd disease of Homo sapiens. Here I least like to give, because I realize that for any human health research there is more money available from Sam than there are competent people and good projects to use it. But how do you tell them that?

CAVE TO BE LOST !

Blanchard Springs Cavern, near Mt. View, Arkansas, is a huge cave with spectacular formations. It is said to compare favorably with Mammoth Cave and Carlsbad Caverns. In summer it shelters a great colony of Myotis grisescens and in winter M. sodalis hibernates there. It is one of an ever dwindling number of caves harboring these species which are now on the official list of rare and vanishing North American mammals. This cave belongs to you and me, for it is in the Ozark National Forest. I was therefore disturbed when I learned in January from Mick Harvey at Memphis State and John Sealander at the University of Arkansas that the Forest Service is developing it as a tourist attraction. Since I am concerned for the bats, and I do not think the U. S. Forest Service belongs in the commercial cave business, I decided to launch a campaign against this project. I wrote Sealander of my intentions and asked if he could find out for me how many bats of these two species were using the cave. His reply included:

"When I visited the cave I would estimate that I saw somewhere between 6,000 and 7,000 Myotis grisescens, mainly in two large aggregations, and about 150-200 M. sodalis. As we were able to visit only about half the cave I would expect that the population of M. grisescens especially is much larger. There was a large pile of guano under the one cluster which was about 7-8 feet deep.

" Present plans are not to develop all the cave, and it is possible that the bat populations may retreat to the more remote unlighted portions of the cave when it is opened to visitors. This is only a conjecture, of course".

Sealander says that the National Forest Service has already spent several hundred thousand dollars on the development and plans to spend four or five million before opening the cave to the public in another three or four years. They have already put in two elevator shafts, each to accommodate about 20-25 people, which will take visitors from the top of a hill to a lower passage in the cave at least 150 feet below. They have built a large amount of walkways which will be lighted and will have handrails to confine the visitors. Sealander says an excellent job has been done with respect to preserving the geological formations in the cave, but he fears the lights will drive out the bats eventually.

While all the above has been going on the supervisor of the Daniel Boone National Forest in Kentucky has been working to preserve the small colonies of M. sodalis that winter in several caves in that area. Two of the caves are on private holdings within the forest. The superintendent is acting as a result of a memorandum of November 25, 1966, from the Forest Service, U.S.D.A., regarding the Land and Water Conservation Fund Act of 1965. Under this act lands can be acquired for the habitat and preservation of species of fish or wildlife that have social or scientific values and that are threatened with extinction. The wildlife priority list for the acquisition of land under this act shows first priority for "Areas that are needed for the protection and management of rare and endangered wildlife and fish species." Therefore the forest administration plans to acquire these two bat caves. They will be gated and access limited to protect the bats.

Meanwhile back in the Ozarks the Forest Service owns a cave which shelters two species of bats (Myotis grisescens and M. sodalis) which are on the official list of endangered species of wildlife, and they are proceeding to destroy the cave by introducing lights. This project conflicts directly with Forest Service Policy as stated in the Forest Service Manual of November, 1967, R 8 Supplement No. 8 under Title 2600 - Wildlife Management. 2603 - Policy. Region 8 (Southern Region,

which includes Ozark National Forest) in wildlife management is to:

2. Manage all National Forest wildlife habitat to meet the requirements of the proper wildlife species, in numbers consistent with capacity.

7. Cooperate in the international program for protection of vanishing wildlife species.

If you want to express your opinion on the policy of the Forest Service regarding the lighting and commercializing of caves in our National Forests you might write to Secretary of Agriculture Orville Freeman. The Forest Service is under his jurisdiction. I expect that Senators McClellan and Fulbright of Arkansas would be pleased to hear the opinions of scientists and other citizens regarding this matter. Maybe even Wilbur Mills in the House would like to hear from you. I don't know how he feels about money coming into Arkansas, but he seems to be concerned about wasting federal funds elsewhere.

WYANDOTTE CAVE TO BE LOST ALSO

Wyandotte Cave, the type locality of Myotis sodalis, has been sort of a commercial cave for years. When I was last in it, there were hibernating clusters of a couple of thousand of these bats. No tours were held except during the summer. There were no electric lights in the cave; lanterns were used to show visitors through.

Wyandotte is perhaps the most important swarming cave in the midwest; Cope and his students have been netting and banding late summer and fall transient bats there by the thousands each year for many years. Many of the bats which winter in Kentucky caves stop by there in August. The significance of this swarming behavior to the bats is not yet understood.

The Indiana Department of Natural Resources now plans to "develop" the area. According to a story in the Louisville Courier-Journal of April 6, 1968, plans call for a 10 year 9.1 million dollar development program which the Director of the Department of Natural Resources called "one of the most exciting programs ever proposed in Indiana".

A new \$500,000 visitors' center will be built to serve the Wyandotte Caves. This will be the first project in the development program. An aerial tram will carry visitors up the long steep knob to the entrance of the two Wyandotte Caves. At the visitors' center there will also be a 260 car parking lot, a 60 site camping area, and a 100 unit picnic ground.

Surely such a development will include electric lights strung through the cave, and I suspect that its usefulness to the bats will be destroyed.

STATUS OF LEPTONYCTERIS YERABUENAE

Last issue I wrote on the problem brought up when Villa resurrected the above name in his book on the bats of Mexico. I was unable to reach a conclusion as to what name should be used for these long-tongued bats of the desert lowlands, and asked for comments on the problem. Three people wrote me; all expressed the opinion that L. yerabuena seems to be a synonym of L. nivalis as best can be determined.

Ronald Pine wrote that Ticol Alvarez has apparently examined at least some of the original material and has concluded that the name is a synonym of L. nivalis. He referred me to the following paper:

ALVAREZ, T. 1966. Redescubrimiento de algunos tipos de murciélagos mexicanos que se suponían perdidos. Revista de la Sociedad Mexicana de Historia Natural, 27: 191-197 (December).

Dilford Carter wrote that the measurements of many of the specimens listed by Martinez and Villa are measurements that clearly show them referable to L. nivalis. Others seem somewhat small for that species. Both species apparently occur at the type locality - Villa lists specimens examined of L. nivalis from there. Without the type specimen one can never know what they described as L. yerbabuenae. If the name is not a synonym of L. nivalis it is a nomen dubium.

Carter later came across Alvarez's paper and sent me a copy of it. Carter says that the three paratypes examined by Alvarez were subadults but that the characteristic hairy interfemoral membranes indicate they are L. nivalis. He says that of course the holotype is still missing and only that specimen could really clear the matter. It is interesting that in the paper Alvarez says he examined three paratypes of L. yerbabuenae, but in the summary he says he examined the type.

Robert J. Baker, who spent more than a year working on the taxonomy, distribution and life history of Leptonycteris, also commented on the problem. He finds L. nivalis to be quite rare, but L. sanborni common and widespread; he has recently seen specimens of the latter from Tamaulipas and Nuevo Leon. He says:

"I examined the Leptonycteris at the University of Mexico in September, 1966. In my opinion only a very few specimens (less than 12 as I recall) were L. nivalis. However, Dr. Villa showed me 4 drawers of skins which he called L. nivalis. In short, all the specimens labeled L. yerbabuenae were L. sanborni, and most of the L. nivalis were also L. sanborni.

"In the collection are specimens of both species from the cave at Yerbabuenae. The two species do not hybridize anywhere, based upon specimens that I have seen. My conclusions concerning the intermediate measurements are that they were young and/or a mixed sample.

"Because Martinez and Villa did not give measurements of the type, I doubt that it will ever be possible to tell which species they described. It seems to me best to use L. sanborni until some better proof is available on the identity of L. yerbabuenae."

HERE AND THERE

I will be in the West for most of the summer. I do not know what to do about the July issue of BRN. Perhaps I will work up an abbreviated issue before leaving in June, or I may wait until I return in August to work on it.

Our book on the Bats of the United States has been in the hands of the printer since February, but I do not know what its fate is now. To do it right will cost \$15,000 more than income anticipated. We and the press both want it done right. The University seems quite sympathetic, and will subsidize it to about \$10,000, but

we are still short by \$5,000. The National Geographic Society has said that they will entertain a proposal for such a grant, and this is now pending. I don't know what happens if they turn it down, for I have no other ideas as to where to get this kind of money for this purpose.

The book as now designed will contain 400 pages and be priced at \$15.00. It will have about 22 color plates with two pictures to a page. Pages are 8 1/2 by 11 and will be bound on the side. There will also be at least one black and white photo of each species. Figures, including skull photos and distribution maps, will average about 7 per species. The key will be completely illustrated with photographs of the characteristics mentioned.

SAMUEL LINHART was a recent visitor at UK. He stopped by to discuss plans for the vampire ecology work being planned in Mexico. He is with the U.S. Fish & Wildlife Service in Denver.

ALLEN BENTON was also here last month. He works on fleas and bats at the State University of New York at Fredonia.

The 1967 issue of MYOTIS has arrived. This is volume 5 of an annual newsletter of European bat research. It contains articles on Dr. M. Eisentraut, who is 65 years old this year; the status of bat protection in Europe; rabies in insectivorous bats; further notes on bats in mine floors; a foreign recovery of a noctule; distribution of central European bats; activities and results from various bat banders; new literature; and other notes. It is produced by Dr. H. Roer, Museum Alexander Koenig, Bonn.

MICHAEL J. HARVEY, at Memphis State, has come up with an idea for a new bat band. He suggests making them of a hard metal that bats couldn't mutilate, but having them notched so that one could close them with the fingers. He sketched his band like this:



During spring vacation I went to Texas with a fish collecting expedition. I planned to net the old railroad tunnel at Comstock. The land now belongs to one Martin King of Comstock. But don't see him if you want to go there; he won't let you on his land.

The rabies summary for the 3rd quarter (July, August, September) of 1967 has been published in the CDC ZOOZOSES Surveillance of January 1968. There were 1,170 laboratory confirmed cases during the period, 248 from bats. Forty-four states, D. C., Guam and Puerto Rico had one or more cases of rabies.

The Arizona Republic, Phoenix newspaper, had a nice article on ANTHONY ROSS March 3. Ross is now at Arizona Western College in Yuma.

CHARLES HANDLEY commented on the guano deposits of Pig Hole Cave, Virginia, that were mentioned in the last issue. He has taken his mammalogy class from the University of Virginia Mt. Lake Biological Station there each summer since 1962. He says the accumulation of old guano and the absence of bats and fresh deposits is striking. Recovery of bat remains has been a class project. Skulls and mandibles are abundant in the superficial layers and mostly represent Myotis sodalis.

The TECH TROGLODYTE Vol 5 No. 1 has an article on the lost bats of Pig Hole Cave p. 23-24. The present owner is said to have told cavers that his grandfather told of the times when bats came out of the cave in such numbers that they blackened the sky over a large area.

JOHN HALL is in Trinidad testing bat bands. He is using bird bands, lipped bands, and round-end bands. He wants to study reactions of the various species to the bands. He plans to work there in the future and wants to find out what kind of band to use.

I shall have to start proof-reading BRN; have never done it before. Last time I picked up an issue when they were ready to mail and read it. I noticed that I had spelled phalanx two different ways on the same page and neither was right.

A 100 foot pit has been discovered near Sherwood, Tennessee, where about 20 long-eared bats hibernate. More cave colonies are known from that than any other state, but it is a rare bat anywhere (Plecotus rafinesquii).

I have a letter from a woman in Milwaukee that describes the spraying of the city for mosquitoes last August. A few hours after the spraying a group of red bats in her rose bushes died. She said it had been announced that the spray to be used was something that would not kill birds.

LEONARD LEE RUE III replied to my query about his photo of the red bat carrying young that I mentioned in the last issue. He said that the bat could not fly with the young hanging to it. The bats were photographed as the mother was dropped and attempted to fly.

DAVID SNYDER wrote that the Myotis grisescens colony at Tobacco Port Cave, Tennessee, is way down from its size of two and three years ago. There used to be about 2,000, but this winter there were 200-300.

ARTHUR DISALVO at CDC in Atlanta, is working on histoplasmosis in bats. He says he may get into some bat banding work.

DAVID EASTERLA commented on bats impaled on barbed wire by noting that the type of Euderma maculatum was "caught on a fence".

ALLEN BENTON asked if I have had any experience with red bats being killed with car aeriels. He says he has collected a few by shooting and one killed by DDT, but that only two red bats had been brought to him during his 20 years of interest in bats. Both had been killed by striking the aeriels of cars.

MICHAEL S. KRANBUHL has been working on the bats of southwestern Ohio. He found a dozen colonies of Eptesicus fuscus and netted a few red bats last summer, but found no myotis.

ANTHONY F. DEBLASE is going on an expedition to Turkey for the Field Museum. He wants to know if Iyad Nader is still the only subscriber in the Near East. Yes.

KNOX JONES has been collecting in Nicaragua for 6 weeks. He plans to go to the conference in Czechoslovakia in September.

RECENT LITERATURE

- ABELENTSEV, V.I. 1967. On finding Nyctalus leisleri Kuhl in the Transcarpathian region of the Ukraine. Zool. Record (Russia) 3: 70-71. (in Russian).
- AJELLO, L., T. S. HOSTY, & J. PALMER. 1967. Bat histoplasmosis in Alabama. J Trop Med Hyg. 16: 329-331.
- ALMACA, C. 1967. Nouvelles observations sur Rhinolophus mehelyi Matschie 1901, au Portugal. Arquivos do Museu Bocage 1: 35-38
- ARATA, A. A. 1968. Discrepancy between "dry" and "fresh" forearm measurements in bats. J Mamm 49: 155-156.
- AVALIANI, R. S. 1967. On the resistance of Myotis mystacinus Kuhl and Vespertilio pipistrellus Schreb. to starvation. Zool. Zhur 46: 146. Russian with English summary.

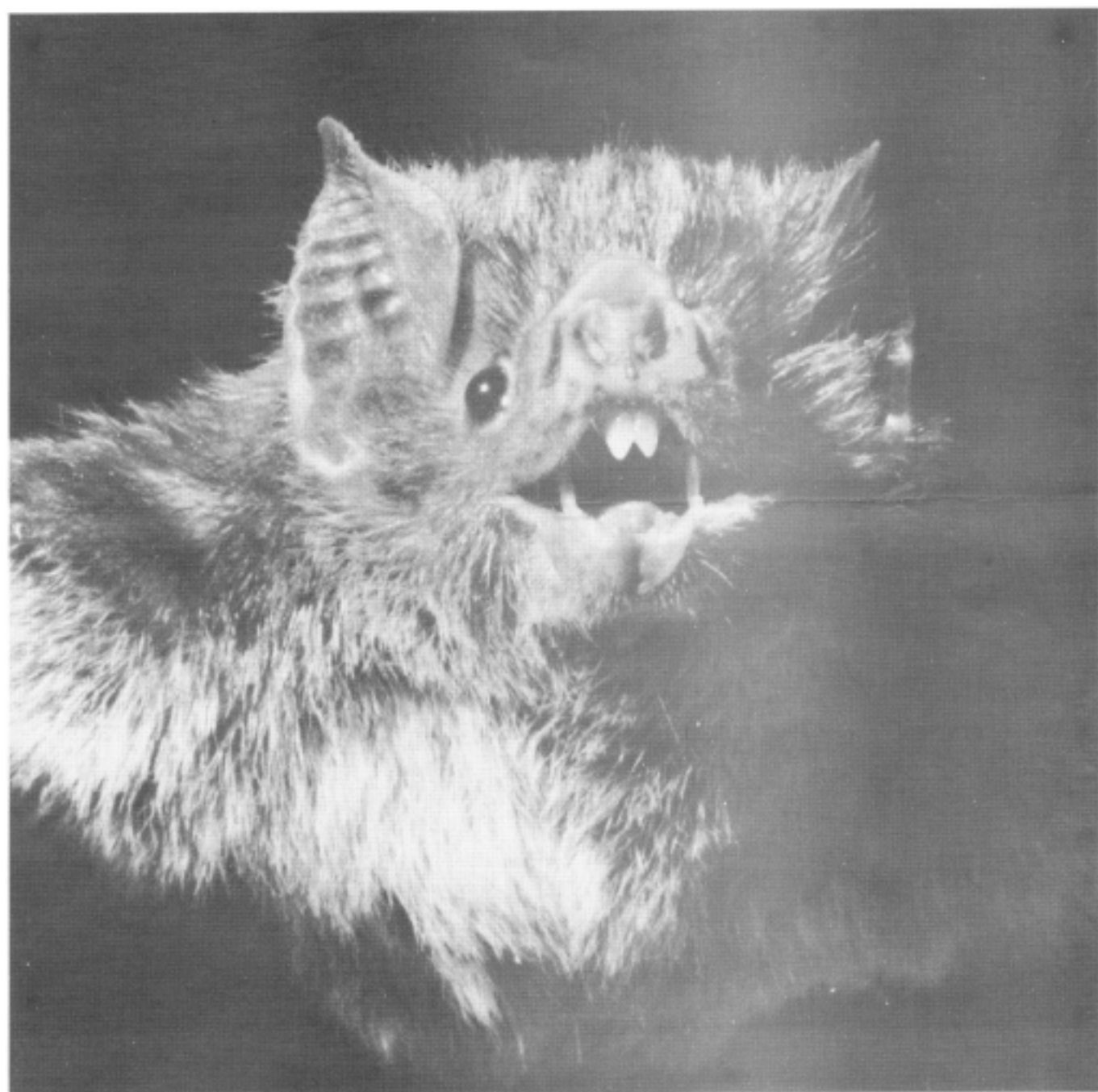
- BAKER, R. H. & R. G. WELBB. 1966. Notas acerca de los anfibios, reptiles, y mamiferos de La Pesca, Tamaulipas. Rev Soc Mex Hist Nat. 27: 179-190. Some range extensions of bats.
- BAKER, R. J. 1967. Karyotypes of bats of the family Phyllostomidae and their taxonomic implications. SW Nat 12: 407-428.
- BANKS, R. C. 1967. Birds and mammals of La Laguna, Baja California. Trans San Diego Soc Nat Hist. 14: 205-232. Some range extensions of bats.
- BEAUCOURNU, J. C. 1966. Sur quelques Ixodoidea (Acarina) paleartiques infestes aux micro-Chiroptera. Ann Parasit Hum Comp. 41: 495-502.
- BEISHLEBAEV, K. 1966. Nyctalus noctula in the walnut forests of south Kirghizia. Zool Zhur. 45: 1583. Russian.
- BOHME, W. B. KLOSTERAUSNITZ, & G. NATUSCHKE. 1967. Untersuchung der Jagflugaktivitat freilabender Fledermause in Wochenstuben mit Hilfe einer doppelseitigen Lichtschranke und einige Ergebnisse an Myotis myotis (Borkhausen, 1797) und Myotis nattereri (Kuhl, 1818). Saug Mitt. 15: 129-138.
- BREE, van P.J.H. & S. BRAAKSMA. 1967. Nieuwe faunistische Gegevens betreffende de Vleermuis Plecotus austriacus Fischer, 1829, in Nederland. Naturhist Maandblad. 56: 8-12.
- BRENNAN, J. M. 1967. New records of chiggers from the West Indies. Natuurwet. Stud Suriname Ned Ant Uitgaven. 46: 146-156.
- BROSSET, A. & G. DUBOST. 1967. Chiropteres de la Guyane francaise. Mammalia. 31: 583-594.
- BROWN, J. W. 1967. Some aspects of early development of the hippocampal formation in certain insectivorous bats. pp 92-103 in symposium on phylogenesis and ontogenesis of the forebrain. Plenum Press, New York.
- BROWN, R. E. 1967. Bacula of some New World molossid bats. Mammalia 31: 645-661.
- CARAS, R. A. 1967. North American Mammals. Meredith Press, New York. 578 pp.
- CHOATE, J. R. & E. R. HALL. 1967. Two new species of bats, genus Myotis, from a Pleistocene deposit in Texas. Am Midl Nat. 78: 531-533.
- CHURCH, R. L. 1967. Capture of a hoary bat, Lasiurus cinereus, by a sparrow hawk. Condor. 69: 426.
- CLARK, G. M. New speleognathina from Central and South American mammals (Acarina, Trombidiformes). Proc Helminthol Soc Wash. 34: 240-243.
- CONSTANTINE, D. G. 1967. Rabies transmission by air in bat caves. U. S. Public Health Service Publ # 1617.
- _____. 1967. Activity patterns of the Mexican free-tailed bat. Univ. of New Mexico Publ Biol # 7, 79pp.
- _____. 1968. Transmission experiments with bat rabies isolates: Responses of certain carnivores and rodents to rabies viruses from four species of bats. Am J Vet Res. 29:181-190.
- CORBET, G. B. 1966. The terrestrial mammals of western Europe. Dufour Editions, Inc., Chester Springs, Pa. 264 pp.
- CRANBROOK, EARL OF. 1967. Long-eared bat (Plecotus auritus). Trans Suffolk Nat Soc. 13: 336.
- _____. 1967. Weaning date of serotine bats (Eptesicus serotinus). Trans Suffolk Nat Soc. 13:336.
- DALLAND, J. I., J. A. VERNON & E. A. PETERSON. 1967. Hearing and cochlear microphonic potentials in the bat Eptesicus fuscus. J Neurophysiol. 30: 697-709.

- DAVIS, W. H. , R. W. BARBOUR, & M. D. HASSELL. 1968. Colonial behavior of Eptesicus fuscus. J. Mamm. 49: 44-50.
- DAVIS, W. H. & C. L. RIPPY. 1968. Distribution of Myotis lucifugus and Myotis austroriparis in the southeastern United States. J. Mamm. 49: 113-117.
- DUNNIGAN, P. B. AND J. H. FITCH. 1967. Seasonal movements and population fluctuations of the cave bat (Myotis velifer) in south-central Kansas. Trans. Kansas Acad. Sci. 70(2): 210-218.
- FELDMANN, R. 1967. Bestandsentwicklung und heutiges Areal der Kleinhufeisennase Rhinolophus hipposideros (Bechstein, 1800) im mittleren Europe. Säug. Mitt. XV: 43-49.
- FORMAN, G. L. 1968. Comparative gross morphology of spermatozoa of two families of North American bats. Univ. of Kansas Sci. Bull. 47(16): 901-928.
- FOSTER, J. B. & A. DUFF-MACKEY. 1966. Keys to the genera of Insectivora, Chiroptera and Rodentia of East Africa. J. East African Nat. Hist. Soc. 25: 189-204.
- FRANK, H. 1967. Fledermausbeobachtungen im Winter 1966/67. Laichinger Höhlenfreund. 2: 12-13.
- FRYLESTAM, B. 1967. Ytterlogare observationer över Langörade fladdermausens aktivitet. Fauna og Flora I: 1-9.
- GENOWAYS, H. H. & J. K. JONES, JR. 1967. Notes on distribution and variation in the Mexican big eared bat Plecotus phyllotis. SW Nat. 12: 477-480.
- HAENSEL, J. 1966. Abweichende Ruheplätze in Stollen überwinternder Fledermäuse. Zool. Abhandl. Mus. Tierkunde Dresden. 28: 277-280.
- _____. 1967. Notizen über 1963-1966 insbesondere in Berlin aufgefundene Fledermäuse. Milu, Berlin. 2: 313-322.
- HALL, L. S. & J. L. MCKEAN. 1967. Transfer of new-born offspring in the bat, Miniopterus schreibersii. Aust. J. Sci. 30: 145.
- HANAK, V. V. 1967. Verzeichnis der Säugetier der Tschechoslowakei. Säug. Mitt. 15(3): 193-221.
- HANDTKE, K. 1967. Neuer Fund der rauhhäutigen Fledermaus Pipistrellus nathusii Keyserling & Blasius 1839, im Harz. Naturkundl. Jahresber. Museum Heineanum, II: 95-96.
- _____. 1967. Zum Vorkommen der Langohrfledermäuse Plecotus auritus L. und Plecotus austriacus Fischer im Nordharz und seinem Vorland. Hercynia. 4: 359-367.
- HARMATA, W. 1967. The incidence of Trombicula (Leptotrombidium) russica Oudmans, 1902 (Acarina, Trombiculidae) on bats Barbastella barbastellus (Schreber, 1774). Wiadomosci parazytologiczne. 13: 267-269. in Polish-English summary.
- HARRIS, P. D. 1967. Quantification of capillary RBC flow. Bibl. Anat. 9: 155-159. Blood flow studied in bat wings.
- HASENCLEVER, H. F., M. H. SHACKLETTE, R. V. YOUNG & G. A. GELDERMAN. 1967. The natural occurrence of Histoplasma capsulatum in a cave. I Epidemiologic aspects. Am. J. Epidemiol. 86: 238-245.
- HAYMAN, R. W. & D. L. HARRISON. 1966. A note on Tadarida (Chaerephon) bivittata Heuglin Z. Säug. 31: 219-226.
- HILL, J. E. 1958. The mammals of Rennell Island. Natur. Hist. Rennel Island Brit. Solomon Islands. 1: 73-84. Emballonura disnae n. sp.

- HILL, J. E. 1963. Notes on some tube-nosed bats, genus Murina, from south-eastern Asia, with description of a new species and a new subspecies. Fed. Mus. J. (Malaya), New Series 8: 48-59.
- HUGHES, S. E. 1968. Temperature of the bat, Plecotus townsendii, during arousal. J. Mamm. 49: 140-142.
- HURKA, L. 1967. Ökologische Beobachtungen in der Wochenstube von Eptesicus nilssonii Keyserling et Blasius, 1839 in der Tschechoslowakei. Zool. Listy, 16: 193-197.
- HUSSON, A. M. 1966. Schedelresten van vleermuizen, aangetroffen in de Henkeput bij Gronsveld. Natuurhist. Mandblad, 55: 128.
- IRVING, R. & J. M. HARRISON. 1967. The superior olivary complex and audition: A comparative study. J. Comp. Neurol. 130: 77-86.
- JONES, C. & J. PAGELS. 1968. Notes on a population of Pipistrellus subflavus in southern Louisiana. J. Mamm. 49: 134-139.
- JONES, J. K., JR., & H. H. GENOWAYS. 1967. Annotated checklist of bats from South Dakota. Kansas Acad. Sci. 70(2): 184-196.
- _____ & A. SCHWARTZ. 1967. Eredin-Archbold-Smithsonian Biological Survey of Dominica 6. Synopsis of bats of the Antilean Genus Ardops. Proc. U. S. Nat. Mus. 124 No. 3634.
- KLIMA, M. & J. GAISLER. 1967. Study on growth of juvenile pelage in bats. I. Vespertilionidae. Zool. Listy, 16: 111-124.
- _____ & J. GAISLER. 1967. Study on growth of juvenile pelage in bats. II Rhinolophidae, Hipposideridae. Zool. Listy, 16: 343-354.
- KOCK, D. 1967. Ein Neunachweis von Myotis weilwitschi und der Status von Myotis venustus (Mammalia, Chiroptera). Senck. biol. 48:319-325.
- KOLB, A. 1966. Geburtsvorgang bei Myotis myotis (Borkhausen, 1797) und anschließendes Verhalten von Mutter und jungem. Bijdragen tot de Dierkunde, Amsterdam. 36: 69-73.
- _____. 1966. Sinnesleistungen der Fledermaus Myotis myotis bei der Nahrungsaufnahme vom Boden. Begleitveröffentlichung zum wiss. Film C 884/1964. (Inst. f. d. wissenschaftl. Film), Göttingen 689-694.
- KOLMAN, J. M., Z. MARHOUL & D. MALKOVA. 1967. Experimental infection of the bat Myotis myotis Borkhausen with the Tahyna virus. J. Hyg. Epidemiol. Microbiol. Immunol. 11:125-126.
- KRAUS, M. & A. GAUCKLER. 1965-66. Zwei wiederentdeckte bayerische Fledermausarten. Das Graue Langohr. Plecotus austriacus (Fischer, 1829) und die Nordfledermaus. Eptesicus nilssonii (Keyserling et Blasius, 1839). Mitt. naturhist. Ges. Nürnberg, 1965-66. 1-5.
- KRZANOWSKI, ADAM. 1967. The magnitude of islands and size of bats (Chiroptera). Acta Zoologica Cracoviensia, 11: 281-346.
- KULZER, ERWIN. 1965. Bulldogg-Fledermäuse. Die Natur. 5: 225-233.
- KUREPINA, M. 1967. Cytoarchitektonik des sehorgans (Thalamus dorsalis) der Chiroptera. pp. 356-364. in Symposium on phylogenesis and ontogenesis of the forebrain. Plenum Press, New York.
- LEEN, N. 1968. The strange world of bats. Life 64(13): 52-65.
- MARTENS, J. 1967. Plecotus austriacus (Fischer) auf Kreta; mit Bemerkungen zu weiteren Arten (Mammalia, Chiroptera). Bonn. Zool. Beitr., 18: 253-257.
- MAYER, A. & J. WIRTH. 1967. Über Fledermausbeobachtungen in österreichischen Höhlen im Jahre 1966. Die Höhle (Z f. Karst-und Höhlenkunde), 18: 69-73.

- McKEAN, J. M. & SIMPSON, K. G. 1967. A Victorian specimen of the Little Flying Fox Pteropus scapulatus. *Vict. Nat.* 84: 180-181.
- MORRISON, P. & B. K. McNAB. 1967. Temperature regulation in some Brazilian phyllostomid bats. *Comp. Biochem. Physiol.* 21: 207-221.
- NEGREA, A., L. BOTOSANEANU & S. NEGREA. 1967. Documents pour servir a la connaissance de la faune de mammiferes des grottes du Banat (Roumanie) *Intern. J. Speleol.* 2: 341-354.
- NICHT, M. 1966. Probleme der faunistischen Erfassung einheimischer Fledermäuse. *Naturschutz und naturkundl. Heimatforsch. i. d. Bez. Halle u. Magdeburg, Halle*, 3: 45-47.
- O'CONNOR, W. B., G. D. CAIN & M. X. ZARROW. 1966. Elongation of the interpubic ligament in the little brown bat (Myotis lucifugus). *Proc. Soc. Exp. Biol. Med.* 123: 935-937.
- PARADISO, J. L. 1967. A review of the wrinkle-faced bats (Centurio senex gray), with description of a new subspecies. *Mammalia* 31(4): 595-604.
- PHILLIPS, C. J. & N. WILSON. 1968. A collection of bats from Hong Kong. *J. Mamm.* 49: 128-133.
- PIECHOCKI, R. 1966. Über die Nachweise der Langohr-Fledermäuse Plecotus auritus L. und Plecotus austriacus Fischer im mitteldeutschen Raum. *Hercynia* 3: 407-415.
- PIEPER, H. 1966. Ein neuer Nachweis des Fledermausflohes Rhinolophosylla u. unipectinata (Taschenberg 1880) (Siphonaptera, Ischnopsyllidae) in Deutschland. *Mitt. bad. Landesver. Naturkunde u. Naturschutz, N. F.*, 9: 413-414.
- PINE, R. H. 1967. Baedon meyeri Pine (Chiroptera, Vespertilionidae) referred to the genus Antrozous. *H. Allen. SW Nat.* 12: 484-485.
- RAHM, U. 1966. Les mammiferes de la foret equatoriale de l'est du Congo. *Ann. Mus. Roy. Afr. Cent. Serv. Sci. Zool.* 149: 37-121.
- RANSOME, R. D. 1968. The distribution of the Greater horse-shoe bat, Rhinolophus ferum-equinum, during hibernation, in relation to environmental factors. *J. Zool. Lond.* 154: 77-112.
- ROER, H. 1967. Wanderungen der Fledermäuse. Aus: *Die Straßen der Tiere*. Herausgeber H. Hediger. *Friedr. Vieweg & Sohn, Braunschweig*, 102-119.
- ROSS, A. 1967. Proceedings of the western foundation of vertebrate zoology. *Ecological Aspects of the Food Habits of Insectivorous Bats* 1:4
- SACHLOVA, D. 1966. Interspezifische allometrische Beziehungen der Gattung Plecotus (Microchiroptera). *Lynx, Prag, N.S.* 6: 153-159.
- SCHMIDT, A. 1967. Über das graue Langohr Plecotus austriacus Fischer 1829, in Brandenburg. *Z. Saug.* 32: 246-250.
- SCHNEIDER, R., H. JURG-KUGN & G. KELEMEN. 1967. Der Larynx der männlichen Hypsognathus monstrosus Allen 1861 (Pteropodidae, Megachiroptera, Mammalia). Ein Unikum in der Morphologie des Kehlkopfes. *Z. Wiss. Zool.* 175: 1-53.
- SCHÖBER, W. 1967. Zur Lage der Decussatio pyramidum bei den Fledermäusen (Chiroptera) *Anat. Anz.* 120: 174-180.
- SCHWARTZ, A. & J. K. JONES. 1967. Bredin-Archbold-Smithsonian. Biological survey of Dominica 7 Review of the bats of the endemic Antillean Genus Monophyllus. *Proc. U. S. Nat. Mus.* 124: no. 3635.
- SHACKLETTE, M. H., H. F. HASENCLEVER, & E. A. MIRANDA. 1967. The natural occurrence of Histoplasma capsulatum in a cave. II Ecologic aspects. *Am. J. Epidemiol.* 86: 246-252.

- SIGMUND, L. 1966. Interspezifische allometrische Beziehungen der Gattung Myotis (Microchiroptera). *Lynx*, Prag, N. S. 6: 139-143.
- SMITHERS, R. H. N. 1936. The mammals of Rhodesia, Zambian and Malawi. Collins Clearwater-Type Press London 159 pp.
- STEBBINGS, R. E. 1967. Spare the bats. Dorset Naturalists Trust.
 _____ 1967. Conservation of bats. *J. of the Devon Trust*. 13: 517-522.
- STEWART, P. A. & E. L. HART. 1967. Incidental capture of vertebrate wildlife in blacklight insect traps. *Am. Midl. Nat.* 78: 235-240.
- STONES, R. C. & T. OLDENBURG. 1968. Occurrence of torpid Myotis lucifugus in a cold mine in summer. *J. Mamm.* 49: 123.
 _____ & J. E. WIEBERS. 1967. Temperature regulation in the little brown bat, Myotis lucifugus. In: *Mammalian Hibernation III*, K. C. Fisher et al (ed.). Oliver & Boyd Ltd. Toronto?
- STRANDTMANN, R. W. & L. E. GARRETT. 1967. Neolaelaps palpispinosus, a new species in Laelapid mite from fruit bats in New Guinea (Acarina: Laelapidae). *J. Med. Ent.* 4: 237-239.
- TAYLOR, R. H. 1967. A note on bats in the St. Arnaud district, Nelson. *NZ J. Sci.* 10: 190-221.
- TESH, R. B. & J. D. SCHNEIDAU, JR. 1967. Naturally occurring histoplasmosis among bat colonies in the southeastern United States. *Am. J. Epidem.* 86(3): 545-551.
- TOPAL, G. 1966. Some observations on the nocturnal activity of bats in Hungary. *Vertebrata Hungarica*, VIII, 139-165.
- TUGENDHAT, M. 1966. Swallows (Hirundo rustica) mobbing pipistrelle bat. *Brit. Birds* 59: 435.
- USINGER, R. L. 1967. Monograph of Cimicidae, Vol. 7. Thomas Say Foundation of the Entomological Society of America 585 pp.
- VERICAD, J. R. & R. BALCELLS. 1965. Fauna mastozoológica de las Pitiusas. *Bol. R. Soc. Española. Hist. Nat. (Biol.)* 63: 233-264.
- WAKEFIELD, N. A. 1966. Mammals recorded for the mallee, Victoria. *Proc. Soc. Vict.* 79: 627-36.
 _____ 1967. Mammal bones in the Buchan district. *Vict. Nat.* 84: 211-214.
- WEBER, B. 1967. Beitrag zur Ernährung der Eulen und der Verbreitung der Kleinsäuger in Haldensleben und Umgebung. *Jahresschrift Kreismuseum Haldensleben*, 8: 79-97.
- WIEDEMAN, M. P. 1967. A preparation for microscopic observation of circulation in the unanesthetized bat. pp 162-180 in *In vivo techniques in histology*. Williams & Wilkins Co. Baltimore.
- ZIMMERMANN, W. 1966. Beobachtungen in einer Wochenstube der Mausohrfledermaus (Myotis myotis Borkhausen, 1797). *Abh. Ber. Naturkundl. Mus. Gotha*, 5-13.



EL VAMPIRO

BAT RESEARCH NEWS

Volume 9 No. 3

July 1968

THE COVER

This smiling vampire, Desmodus rotundus, is one of the captive colony kept at the Southwestern Rabies research Laboratory of the U. S. Public Health Service at Las Cruces, N. M.

James Tigner of the U. S. Fish & Wildlife Service in Denver took the picture and sent me a print. I would like to use it in our book, but this species has not yet been recorded in the U. S. All three species of vampires get into southern Tamaulipas and are likely to wander into Texas now and then.

Vampires take to captivity perhaps better than any other bats. So far as I know they are the only bats to breed and raise their young in captivity. The colony at Cornell which was established by Wimsatt for experimental work, has been going for years. There are colonies now at various labs and zoos across the country. The bats are generally fed on blood from a slaughter house. They readily take blood from a bowl on the floor.

HERE AND THERE

I was both here and there during the summer, causing this issue to be late. I left Lexington on June 10 and returned August 24. Most of the time was spent collecting little brown bats with Roger Barbour in southern Colorado and northern New Mexico. We brought back about 200 specimens of these plus many other skins.

RICHARD ROWLETT wrote me last spring about his plans to net bats in N. M. I told him I would be there too and might run into him. Sure enough—we happened to meet.

On the way back I stopped at Wind Cave National Park in the Black Hills of S. D. and ran into RON TURNER who is working with KNOX JONES at Kansas on the mammals of the Black Hills. I stayed a week and we did a lot of netting. We did quite well, catching 10 of the 9 species known from the region. We got 9 species in one night.

The July issue is always the most difficult for me to get out. I have lots of material at hand, but will cut this one short to get it out as soon now as possible and start on the October issue.

SUBSCRIPTIONS AND EXCHANGES

United States, Canada and Mexico:

- | | |
|--|----|
| * ADAMS, DEVIL, box B, University Park, N. M. 88070 | 69 |
| ALTENBACH, J. SCOTT, 4901 S. Huron, Englewood, Colo. 80110 | 68 |
| ANDERSON, KENNETH, Biology Dept., St. Benedicts College, Atchison, Kans. 66002 | 69 |

Bat Research News appears quarterly: January, April, July and October. Subscription rate is \$ 1.00 for 2 years. All back issues are available for \$3.00. Wayne H. Davis, Department of Zoology, University of Kentucky, Lexington, Ky. 40506 U.S.A.

- BAER, DR. GEORGE, Centro Nacional de Investigaciones Pecurias, Km 15 1/2
Carraterra a Toluca, Palo Alto, D. F., Mexico 68
- BAKER, DR. ROBERT J., Dept. of Biology, Texas Tech College, Lubbock,
Texas 79409 68
- BAKER, DR. ROLLIN, The Museum, Michigan State University, East Lansing,
Mich. 48823 71
- BAKER, WILSON, Tall Timbers Research Station, Rt. 1, box 110,
Tallahassee, Fla. 32301 69
- BARRETT, STEPHEN D., 4214 Myerwood Dr., Dallas, tex. 75234 69
- BAUER, ROLLIN, 1 Hill St., Branford, Conn. 06405 69
- BECK, DR. AL, Dept. of Microbiology, School of Veterinary Medicine,
University of California, Davis, Calif. 95616 68
- BEECHER, DR. M. D., Dept. of Psychology, Boston University,
Boston, Mass. 02215 69
- BELL, DR. J. F., U. S. Public Health Service, Rocky Mt. Laboratories,
Hamilton, Mont. 59840 70
- BENSON, WES, Oklahoma City Zoo, Rt. 1, box 478, Oklahoma City,
Okla. 73111 69
- BENTON, DR. ALLEN, Dept. of Biology, State University of New York,
Fredonia, N. Y. 14063 69
- BESCHEL, DR. ROLAND, Dept. of Biology, Queens University, Kingston,
Ontario 69
- BHATTNAGAR, KUNWAR P., Dept. of Anatomy, School of Medicine, State
University of New York, Buffalo, N. Y. 14214 68
- BIRNEY, ELMER, Museum of Natural History, University of Kansas,
Lawrence, Kans. 66045 68
- BOLLING, MRS. FLORENCE, 312 Raymond St., Morgantown, W.Va. 26505 69
- BONNELL, MICHAEL, Dept. of Zoology, University of Idaho, Moscow,
Idaho 83843 68
- BOWDRE, LARRY, The Museum, Michigan State University, East Lansing,
Michigan 48823 69
- BOWLES, JOHN B., Museum of Natural History, University of Kansas,
Lawrence, Kans. 66044 71

BOWMAN, MRS. WALTER, Apt. 201, 125 NW 20th Place, Portland,
Oregon 97209 69

BRADLEY, DR. W. GLEN, Dept. of Biological Sciences, Nevada Southern
University, Las Vegas, Nevada 89109 69

BROWN, DR. LARRY, Dept. of Zoology, University of South Florida,
Tampa, Fla. 33620 68

BRUCE, DR. DAVID, Biology Dept., Seattle Pacific College, Seattle,
Wash. 98119 69

CATLING, PAUL, Apt 13, 2368 Queen St. E, Toronto 13, Ontario 69

CAVE RESEARCH ASSN., 3842 Brookdale Blvd., Castro Valley, Calif. 94546 ex

CHASE, JULIA, Dept. of Anatomy & Physiology, Indiana University,
Bloomington, Ind. 47401 68

CHRISTIANSON, DR. LEE, Dept. of Biology, College of the Pacific,
Stockton, Calif. 95204 69

CLEVELAND, DR. ARTHUR G., Dept. of Biology, Texas Wesleyan College,
Ft. Worth, Texas 76105 69

COMMUNICABLE DISEASE CENTER, Library, Bldg. 1, room 416,
1600 Clifton Rd. NE, Atlanta, Ga. 30333 68

COMMUNICABLE DISEASE CENTER, Rabies Control Program, Veterinary
Section, Atlanta, Ga. 30333 ex

CONNER, PAUL, New York State Museum, Albany, N. Y. 12224 69

CONSTANTINE, DR. D. G., 3425 Morningside Dr., Richmond, Calif, 94803 68

COOK, MRS. JOYCE, 441 Echo Dr., Apt 5, Ottawa, Ontario 70

COPE, JAMES B. Biology Dept., Earlham College, Richmond, Ind. 47375 69

CRESPO, RAUL FLORES, Instituto de Investigaciones Pecurias, Km. 15 1/2
Carraterra a Toluca, Mexico D. F., Mexico 69

CROSS STEPHEN, Dept. of Biological Sciences, University of Arizona,
Tucson, Ariz. 85721 68

D'AGROSA, DR. LOUIS, Physiology Dept., School of Medicine, St.
Louis University, St. Louis, Mo. 63104 69

DAVIS, DR. DAVID E., Dept of Zoology, North Carolina State Univ
Raleigh, N. C. 27607 68

DAVIS, DR. H. A., 307 Duquesne Ave., Morgantown, W. Va. 26505

DAVIS, LARRY, first Div. USS Walke DD 723, FPO San Francisco Calif. 96601 69

DAVIS, RICHARD, Dept. of Biology, Long Beach State College, Long Beach, Calif. 90801 68

DAVIS, DR. RUSSELL, Dept. of Biological Sciences, University of Arizona, Tucson, Ariz. 85721 69

DAVIS, DR. W. B., Dept. of Wildlife Science, Texas A & M University, College Station, Texas 77840 68

DEBLASE, TONY, Rt. 1, box 254, Plymouth, Ind. 46563 68

DECOURSEY, DR. GEORGE, Dept. of Biology, University of South Carolina, Columbia, S. C. 29208 69

DEFENDERS OF WILDLIFE, INC., 809 Dupont Circle Bldg., Washington, D.C. 20036 ex

de la TORRE, DR. LUIS, College of Pharmacy, University of Illinois Chicago, Ill. 60612 70

DENTON, DR. J. FRED, Dept. of Microbiology & Public Health, Medical College of Georgia, Augusta, Ga. 30902 68

DIERKS, DR. RICHARD E, Veterinary Medical Research Institute, Iowa State University, Ames, Iowa 50010 68

DOBBE, KEITH, 3130 N 90th St., Milwaukee, Wisc. 53222 69

DISALVO, DR. ARTHUR F., State Board of Health Laboratory, J. Marion Sims Bldg., Columbia, S.C. 29201 68

EASTERIA, DAVID, 403 S. Frederick, Maryville, Mo. 64468 69

EB&A NEWS, box 147, Hanover, N. J. 07936 ex

EBERT, DR. JAMES W., 2002 W 39th St., Kansas City, Kans. 66203 68

ERNST, CARL, 1121 Raymond Dr., Lancaster. Pa. 17601 68

FENION, M. BROCK, Mammal Dept., Royal Ontario Museum, Toronto 5, Ontario 69

FLEHARTY, DR. E. D., Dept of Biology, Ft Hays State College, Hays, Kansas 67601 69

FORESIGHT, Geology Library, University of Missouri, Columbia, Mo. 65201 ex

60

FRANQ, DR. EDWARD, Dept of Zoology, University of New Hampshire, Durham, N. H. 03824	69
FRUM, W. GENE, 1612 6th Ave., Huntington, W. Va. 25703	
FUSSELL, PETE, State Board of Health, Jackson, Miss. 39205	68
GIER, DR. HERSCHEL, Dept of Zoology, Kansas State University, Manhattan, Kans. 66502	68
GILKEY, GLEN, 7360 W Oregon Dr., Denver, Colo. 80226	68
GILL, D. A., 740 Springland Dr. Apt 511, Ottawa, Ontario	69
GLASS, DR. BRYAN P., Dept of Zoology, Oklahoma State University, Stillwater, Okla. 74075	68
GOEHRING, DR. H. H. Dept. of Biology, St. Cloud State College, St. Cloud, Minn. 56301	68
GOODMAN, DON, Dept of Biology, Michigan Tech College, Houghton, Mich. 49931	69
GRANT, WILLIAM, 8408 Broadmoor, Overland Park, Kans. 66212	71
GRAVES, FRANK, 2331 Dwight Rd., #2, Memphis, Tenn 38114	69
GRAY, CHRISTOPHER, 1004 Ardmore Dr., Louisville, Ky. 40217	68
GREENWALD, DR. E. K. 1607 Fountain Ridge, Chapel Hill, N.C. 27514	69
GREER, DR. J. K., Stovall Museum of Science & History, University of Oklahoma, Norman, Okla. 73069	69
GRIFFIN, DR. DONALD R., The Rockefeller University, New York 10021	69
GRIGSBY, EVERETT, Division of Natural Science, Northeastern State College, Tahlequah, Okla. 74464	68
GREENHALL, ARTHUR, Bat Ecologist, FAO of the United Nations, Apartado Postal M-10778, Mexico 1, D. F., Mexico	69
GUNIER, WILBUR J., 1505 Lipper, Higginsville, Mo. 64037	69
HAARR, ALLAN P., 50 Clover Dr. Delmont, Pa. 15626	ex
HALL, DR. E. RAYMOND, Museum of Natural History, University of Kansas, Lawrence, Kans. 66045	69
HALL, DR. GEORGE A., Chemistry Dept., West Virginia University, Morgantown, W. Va. 26506	69

HALL, DR. JOHN S., Dept of Biology, Albright College, Reading, Pa. 19604	69
HALLIGAN, MRS. ROBERTA, Board of Health, 14 Roseland Ave., Caldwell, N. J. 07006	69
HANDLEY, DR. CHARLES O., Division of Mammals, U. S. National Museum, Smithsonian Institution, Washington, D.C. 20560	69
HARDIN, JAMES, Dept of Biology, Memphis State University, Memphis, Tenn 38111	69
HARKER, DONALD F., Rt 3, Clarksville, Tenn 37040	68
HARRIS, DR. PATRICK, 1001 Prospect, Columbia, Mo. 65201	69
HARVEY, DEAN E. 2764 H St., San Bernardino, Calif. 92405	68
HARVEY, DR. MICHAEL J., Dept of Biology, Memphis State University, Memphis, Tenn. 38111	68
HAYS, DR. H. A., Dept of Biology, Kansas State College, Pittsburg, Kans. 66762	68
HEDGES, SGT. JAMES, 8218 Sherrill, Hyattsville, Md. 20785	
HELISLEY, JAMES R., Student Detachment, Fitzsimmons Hospital (MD-3412) Denver, Colo 80240	68
HERREID, DR CLYDE F., Dept of Biology, State University of New York, Buffalo, N. Y. 14214	69
HICKMAN, GENE, Biology Dept., Bowling Green High School, Bowling Green, Mo. 63334	68
HICKS, DAVID J., 31 Brooklyn St., Port Jervis, N.Y. 12771	68
HILTEBRAND, EDWARD, box 272, Osage Beach, Mo. 65065	ex
HITCHCOCK, DR. H. B., Dept of Biology, Middlebury College, Middlebury, Vt. 05753	69
HIXSON, BECKY, Dept of Biology, Kansas State College, Emporia 66801	69
HOOD, LARRY, box 478, Laurel, Md. 20810	ex
HUMPHREY, SIEVE, Zoology Dept, Oklahoma State University, Stillwater, Okla. 74074	69
HUNTER, LEON, Barstow School District, 551 South H St., Barstow, Calif 92311	68

JOHNSON, S. O., Fosston, Minn. 56542

JONES, ARTHUR L. 5215 Pinedale Heights, Rapid City, S.D. 57703 69

JONES, DR. J. KNOX, Museum of Natural History, University of
Kansas, Lawrence, Kans. 66045 69

JUDD, FRANK, Dept of Biology, Texas Tech College, Lubbock 79409 68

JUNNELL, DONALD R., 2060 N Douty, Hanford, Calif. 93230 69

KALLEN, DR. FRANK, Dept of Anatomy, School of Medicine, State
University of New York, Buffalo, N. Y. 14214 69

KAUFMAN, DONALD, Dept of Zoology, University of Georgia,
Athens, Ga. 30601 69

KERRIDGE, DAVID, Dept of Biology, University of Victoria, Victoria, B.C. 69

KILGORE, DELBERT L., Dept of Zoology, University of Kansas,
Lawrence, Kans. 66045 69

KIRKPATRICK, RALPH, rt. 1, Jonesboro, Ind. 46438 68

KLIMKIEWICZ, M. KATHLEEN, box 632, Hollins College, Hollins, Va. 24020 68

KLITE, DR. PAUL, University of Colorado Medical Center, Denver 80220 68

KLUGER, MATTHEW, 1805D Orchard Pl., Urbana, Illinois 61801 69

KOEHLER, GLEN, 3275 N 93rd St., Milwaukee, Wisc. 53222 68

KOENIG, CAROL, 111N Dunn St., Bloomington, Ind. 47401 69

KRANBUHL, MICHAEL S., Dept of Biological Sciences, University
of Cincinnati, Cincinnati, Ohio 45221 69

KRULIN, GRAGORY S., Dept of Zoology, University of Arkansas,
Fayetteville, Ark. 72701 68

KRUTZSCH, DR. PHILIP H., Dept of Anatomy, College of Medicine,
University of Arizona, Tucson, Ariz. 85721 68

KUNZ, THOMAS H., Museum of Natural History, University of Kansas
Lawrence, Kansas 66044 69

LANEY, CHRISTINA, 312 W 78th Street, New York, New York. 10024 ex

LAVAL, RICHARD, Dept. of Wildlife Science, Texas A & M University, College Station, Texas 77843	68
LAYNE, DR. JAMES, Archbold Biological Station, Rt. 2, box 380, Lake Placid, Florida. 33852	72
LEITNER, DR. PHILIP, Biology Dept., St. Marys College, St. Marys College, California. 94575	68
LEWIS, JAMES. Tenn. Game and Fish Commission, Nashville, Tenn. 37219	68
LIBRARY, Central Washington State College, Ellensburg, Washington 98926	68
LIBRARY, National Museum of Canada, Ottawa 4, Ont. Canada.	Ex.
LIBRARY, Periodical Dept. Central Mo. State College, Warrensburg, Mo. 64093	68
LIDICKER, DR. W. Z., Museum of Vertebrate Zoology, University of California, Berkeley, California 94720	69
LINHART, SAMUEL, Centro Nacional de Investigacion Pecurias, Km 15 1/2 Carr. a Toluca, Palo Alto, D. F. Mexico.	69
LITTLE, LUTHER, Rt. 1, box 21E, Littlerock, California 93543	68
LOPEZ-FORMENT, WILLIAM, Ixmiquilpan No. 21, Mexico 18, D.F. Mexico	69
LORD, DR. REXFORD D., Virology Section, Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga. 30333	69
MAIN, ANDREW, Encephalitis Field Station, Lakeville Hospital, Middleboro, Mass. 02346	69
MARTIN, PETER, Hill Top Rd., Wilson Pt., S. Norwalk, Conn. 06854	68
MARTIN, DR. ROBERT, Dept. of Science, Farmington State College, Farmington, Maine 04938	69
MAXWELL, TERRY, 3308 Cornell, San Angelo, Texas 76901	69
MAZA, BERNARDO, box 495, Mercury, Nevada 89023	68
MCCOY, CLARENCE, Carnegie Museum, Pittsburgh, Penn. 15213	69
MCCLURE, H. ELLIOTT, Director, Migratory Animal, Pathological Survey, APO, San Francisco, California 96346	69
MCHUGH, R. Sanitation and Engineering Labs, 8148 SW Beaverton-Hillsdale Highway, Portland, Oregon 97225	70

MCMANUS, REID, Memramcook, New Brunswick	69
MEADOR, JOEL TOM, Rt. 1, Eldorado, Texas 76936	69
MILNE LIBRARY, State University College, Oneonta, N. Y. 13820	70
MOHR, CHARLES E. box 3900, Greenville, Delaware 19807	68
MOLLHAGEN, TONY R., Dept of Biology, Texas Tech, Lubbock 79409	69
MORRILL, MRS. WILLIAM, Rt. 32, North Franklin, Conn. 06254	68
MUELLER, DR. HELMUT, Dept of Zoology, University of North Carolina, Chapel Hill, N. C. 27514	69
MUMFORD, DR. RUSSELL E., Dept of Forestry & Conservation, Purdue University, Lafayette, Ind. 47907	69
MUNYER, EDWARD, Dept of Life Sciences, Vincennes University, Vincennes, Ind. 47591	69
MURPHY, GEORGE, P. O. Z, State College, Miss. 39762	68
MUSEUM OF NATURAL HISTORY, University of Kansas, Lawrence 66045	ex
NASSAU COUNTY MUSEUM OF NATURAL HISTORY, Garvies Point, Glen Cove, N. Y. 11542	69
NATIONAL PEST CONTROL ASSN., Buettner Bldg., 250 West Jersey St., Elizabeth, N. J. 07202	69
NELLER, EARL, 4201 Magnolia Ave., St. Louis, Mo. 63110	69
NEUHAUSER, HANS, Dept. of Zoology, University of Georgia, Athens, Ga. 30601	72
NEW YORK ZOOLOGICAL SOCIETY, 185th St & Southern Blvd, Bronx, N.Y. 10460	68
O'FARRELL, MICHAEL J., 1608 Ferrell St., Las Vegas, Nevada 89106	69
OGILVIE, DR. P. W., Oklahoma City Zoo, box 478, rt 1, Oklahoma City, Okla. 73111.	68
OREGON STATE BOARD OF HEALTH, Public Health Library, 1400 SW 5th Ave., Portland, Ore. 97201	68
PACKARD, DR. ROBERT, Dept of Biology, Texas Tech, Lubbock 79409	69
PADOVAN, DENNIS, 1707 8th St., Anacortes, Wash. 98221	68

PARMALLEE, DR. PAUL, Illinois State Museum, Springfield, Ill. 62706	69
PARDUE, JOE, Rt 3, Clarksville, Tenn. 37040	68
PASTON, DOROTHY, 7710 Ensley Dr. SW, Huntsville, Ala. 35802	ex
PAWLEY, RAY, Brookfield Zoo, Brookfield, Illinois 60513	68
PEACOCK, RICHARD, 3140 Highland Lane, Fairfax, Va. 22030	68
PETERSON, DR. RANDOLPH, Royal Ontario Museum, Toronto 5, Ontario	70
PEREZ, GERALD S.A., Wildlife Biologist, Dept of Agriculture, Government of Guam, Agana, Guam 96910	68
PERRY, DR. ALFRED, Dept of Biology, Memphis State University Memphis, Tenn 38111	68
PHILLIPS, CARLETON, Museum of Natural History, University of Kansas, Lawrence, Kans. 66044	69
PINE, DR. RONALD, Division of Mammals, U.S. National Museum, Smithsonian Institution, Washington, D. C. 20560	68
PRICE, FRED, 1115 Oakland, Ft. Smith, Arkansas 72901	69
PSC Library, 2211 N Lexington St., Arlington, Va. 22205	ex
RAEGER, JAMES H., College of Medicine, Baylor University, Houston, Texas 77025	69
REDDILL, JAMES, Dept of Biology, Texas Tech, Lubbock, Tex. 79409	70
RICK, ANN, 36 Broadway Ave., Ottawa 1, Ontario	69
ROBERTSON, P. B., Museum of Natural History, University of Kansas, Lawrence, Kans. 66044	69
ROBINETTE, JOE, box 5765, Sul Ross State College, Alpine, Tex. 79830	69
RODNEY, DR. ALAN B., Dept of Biology, New Mexico State University, Las Cruces, N. M. 88001	69
ROGERS, GEORGE., Dept of Zoology, Oklahoma State University, Stillwater, Okla. 74075	69
ROTH, STANLEY, Science Dept, Lawrence High School, Lawrence, Kansas 66044	68

ROWLETT, RICHARD A., 518 West Halsey, Maryville, Mo. 64468	69
RUDD, DR. ROBERT, Zoology Dept., University of California, Davis 95616	68
SCHNELL, DR. DONALD, 1131 East Broad St, Statesville, N.C. 28677	68
SCIENCE LIBRARY, Box 2653, University of Alabama, University, Ala 35486	69
SEALANDER, DR. JOHN, Dept of Zoology, University of Arkansas, Fayetteville, Ark 72701	69
SENGER, DR. CLYDE, Dept of Biology, Western Washington State College, Bellingham, Wash 98225	71
SHOCKLEY, BECKY, 1314 Walters Ave., Baltimore, Md. 21212	ex
SIMMONS, DR. JAMES A., Auditory Research Labs, Forrestal Rd. North, Princeton University, Princeton, N.J. 08540	68
SINOR, ALLEN, 351 Lakeshire Dr., Daly City, Calif. 94015	72
SMILEY, DAN, Mohonk Lake, New Paltz, N.Y. 12561	70
SMITH, DR. DONALD A., Dept of Biology, Carleton University, Ottawa 1, Ontario	68
SMITH, DR. ELIZABETH A., Smithville, Ohio 44677	68
SNYDER, DR. DANA P., Dept of Zoology, University of Massachusetts, Amherst, Mass 01002	69
SNYDER, DAVID H., Dept of Biology, Austin Peay State College, Clarksville, Tenn. 37040	69
SPELLER, S. WAYNE, Dept of Biology, University of Saskatchewan, Saskatoon, Sask.	69
STALLING, DICK, Biology Dept., Northwestern State College, Natchitoches, La. 71457	68
STALLWORTHY, DR. W. B., Dept of Biology, Mt. Allison University, Sackville, New Brunswick	68
STARK, DR. HAROLD E., Communicable Disease Center, U.S. Public Health Service, Atlanta, Ga. 30333	69
STATE UNIVERSITY OF NEW YORK, Health Sciences Library, 141 Capen Hall, 15th Circle, Buffalo, N. Y. 14214	69
STEPHENS, HARRY, 805 N Jackson St., Magnolia, Arkansas 71753	68

STERLING, KERRY B., Apt 1-d, 533 W 112th St, New York, N.Y. 10025	68
STONES, DR. ROBERT, Dept of Biology, Michigan Tech, Houghton 49931	69
SULKIN, DR. S. EDWARD, Dept of Microbiology, Southwestern Medical School, Dallas, Texas 75235	68
SWIGER, DR. ELIZABETH, 1599 Hillcrest Rd., Fairmont, W. Va. 26554	68
TAMARIN, ROBERT H., Dept of Zoology, Indiana University, Bloomington, Ind. 47401	69
TAMSITT, DR. J. R. Dept of Mammals, Royal Ontario Museum, Toronto 5, Ontario	71
TECH TROGLODYTE, box 471, Blacksburg, Va. 24060	ex
TESH, DR. ROBERT, Middle American Research Unit, box 2011, Balboa Heights, Canal Zone	69
THOMAS, MAURICE, Biology Dept, Tulane University, New Orleans, Louisiana 70118	69
THOMPSON, JAMES N., JR., 3257 Nesbitt Ave, Oklahoma City, Okla 73112	69
TIGNER, JAMES, U. S. Fish & Wildlife Service, Bldg 45, Federal Center, Denver, Colo 80225	69
TRIMBLE, MRS. ELAINE, 385 East Butler, St Paul, Minn 55118	68
TUCKER, T. G., 907 Colburn Rd., Lees Summit, Mo. 64063	69
TURNER, GEOFF, Dept of Mammalogy, Royal Ontario Museum, Toronto 5, Ontario	69
TURNER, LARRY, Dept of Biology, Portland State College, Portland, Oregon 97201	68
TWENTE, DR. JACK, Dept of Zoology, University of Missouri, Columbia, Mo. 65202	70
UPCHURCH, ERWIN, box 96, Arenzville, Illinois 62611	68
VILLA, DR. BERNARDO, Seccion de Mastizoologia, Instituto de Biologia, Ciudad Universidad, Villa Obregon, Mexico, D.F., Mexico	
WALLEY, HARLAN, 717 N Elm St, Sandwich, Illinois 60548	68
WARD, G. L. Biology Dept, Earlham College, Richmond, Ind 47375	69

WATKINS, LARRY, 519 E 4th St, Maryville, Mo.	69
WEBER, MRS. YVONNE, 2168 SW Main St, Portland, Oregon 97205	71
WEBSTER, FRED, 62 Coolidge Ave, Cambridge, Mass 02138	70
WEBSTER, RICHARD, Dept of Anatomy, School of Medicine, State University of New York, Buffalo, N.Y. 14214	69
WELLS LIBRARY, Northwest Missouri State College, Maryville, Mo.	68
WHITAKER, DR. JOHN, Dept of Life Sciences, Indiana State University, Terre Haute, Ind. 47809	68
WHITE, DR. JESSE, Biology Dept, Delta State College, Cleveland, Mississippi 38732	70
WIERSERS, DR. JACOB, Dept of Biological Sciences, Purdue University, Lafayette, Ind 47907	68
WILDLIFE REVIEWS, U.S. Fish & Wildlife Service, Patuxent Wildlife Research Center, Laurel, Md. 20810	ex
WILHELM, DALLAS E., USS F.B. Parks (DD-884), FPO San Francisco, California 96601	68
WILSON, BOBBY M., Rt. 1, Caneyville, Ky. 42721	69
WILSON, DR. NIXON, Bernice P. Bishop Museum, Honolulu, Ha. 96819	69
WIMSATT, DR. WILLIAM A., Dept of Zoology, Cornell University, Ithaca, N.Y. 14850	69
WINKLER, DR. WILLIAM G., box B, University Park, N.M. 88070	69
WOLFE, DR. JAMES L., Dept of Zoology, Mississippi State University, State College, Miss 39762	68
WOODALL, MRS. DORA, 8725 East Cypress, Scottsdale, Arizona 85257	69
WOODS, JOHN, 25 Widdicombe Hill, Apt 702, Weston, Ontario	69
YALE SPELEOLOGICAL SOCIETY, 2027 Yale Sta., New Haven, Conn 06520	ex
YOUNG, DAVID, Higginsville, Mo. 64037	69
YUNICK, DR. ROBERT A., 1527 Myron St, Schenectady, N.Y. 12309	69

Overseas and Foreign Postal Rates:

ALEXANDER, DR. PAUL, Tunghai University, Taichung, Taiwan	75
BEHRENDT, HERMANN, Buchhandlung, box 341, Bonn, Germany	68
DORGELO, DR. J., Dierfysiologisch Laboratorium, Plantage Muidergracht 14, University of Amsterdam, Amsterdam C, Netherlands	68
EAST AFRICAN VIRUS RESEARCH UNIT, The Director, box 49, Entebbe, Uganda	69
ENGLANDER, DR. H., Zoologisches Institute der Universitat Koln- Lindenthal, Kerpener Strasse 13, Germany	69
FELDMANN, DR. REINER, 5759 Bospelde/Westfalen, den Friedhofstrasse 22, Germany	ex
GAISLER, DR. JIRI, Laboratory of Vertebrate Zoology, Czechoslovakia Academy of Science, Brno, Drobneho 28, Czechoslovakia	ex
GONZALEZ, MAXIMO G., Centro Panamericano de Zoonosis, Oficina Sanitaria Panamericana, Casilla 23, Ramos Mejia, Provincia de Buenos Aires, Argentina	69
HAMILTON-SMITH, ELERY, 17 Helwig, Montmorency, Victoria, Australia	ex
HANAK, DR. VLADMIR, Dept of Systematic Zoology, Charles University, Vinicna Praha 2, Czechoslovakia	ex
JENSEN, BERGER, Game Biology Station, Kalo, Ronde, Denmark	68
KIRK, GUSTAV, D-3221, Hohenbuechen 31, West Germany	68
KLEIMAN, MISS DEVRA, Zoological Society of London, Regents Park, London NW, England	68
KRAPP, DR. FRANZ, Zoologische Institut, Universitat Freiburg, Switzerland	68
KRZANOWSKI, DR. ADAM, Institute of Systematic Zoology, Polish Academy of Sciences, Slawkowska 17, Krakow, Poland	ex
KUNS, DR. MERLE, Centro Panamericana de Zoonosis, Casilla 23, Ramos Mejia, Provincia de Buenos Aires, Argentina	68
LIBRARIAN, Division of Wildlife Research, CSIRO, Canberra, ACT, Australia	ex
LIBRARY, Societas Entomologica Helsingforsiensis, Snellmangatan 9-11, Helsingfors 17, Finland	ex

MACKINTOSH, J. A., Murihiku Game Farm, Otatara No. 9, R. D. Invercargill, Southland, New Zealand	69
MARINKELLE, DR. C. J., Universidad de Los Andes, Calle 18-A, Carrera 1-E, Apartado Aereo 4976, Bogota, D.E., Colombia	69
MCGUIRE, S. L., Louisiana State University, School of Medicine, International Center for Medical Research and Training, Apartado 5140, San Jose, Costa Rica	69
MORAHAN, DR. R. J., Commonwealth Serum Laboratories, Wewak, Sepik District, Territory of Papua & New Guinea	68
NADER, DR. IYAD, Biological Research Center, Sulaikh, Baghdad, Iraq	69
OLDHAM, TONY, 17 Freemantle Rd., Eastville, Bristol 5, England	69
OLSSON, SVEN-OLLE, Oestra Foerstadsgatan 23B, Malmoe C, Sweden	72
PICKVANCE, T. J., 116 Bunbury Rd., Northfield, Birmingham, 31, England	68
POLISH ACADEMY OF SCIENCE, Mammal Research Institute, Bialowieza, Poland	ex
PYONG-OH, Dr. WON, Dept of Biology, Kyung Hee University, Seoul, Korea	69
ROER, DR. H., Museum Alexander Koenig, Koblenzer Strasse 150-164 Bonn, Germany	ex
RYDZEWSKI, DR. W., Laboratory of Ornithology, Sienkiewicza 21, Wroclaw, Poland	ex
SCHAFFER, DR. W., Natur-Museum und Forschungs Institute Senckenberg, der Senckenbergischen Naturforschenden Gesellschaft, 6 Frankfurt 1, Senckenberg-Anlage 25, Germany	ex
SHRIVASTAVA, DR. SHYAMA CHARAN, Dept of Zoology, Government Science College, Gwalior, M.P., India	68
SOCIEDAD VENEZOLANA DE ESPELEOLOGIA, Biblioteca, Apartado 6621, Caracas, Venezuela	ex
STEBBINGS, R. E., Nature Conservancy, Furzebrook Research Station, Wareham, Dorset, England	69
THAKAR, D. S. 17 Snehalala Ganj, Street no. 1, Indore 3, M.P., India	69
TRANSVAAL MUSEUM, box 413, Pretoria, South Africa	68

WOLOSZYN, BRONISLAW, Cybulskiego 20, Katedra Zoologii WSR,
Wroclaw, Poland

ex

YOSHIYUKI, MISS MIZUKO, The National Science Museum, Dept of
Zoology, Ueno Park, Tokyo, Japan

69

246

RECENT LITERATURE

- AL-ROBAAE, K. 1968. Notes on the biology of the tomb bat, Taphozous nudiventris magnus v. Wettstein 1913 in Iraq. *Saugetierk Mitt* 16: 21-26.
- BAIN, O. 1966. Diversite et etroite specificite parasitaire des filaires de chauves-souris sous le nom de Litmosa filaria. *Bull Mus Nat Hist Natur* 38: 928-939.
- BAKER, R. H. 1968. A late autumn record for the hoary bat in Michigan. *Jack-Pine Warbler* 46: (no p number on my reprint).
- BAKER, W. W., S. G. MARSHALL & V. B. BAKER, 1968. Autumn fat deposition in the evening bat (Nycticeius humeralis). *J Mamm* 49: 314-317.
- BARETTO, M. P. 1967. Estudio sobre reservatorios e vectores silvestres do Trypanosoma cruzi: XIX. Inquerito preliminar sobre triatomineos silvestres no Sudeste do Estado de Gorias, Brazil. *Rev Inst Med Trop Sao Paulo* 9: 313-320.
- BROSSET, A & R. VUATTOUX, 1968. Redecouverte du "rat volant" de Daubenton, Myopterus senegalensis Oken (Chiroptera), en Cote d' Ivoire. *Mammalia* 32: 82-85.
- CAGLAR, M. 1965. The Chiropteran fauna of Turkey. *Istanbul Univ Fac Mecm Ser B Ilimler* 30: 125-134. In a language which is not familiar to me (Turkish?). My translation of the title is a guess.
- CAPANNA, E & M. V. CIVITELLI, 1967. I Cromosomi di Pipistrellus savii. *Caryologica* 20: 265-272.
- _____ & L. CONTI. 1967. I cromosomi somatici del Pipistrello " Ferro di cavallo minore" (Mammalia-Chiroptera). *Accad. Nazionale dei Lincei* 43: 125-130.
- CARPENTER, R. E. & J. B. GRAHAM. 1967. Physiological responses to temperature in the long-nosed bat, Leptonycteris sanborni *Comp Biochem Physiol* 22: 709-722.
- CAUBERE, B., H. MENU & M-C SAINT GIRONS. 1968. Notes sur les mammiferes de France VII. Dimensions de l'avant-bras de Rhinolophus ferrumequinum (Schreber, 1774). *Mammalia* 32: 97-103.
- CHIPPAUX, A. & C. CHIPPAUX-HYPPOLITE. 1966. Une souche d'arbovirus isolee a Bangui a partir de glandes salivaires de chauves-souris: Note preliminaire. *Bull Soc Pathol Exot* 58: 164-169.
- CONSTANTINE, D. G. 1967. Rabies transmission by air in bat caves. U.S. Public Health Service Publication No. 1617. 51pp.
- _____, 1968. Rabies in New Mexico cavern bats. *Pub Health Repts* 83: 303-316.
- DALQUEST, W. W. 1968. Mammals of North Central Texas. *SW Nat* 13: 13-22.
- DAVIS, R. 1968. Wing defects in a population of pallid bats. *Am Midl Nat.* 79: 388-395.

- DEANE, I. M. 1967. Tripanosmídeos de mamíferos de região amazônica: IV. Hemoscopia e xenodiagnóstico de estrada Belem-Brasília. Rev Inst Med Trop São Paulo 9: 143-148.
- DECARVALHO, C. I. 1967. Nouvelle donnée faunistique concernant Nyctalus leisleri (Kuhl, 1818) en France. Mammalia 31: 165-169.
- DUBSAREK, F. & J. DE LA CRUZ. 1966. Nuevos géneros y especies de Acaros (Acarina: Liotrophoridae) parasitos de murciélagos cubanos. Poeyana Inst Biol Sera la Habana 31: 1-20.
- HARRIS, P. D., J. E. RANDALL & P. A. NICOLL. 1968. Detection of erythrocytes passing through capillaries by a photocell-computer technique. J Appl Physiol 24: 728-732. (Myotis lucifugus wing)
- EMPRESSA, A. C. 1965. Guano de murciélago. Agrotenia, 3: 30-35.
- ESQUEVEL, R., J. A. ZUMIGA, M. ALFARO & E. KOTOHER, 1967. Trypanosomes of Costa Rican fetal mammals. J. Parasit. 53: 951-955.
- GENOWALS, H. H. 1967. Second record of Myotis volans from North Dakota. Trans Kansas Acad Sci 69: 335.
- GREENHALL, A. M. 1968. Notes on the behavior of the false vampire bat. J Mamm 49: 337-346.
- SUNDAY, J. E. 1967. Notes on the Pleistocene big brown bat (Eptesicus grandis). Ann Carnegie Mus 39: 105-114.
- GURAYA, S. S. 1967. Cytochemical study of interstitial cells in the bat ovary. Nature 214: 615-616.
- GURIOVOL, N. N. 1966. Ecological-morphological differences in the structure of the nasal cavity in the representatives of the orders Insectivora, Chiroptera and Rodentia. Zool Zh 45: 1536-1551. In Russian.
- HAENSEL, J. 1968. Neues Hochstalter für das Mausohr, Myotis myotis (Borkhausen, 1797). Saugtierk Mitt 16: 53.
- HOOPER, E. T. & J. H. BROWN. 1968. Foraging and breeding in two sympatric species of Neotropical bats, genus Noctilio. J Mamm 49: 310-312.
- HUMPHREY, P. S., D. BRIDGE & I. E. LOVEJOY. 1968. A technique for mist-netting in the forest canopy. Bird Banding 39: 43-50.
- HUMPHREY, S. R. & J. B. COPE, 1968. Records of migration of the evening bat, Nyctiscius humeralis. J. Mamm 49: 339.
- TENSON F. G. F. TENSON, 1968. Ringmærkning af flagarmus på Kronborg slot. Flora og Fauna 74: 21-29.
- JONES, J. K. & H. H. GLENOWAYS. 1967. A new subspecies of the free-tailed bat, Molossops greenhalli, from western Mexico (Mammalia: Chiroptera). Proc Biol Soc Wash 80: 207-210.
- KHATUNIA, H. 1967. A remarkable specimen of Indian Chiroptera. Sci Cult. 33: 296-297.
- KIRKPATRICK, T. H. 1967. Mammals, birds and reptiles of the Warwick District, Queensland. I. Introduction and mammals. Queensland J An Sci 23: 591-598.
- LAOPIERRE, M.M.J. & A.J. BUCK, 1967. Feeding mechanism of Chiroptonyssus robustipes on the transilluminated bat wing. Exp Parasitol 20: 312-320.
- IAYNE, J. N. 1967. Evidence for the use of vision in diurnal orientation of the bat, Myotis austroriparius. An Beh 15: 409-415.
- LINARES, O.J. 1966. Notas acerca de Macrophylum macrophyllum (Wied) (Chiroptera) Mem Soc Cienc Nat LaSalle 26:53-61.

- LINARES, O. 1968. Quiropteros subfosiles encontrados en las cuevas venezolanas. Bol Soc Venez Espeleol. 1: 119-145.
- _____. 1968. Extension de distribucion para Lonchophylla robusta con algunas notas sobre las especies venezolanas del genero Lonchophylla (Chiroptera-Mammalia) Bol Soc Venez Espeleol. 1: 53-60.
- MACHADO, C. E. 1967. The systematic position of the bats Desmodus and Chilonycteris, based on host-parasite relationships (Mammalia; Chiroptera) Proc Biol Soc Wash 80: 223-226.
- MARINKELLE, C. J. 1967. Cimex hemipterus (Fabr.) from bats in Colombia, South America. Proc Ent Soc Wash 69: 179-180.
- MCNEIL, R. 1967. Modification of the use of the Japanese mist nets. Bird Banding 38: 149-151.
- MUELLER, H. C. 1968. The role of vision in vespertilionid bats. Am Midl Nat. 79: 524-525.
- NICKEL, P. A. 1967. Helminths of bats collected in Kansas, Nebraska and Oklahoma. Am Midl Nat 78: 480-485.
- NUNEZ, E. A., R. P. GOULD, D. W. HAMILTON, J. S. HAYWARD & S.J. HOLT. 1967. Seasonal changes in the fine structure of the basal granular cells of the bat thyroid. J Cell Sci 2: 401-410.
- PETROVICKY, P. 1967. The reticular formation in the bat (Myotis myotis Borkh.) Folia Morphol 15: 146-152.
- PIRLOT, P. 1968. Chiropteres du Perou, specialement de Haute-Amazonie. Mammalia 32: 86-96.
- RAHM, U. & A. CHRISTIAENSEN 1966. Les mammiferes de l' Ile Idjwi (Lac Kivu, Congo). Ann Mus Roy Afr Cent Sci Zool 149: 1-35.
- ROER, H. 1968. Zur Frage der Wochenstuben-Quartiertreue weiblicher Mausohren (Myotis myotis). Bonner Zool Beit. 19: 85-96.
- SEEBECK, J. H. & E. HAMILTON-SMITH. 1967. Notes on a wintering colony of bats. Vict Nat. 84: 348-351.
- TESH, R. B., A.A. ARATA & J. D. SCHNEIDAU, JR. 1968. Histoplasmosis in Colombian bats. With a consideration of some of the factors influencing the prevalence of natural infection in Chiroptera. Am J Trop Med Hyg 17: 102-106.
- VAN DEUSEN, H. M. 1968. Carnivorous habits of Hypsignathus monstrosus. J. Mamm. 49: 335-336.
- WIEDEMAN, M. P. 1968. Blood flow through the terminal arterial vessels after denervation of the bat wing. Circ Res. 22: 83-89.
- WIMSATT, W.A. & H.F. PARKS. 1966. Ultrastructure of the surviving follicle of hibernation and of the ovum-follicle cell relationship in the vespertilionid bat Myotis lucifugus. In Rowlands, I.W. (ed). Comparative biology of reproduction in mammals. Symposium no. 15 Zool Soc London. p 419-454.
- WOLOSZYN, B. 1967. Wspolczesna i holocenska fauna ssakow z jaskini Szczelina Chocholowska w tatrach. Prace Mus Ziemi no. 11. p 291-298

WHICH WAY DO THE BATS SPIRAL FROM CAVES

I have a letter from Dr. Joseph Wood Krutch, America's best known Naturalist-Philosopher-Writer, saying that for some time he has been trying without any success to gather information concerning the circling of bats when they leave a cave with a vertical exit like that at Carlsbad. Do they always fly counterclockwise? He says the literature contains a few references to circling bats, but is strangely silent concerning the direction of the spiral.

Dr. Krutch says he has quite a collection of facts and alleged facts about various phenomena involving clockwise or counterclockwise spiraling in animals. Also various contradictory opinions and possible explanations, but he has been unable to find any data on bats. If anyone has any data on this he should write to Dr. Krutch at 5041 East Grant Rd., Tucson, Arizona 85716.

RED BAT CARRIES YOUNG IN FLIGHT

The question of whether or not bats ever carry young while foraging in the evening has been discussed in the last couple of issues. This has prompted Larry Watkins to supply his data on the subject.

For the past two years Larry has been working with David Easterla in Missouri banding Nycticeius, Lasiurus and Eptesicus. During the summer of 1967 he banded 96 L. borealis, of which 83 were females. On 24 June, 1967, he netted a female which was carrying a nearly grown young as it flew over a pond. The nearest trees were about 150 yards away.

On the other hand, one he netted that was carrying no young but was lactating was later found on 3 July a half mile from where it was banded. It was then on the ground under a tree with three nearly grown young attached to it. The bat was unable to fly with the load.

Watkins says he plans to continue his banding, especially at the Nycticeius colonies. He has banded 2092 of these, but has had no significant recoveries as yet.

WYANDOTTE CAVE

Last time I wrote about the plans of the state to make a commercial extravaganza at Wyandotte Cave in Indiana. Two people have written comments about it since then.

Tony DeBlase says that the Wyandotte problem is one that has been bothering him. This past December he, Jim Cope and Steve Humphrey visited the cave and found that the bat population has continued to decrease at an alarming rate. Where 5 years ago there were several thousand each of Myotis sodalis and M. lucifugus, they found only a couple hundred of the former and less than a hundred of the latter. He says the loss does not seem to be influenced by any increased activity in the cave. In fact the time involved in the transfer to public ownership has probably decreased disturbance.

Tony says he is worried that the planned lighting and other "improvements" will disturb the bats. But he is more concerned that by the time this happens there will be no bats left.

Richard L. Powell, Geologist, Coal Section, Dept of Natural Resources, Geological Survey, State of Indiana, wrote:

"The plans for development of ~~the~~ Wyandotte Cave property are indeed exciting,

but are not practical nor necessarily to be implemented as proposed. But it is true that the commercial route in Wyandotte cave is to be lighted electrically. The lighting may be similar to that being installed in Mammoth Cave, that is 4 to 8 foot long fluorescent fixtures. Such an improvement seems to be the best way to open the cave as a major tourist attraction. The development is to retain as much as possible the natural features of the cave.

"Cave fauna is not one of the natural features of either Wyandotte or Little Wyandotte caves. The caves are nearly devoid of any fauna, even in the remote, seldom explored regions of Wyandotte. I made a fauna survey with Dr. Carl Krekeler of Valparaiso University and we found about 6 different critters among about 15 living specimens. I have been in the cave numerous times within the past three years, at least 250 hours. I have seen scattered individual bats and small clusters in Wyandotte at times, mostly in the fall, but no population of significance. According to reports I have solicited, bats did frequent the cave in hordes in the past, but commercialization drove them out as long as 30 years ago. I have yet to see the Indiana bat, Myotis sodalis, to my knowledge. Most of those in Wyandotte were M. lucifugus and Pipistrellus subflavus. I am enclosing a slide of a bat which I thought might be the Indiana bat. Can you verify and please return the slide? (ed. The picture was a hibernating Pipistrellus subflavus).

I think I can assure you that the improvements in Wyandotte Cave will do little, if any, additional damage to the nonexistent fauna of Wyandotte Cave. In fact the new gate will be so constructed to be barred at the top to allow passage of bats, which is not the situation at present."

Jim Cope will probably be interested to learn that the bats were driven out 30 years ago. He and his students have banded about 30,000 bats there during the past ten years.

FROM: Dr. Wayne H. Davis
 Department of Zoology
 University of Kentucky
 Lexington, Kentucky 40506
 U. S. A.



Site of a Myotis Colony in Colorado

THE COVER

This was one of our collecting localities last summer in the San Luis Valley of Colorado. This spot is one mile north and 4 miles east of Mosca, Conejos County,

elevation 7550 feet. Findley and Jones (J. Mamm. 48:442) list "4 mi E Mosca" as the locality of one of their four specimens of "intergrades between M. l. carissima (sic) and M. l. occultus." According to Dick Stalling the specimen came from a colony in the house behind the two trees in the photo. When we visited the locality on 29 June, 1968, the bats were no longer in the house. However, we found a good colony in the barn to the right and collected 30 specimens.

This is most unusual country. It is sandy desert, but water springs forth from artesian natural wells at various places. There is a water flow between the house and the barn. There are several good feeding areas for bats nearby.

Our plans for the summer were to collect series of 30 specimens from each of the localities from which Findley and Jones listed their intergrades, so that we would have adequate material with which to study the relationships of M. lucifugus and M. occultus. After taking our sample here, we visited nearby Homelake where Dick Stalling had told us there was a large colony. We easily located this group of many hundreds of bats and took a sample of 30.

From here on the task of locating bats was not easy. We visited the Conejos River, from where a specimen had been taken at 8300 feet by the old Biological Survey. We located the spot and netted two of our bats over a pond beside the river. During the next few days we visited every ranch and building both up and down the river checking for bats. At night we netted with a little success, picking up a few specimens here and there. Finally we located a colony in the courthouse at Conejos, on the Conejos River at 7900 feet. Here the bats were living with Myotis volans. The two species were clustered together. A colony of Eptesicus occupied another part of the attic. When we began examining our myotis we found a single M. yumanensis among them. This seems to be the first record of this species from the San Luis Valley, although there is a recent record from El Paso County. We skinned a series of bats from the courthouse and then headed for Eagle Nest, New Mexico, a region from which Findley and Jones had two of their intermediate specimens. Here I spent all day interviewing people, telephoning, checking buildings and visiting ranches. A rancher showed me the beaver pond over which the U.N.M. people had netted their specimen, but everybody I talked with agreed that bats were very scarce in Eagle Nest. Finally, in checking out the abandoned buildings of a gold mine west of town, I encountered a colony of about 50 M. volans. Among these were 4 male M. lucifugus. We set up nets in the building, and during two nights work captured 52 little brown bats. As these were the most interesting looking specimens we had encountered, we skinned them all. We banded and released 241 M. volans. The only other bat taken was a M. thysanodes. This was an interesting record. Not only was it a range

Bat Research News appears quarterly: January, April, July and October. Subscription rate is \$1.00 for 2 years. All back issues are available for \$4.00. Wayne H Davis, Department of Zoology, University of Kentucky, Lexington, Ky. 40506 U.S.A.

extension, but it may be an altitudinal record as well. It was up with the water shrews in the spruce forest at 9350 feet.

After getting all the specimens we wanted from the chosen localities, we found we still had some time, so we decided to get some specimens from the area in Colorado between the San Luis Valley and Ft. Collins. It seemed to us as if there is quite a difference in size of bats from these two regions, and we wanted to see if they intergrade. Therefore we went over the mountain from the San Luis Valley into the Arkansas River Valley and set up camp. This is beautiful country and looks ideal for little brown bats. There followed five days of the most difficult time I have ever had in locating bats. We visited every village from Salida to Twin Lakes, talked to dozens of people, checked likely buildings and mines, netted night roosts and ponds. We got M. volans and M. leibii. We then went on the radio at Salida asking for help in locating bats. No luck. Everybody we talked with said that bats were very scarce.

On the fifth day I went into a restaurant in Twin Lakes and asked a group of locals if there were bats in town. They all agreed that bats were common there, and could be seen by the numbers about the street lights every evening, but none knew where they were by day. I then decided to locate bats there that day if I had to check every building in the small village. I began walking the streets and talking to everyone I saw. Bats were soon located in a couple of buildings, and I got a reasonable sample.

Several people have asked me what we have found out about the problem of M. lucifugus - M. occultus. We haven't really got into it yet. About half the skulls are back from the bug room, and the rest will come out this week. Things then need be numbered and catalogued. We will get to working with the material sometime this month. We have so many specimens to handle that we will probably be working with it much of the winter. W. H. Davis.

BAT BANDING IN THE WEST

Although we skinned nearly all the little brown bats and many other specimens last summer, we also got a few banded. Landing records include:

	Colo	N. M.	S. Dak	Minn	total
M. volans	77	241	74		392
M. lucifugus	22		14	267	303
M. leibii			35		35
L. cinereus	2		11		13
E. fuscus	2		7		9
P. townsendii			2		2
totals	103	241	143	267	754

WHERE DO THE MYOTIS OF NORTHERN MINNESOTA SPEND THE WINTERS?

I have long been intrigued by the question of where winter the north central populations of Myotis lucifugus, and I have written about the problem here before. Bob Stones has found that there are numerous old mines on the northern peninsula of Michigan which can serve as hibernacula for Michigan and Wisconsin bats. Helmut Mueller told me about a mine with a good colony that he recently discovered not too far from Madison. The bats from northern Indiana migrate to the caves in southern Indiana and Kentucky. Those that summer in northern Ohio still present a mystery. We have not been able to establish any communication between this area and the great winter concentrations in Carter Cave, Ky.

If one checks a map of North America for the region farthest from caves, mines or any other suitable underground retreats, but which is inhabited in summer by fair numbers of bats, he sees the prairie region of northwestern Minnesota, eastern North Dakota, and southern Manitoba. This has been of particular interest to me, since I spend part of each summer visiting at my wife's home in northwestern Minnesota. Although I never worked with any bats there, I have kept an eye open for the animals during each of the past ten summers. Many times I have walked the streets of the village of Fosston in the evening looking for bats and trying to spot a roost. What looked like little brown bats could nearly always be seen, but always in small numbers, and I never was able to locate a roost. Over the years I developed the opinion that bats were really rather scarce up there, and that I could never tag enough to expect any recoveries. I thought that likely the few bats seen winter locally in wells. Several years ago I discovered a country church that was obviously inhabited, but I never bothered the bats, because banding a few bats from one building I thought not likely worth the effort.

Last summer, however, a report reached me that a well-known local citizen in Fosston, Minnesota, had purchased a farm house that was inhabited by numerous bats. When I checked I was delighted to find that there was a good sized colony. I built a trap on the house and told the owner that I thought we would probably get a couple of hundred bats. We caught 202. With this as a good start and an opportunity for some free publicity, I decided to make a real effort to locate some more bats in the region. I contacted the local newspaper, told them I had an interesting story, and suggested they get a picture of the contraption I had built to catch the bats in. I wrote the story myself to get the slant I wanted and ask for reports of other colonies. I got 38 calls and letters - the greatest number I have ever had from a newspaper story. And whereas Hitchcock and I had found that in New England only about one of three reports really were bat colonies, every one of the more than thirty I was able to check out was a summer day roost of little brown bats.

Unfortunately, I began my work on August 4, just the time the summer colonies were breaking up. The speed of the breakup was remarkable. I got a good catch at the first locality, but numbers fell off rapidly elsewhere, and within a week the bats were virtually gone. I now know many good colonies there with which I can work next year.

It was of especial interest that no colony was located in the village; all were in old farm houses, and they seemed concentrated in a few regions north and east of town. In these regions of clusters of trees and numerous lakes bats seem to be abundant.

I made a careful check of bats handled in looking for Myotis volans. Since the recent report of Genoways on this bat in north central North Dakota I have suspected its occurrence in Minnesota. Several species of western birds and mammals range across southern Canada and northern North Dakota into this corner of Minnesota, and probably few little brown bats have ever been examined from this region. However, I was unable to find any M. volans.

In my newspaper story I mentioned that I was primarily interested in finding the winter range of the Minnesota Myotis. Many people expressed surprise that the bats should leave their attic for the winter, and several told me that they did not. Hitchcock and I got this same story in New England. We checked out a couple of those that claimed most emphatically, and found no indication of bats in winter and the residents had "not heard them this winter". Hitchcock also checked into each winter band recovery, and if it was a live bat in a building, he visited the locality. He found no evidence of bats using such buildings, and thought that these were probably captures of bats in winter transit.

I doubt that little brown bats winter in attics in Minnesota. However, one story has made me reconsider the possibility. An elderly woman told me that she knew her bats were there all winter. They were in the roof and the boxing about the window of a bedroom. The bedroom she said was used only once each year when her son came up from Minneapolis deer hunting in November. She said he was always bothered by the bats scurrying about. Possibly she had got mixed up with a summer visit.

Our physiologist tells me that water loss from an animal hibernating at near freezing temperatures would be negligible. Even with low relative humidity the vapor pressure deficit is low. Even with a large difference in temperature - say freezing in the attic and -40° F outside, he does not think the stress of water loss to a bat would be of any significance, like it is in a refrigerator for example. W. H. Davis.

TEMPERATURE AND HUMIDITY AT AN INDOOR WINTER BAT ROOST

The above paragraph reminded me of the scarcity of data on winter roosts of bats in buildings. Although it is well known that bats hibernate in buildings in Europe and North America, I was unable to find any measurements in the literature on local environmental conditions at such hibernacula when I was writing the chapter on physiological ecology of hibernation for Wimsatt's book on the biology of bats. So last winter I tried to interest a student in the problem. In December I took a student[†] to the elementary school at Midway, Ky., just a few miles from here, where I had reason to suspect that bats winter. We had banded a summer colony of about 50 here a few years ago, and had had one recovered as it was flying about in the hallway in January.

When we checked the attic in December we found 6 Eptesicus fuscus. They were hanging in the open on the rafters. They did not look to be in deep hibernation. Some had their eyes open. I suggested that the student set up to take continuous temperature recordings at the site and measure humidity at weekly intervals. However, he did not develop an interest in the project, and he got into other things. We did go up once more. On February 26, 1968 in mid-afternoon we found the temperature at Midway, Ky., to be 44° F. In the attic we found a single bat, Eptesicus fuscus.

The temperature where the bat hung was 71° F, and the relative humidity was 43%. However, I do not consider these data reliable, because we let hot dry air into the attic from the classroom below when we entered through the trap door. The bat hung close to this entrance, only about 15 feet distant.

HERE AND THERE

The University press has been sitting on our ms of the bat book since February. We have been prodding them since our return from the West, and they have now set up a schedule of events for it. They set the release date now as May, 1969.

Now that we don't have anything to do, Barbour and I have been working on a book on the mammals of the eastern United States. This will include all wild species presently found living east of the 100th parallel. We started literature files and developed a plan of attack for getting the photos we need last spring. This is why you readers have been getting requests of reprints from me for your papers on things other than bats. I have decided bats are getting so scarce that I am going to quit molesting them.

We got pictures of several things that we needed on the western trip. While I was in Minnesota I ran traps for three weeks trying to locate places where we can get some of the things we need from up there. Then last month we took a long weekend in the Smokies to pick up several things we needed from there.

On the way home last summer I stopped by at Sandwich Illinois to visit with HARLAN WALLEY. He is working up his data on the bats he has banded at Blackball Mine. He showed me the map he had drawn up on their summer distribution. The dispersal pattern is quite interesting - different from anything found for New England or Kentucky caves and mines. Walley was somewhat surprised at the success I had just had in locating bat colonies in Minnesota. Despite intensive efforts, he has never had any success at locating colonies of Myotis lucifugus in his part of Illinois. While I was visiting with Walley in the evening RAY PAWLEY dropped by. He is a subscriber who is the curator of the Brookfield Zoo. He is interested in keeping bats and everything else in captivity. He has been having some nice success with his bats and bushmasters.

I missed the meetings of the American Society of Mammalogists this year for the first time in quite a while. I just couldn't fit it into things quite right, although I went through Ft. Collins just a week after the meetings. As usual there were several interesting looking bat papers on the program.

LARRY BROWN has been banding some small colonies of Myotis austroriparius and Tadarida around Tampa where he is now settled at the University of South Florida. He says he and his students have found yellow bats to be very abundant in Hillsborough County.

DAVE BRUCE has finished his PhD at Purdue and taken a position at Seattle Pacific College in Seattle, Washington, where he is teaching physiology and working on the physiology of hibernation in bats.

SGT. JAMES HEDGES sent me a clipping from the Cedar Rapids Gazette of July 8 about a girl being bitten by a rabid bat in that Iowa town.

JAMES REDDELL wrote that he visited the famous railroad tunnel at Comstock, Texas last spring and caught Myotis yumanensis, M. velifer and Tadarida brasiliensis, but found no vampires or other oddities. Apparently there are two tunnels at Comstock,

and the one the locals wouldn't let me in last May was the wrong one. Reddell set up a net on the west bank of the Pecos north of Langtry and netted a Pipistrellus subflavus, which is a small range extension. He also banded several Antrozous pallidus, Myotis velifer and Plecotus townsendi.

WILLIAM LOPEZ-FORMENT is now working on the vampire bat project at the Instituto Nacional de Investigaciones Pecurias, in Mexico, D.F.

ALAN RODNEY is a new subscriber who is interested in bat parasites. He is working on a survey of the ectoparasitic arthropods in New Mexico. He is at N.M. State in Las Cruces.

CHARLES HANDLEY has a bat banding project going in Brazil. He returned last spring from a trip during which he banded 650 that he netted over a fresh water swamp near Belem, Para.

At hand is the second issue of the newsletter of the OZARK UNDERGROUND LABORATORY, released in April, and the third issue, produced in July. It seems as if they have developed a fine research facility, to which they welcome guest investigators. The cave is near Forsyth in southwestern Missouri, and the address is route 2, Ozark, Mo. 65721.

The first issue of the NORTH AMERICAN BIOSPELEOLOGY NEWSLETTER appeared in June. It was produced by T. C. Barr and Martha Cooper at the Institute of Speleology, University of Kentucky. The Institute is quite active now, after having experienced considerable difficulty for several years in getting under the ground. There are several graduate students working in the lab on campus and at the field station and caves at Mammoth Cave National Park.

JOHN COOPER said he was interested in Allan Benton's comments on Lasiurus borealis being killed by car aeriels. Cooper says that, although he has not seen one killed by aeriels, he has frequently seen them diving at his automobile. On many occasions over the years, while driving through the mountains in Virginia and West Virginia in early summer, he has seen bats clearly identifiable as this species swoop down toward the headlights of his car. Several of them struck the car and were captured.

Cooper wrote a note of thanks for my plug for the Shelta Cave Fund. He says that close to half the money needed to save the cave has now been raised. I shall contribute again this year. Send contributions to the fund to the Nature Conservancy, Shelta Cave Fund, John Cooper, Dept of Zoology, University of Kentucky, 40506.

There has been some confusion about Blanchard Spring Caverns, the cave that the U. S. Forest Service is commercializing in Arkansas, and which I wrote about here in April. The spring issue of the Nature Conservancy News lists this cave as being owned by the Nature Conservancy. I wrote the Conservancy for a clarification. They do not own the cave. They bought a private inholding near the cave. The Conservancy holding is a woodland along Sycamore Creek. They bought it to protect it from commercial exploitation.

DAVE EASTERLA is president of the Missouri Chapter of the Nature Conservancy. He wrote me that the chapter is acquiring the Pleasant Valley Cave and a surrounding 40 acre woodlot in the St. Louis area. I made a contribution to this worthy cause. Make your check out to the Missouri Chapter of the Nature Conservancy, and send it to the treasurer, Joel Massie, 1015 Locust St., St. Louis, Mo. 63101. Help save a cave.

The CDC Veterinary Public Health Notes for March list rabies for Indiana in 1967. There were 89 cases, of which 25 were bats. About half these were big brown bats and eight were red bats.

The April issue of the above reported an interesting case of rabies that gives one cause for thought. An Air Force Sentry dog being trained in Texas bit its handler and was found to be rabid. FA and mouse inoculation tests were positive. The dog had been vaccinated in March and in May of 1967 for rabies, and again in January, 1968. It had had no known exposure to rabies other than the vaccine, although it had a few fight wounds prior to May, 1967.

The same issue gave results of a test of intramuscular vs subcutaneous inoculation with rabies vaccine. The intramuscular route gave the superior response.

The June issue contains a report on the isolation of airborne rabies virus. This was done at Frio Cave in Texas, by Dr. Winkler of the SW Rabies Lab in Las Cruces, N.M., using a mechanical air sampler.

The quarterly rabies report of the CDC Zoonoses Surveillance for the first quarter (January, February, March) of 1968 was published in July. There were 991 laboratory confirmed cases of rabies in the United States during that period. Of these only 13 were in bats. Few bats are tested during this quarter, because most bats are hibernating in the U.S. at that time.

Dr. J. F. BELL, who is now in Argentina, sent me a half page clipping with photographs from the Buenos Aires Herald of July 23 concerning a research project aimed at developing a method to control the spread of rabies by vampires. The project is sponsored by the Argentine Animal Health Service, the World Health Organization, and a meat packing firm. Three scientists from Cambridge University are involved in the project - a 22 year old zoologist and two 21 year old medical students. They hope to develop a bait and traps which will be effective in keeping down the vampire population in selected areas.

DICK LAVAL wrote to comment on the distribution of Myotis lucifugus and M. austroriparius along the Gulf Coast, as contrasted to what I reported in my recent paper for the coastal Carolinas and Georgia. He mentions that limestone caves occur close to the coast in Florida, Alabama and Mississippi, in contrast to the region I studied. In these caves he netted the only two specimens of M. lucifugus yet taken along the Gulf. He believes the species is only a straggler in this region. Where large series of myotis are known from the coastal plain, all are M. austroriparius. He thinks it unlikely that M. lucifugus occurs at all on the Gulf Coastal Plain itself.

LaVal banded 760 bats in Costa Rica last summer and found that many could be recaptured by netting the same places on successive nights. He noted the same thing where netting in west Texas. He found that in Costa Rica the number 2 bands were not hard enough for Phyllostomus discolor, which chewed them up, or large enough for Artibeus literatus.

I haven't heard anything about the conference on bats that was held in Czechoslovakia 5-9 September. This was soon after the Russian invasion of that unfortunate little country.

RECENT LITERATURE

- BOURLOND, A., K. WOLFF & R. K. WINKELMAN. 1967. Cholinesterase in melanocytes of the bat. *Nature*. 214: 846-847.
- BRENTJES, B. 1968. Zur Rolle der Fledermaus in Altamerika. *Saugetierk. Mitt.* 16: 157-160.
- CAPANNA, E. 1968. Some considerations on the evolution of the karyotype of Microchiroptera. *Experientia*. 24: 624-626.
- CHOATE, J. R. & E. C. BIRNEY. 1968. Sub-recent Insectivora and Chiroptera from Puerto Rico, with the description of a new bat of the genus Stenoderma. *J. Mamm.* 49: 400-412.
- CSIZMAZIA, G. 1966. Beitrage zur Fledermaus-Fauna des Ungarischen Tisza-Tales. *Tiscia* 2: 127-130.
- DE BALSAC, H. H. & F. DE BEAUFORT, 1968. Le statut des noctules (Nyctalus) en France. *Mammalia* 32: 204-206.
- DULIC, B., B. SOLDATOVIC & D. RIMSA. 1967. La formule chromosomique de la noctule, Nyctalus noctula (Mammalia, Chiroptera). *Experientia* 23: 945-946.
- EASTERLA, D. A. 1968. First records of the pocketed free-tailed bat for Texas. *J. Mamm.* 49: 515-516.
- HAWKEY, C. 1967. Inhibitor of platelet aggregation present in the saliva of the vampire bat. *British J. Haematol.* 13: 1014-1020.
- HAYMAN, R. W., X. MISSONE & W. VERHEYEN. 1966. The bats of the Congo and of Rwanda and Burundi. *Ann. Mus. Roy. Afr. Cent. Ser. 8 Sci. Zool.* 154: 1-99.
- HAYWARD, J. S. & C. P. LYMAN. 1967. Non-shivering heat production during arousal from hibernation and evidence for the contribution of brown fat. *Proc. 3rd Internatl. Symp. Mammalian Hibernation* pp 347-355.
- HILL, J. E. 1967. The bats of the Andaman and Nicobar Islands. *J. Bombay Nat. Hist. Soc.* 64: 1-9.
- HOOPER, J. D. H. 1967. Longevity of Rhinolophid bats in Britain. *Nature*. 216: 1135-1136.
- HURKA, L. 1967. Beitrag zur Kenntnis der saisondynamic des befalls von Pipistrellus pipistrellus Schreber, 1774, mit flohen (Aphaniptera, Ischopsyllidae). *Vestn. Cesk. Spoleonosti Zool.* 31: 230-239.
- KALLEN, F. C. 1967. Urine production in the hibernating bat. *Proc. 3rd Internatl. Symp. Mammalian Hibernation.* pp 280-294.
- KONSTANTINOV, A. I., B. V. SOKOLOV & I. M. STOSMAN. 1967. Comparative investigation of the sensitivity of echolocation of bats. *Doklady Akad. Nauk SSR.* 175: 1418-1421. (in Russian).
- MARINKELLE, C. J. 1968. Eimeria eumopos, n. sp., from a Colombian bat Eumops trumbulli. *J. Parasitol.* 15: 57-58.
- MAYER, A. & J. WIRTH. 1966. Neuen Fledermausarten im Turkenloch bei Kleinzell (Niederosterreich) nachgewiesen. *Hohle* 17: 98.
- MCKEAN, J. L. & L. S. HALL. 1965. Distribution of the large footed myotis, Myotis adversus, in Australia. *Vict. Nat.* 82: 164-168.
- RICK, A. M. 1968. Notes on bats from Tikal, Guatamala. *J. Mamm.* 49: 516-520.
- ROSENBAUM, A. M., A. MELMAN & H. SOBEL. 1967. Normal seasonal and experimentally induced changes in kidneys of active summer and hibernating

- winter bats: Histochemical and electron microscopical studies. Proc. 3rd Internatl. Symp. Mammalian Hibernation. pp 295-304.
- SUKHOVSKAYA, L. I. 1966. Neuronal structure and interneuronal connections of the posterior corpora bigemina in the bat. Arkh. Anat. Gistol. Embriol. 51: 33-38. (in Russian).
- THAKAR, D. S. & H. B. TEWARI. 1967. Histochemical studies on the distribution of alkaline and acid phosphatases amongst the neurons of the cerebellum, spinal and trigeminal ganglia of bat. Acta Histochem. 28: 359-367.
- VASILEV, A. G. 1967. Electrical activity of the inferior colliculus of an ultrasonically stimulated bat. Doklady Akad. Nauk SSR 175: 741-744.
- _____. 1967. Comparative characteristics of the auditory system of Vespertilionidae and Rhinolophidae (electrophysiological data). ibid. 1414-1417.
- WALTON, D. L. 1967. Subfamilial relationships in the family Phyllostomatidae (Mammalia: Chiroptera) based on post-cranial osteology and myology. PhD thesis, Tulane University. 113 pp.
- WATERMAN, J. A. 1965. The history of the outbreaks of paralytic rabies in Trinidad transmitted by bats to human beings and the lower animals from 1925. Caribbean Med. J. 27: 164-169.
- ZDZITOWIECKI, K. 1967. Czosnoivca janonae, g. n., sp. n., (Lecithodendriidae), a new species from the bat Myotis daubentoni (Kuhl, 1819). Acta Parasitol. Polska. 14: 405-408.