GENERAL NOTES

An emetic technique to investigate food preferences.—Studies of food preferences of bird species are generally based on contents of preserved stomachs and direct observation in the field. A thorough study often requires sacrificing a number of birds of a population. If other aspects of the species are being investigated simultaneously, if the population under observation is small, and banding or color marking for individual identification is used, then the loss of any individuals may be undesirable. Although the use of emetics on birds is not a widespread technique, this method can provide data on food habits without sacrificing birds. Previous studies involving techniques that do not require sacrificing birds are summarized here, followed by data obtained from the technique that appears most valuable.

A technique was developed by Moody (1970, Auk 87: 579) for obtaining stomach contents from insectivorous birds by forcing saline solution through the digestive tract and flushing food material out the cloaca. The application of this technique to granivorous birds by Moody (op. cit.) proved unsuccessful because of impediment of the saline flow by the gizzard. Chaney and Kare (1966, J. Amer. Vet. Med. Assoc. 149:938) determined the effects of several emetic substances orally introduced—copper sulfate—or intravenously introduced—copper sulfate, apomorphine, hydergine, and lanatoside C. The results for each of the experimental species—Herring Gull (*Larus argentatus*), Rock Dove (*Columba livia*), domestic chicken (*Gallus domesticus*), and Brown-headed Cowbird (*Molothrus ater*)—were unpredictable in terms of dosage, latency of reaction, and fatality. No chemical worked well on all the species, probably because of physiological and anatomical differences. Kadochnikov (abstract, 1967, Bird-Banding 38: 334) developed an emetic technique for obtaining food samples from adult birds. By force-feeding Rooks (*Corvus frugilegus*) and Starlings (*Sturnus vulgaris*) a 1% solution of tartar emetic (antimony potassium tartarate), he obtained regurgitated food samples in 2–17 min without the birds suffering any toxic after effects. Kadochnikov's method of food sampling appears to have the potential of becoming a profitable, routine field technique. As the details of Kadochnikov's technique are not readily available to American ornithologists, I attempted to test the technique starting only with the amount of information present in the abstract to determine if the method could easily be used in the field to obtain actual data on food habits. Also, because Kadochnikov worked with two large-sized bird species, both omnivorous, I wanted to see if the technique would work equally well on smaller birds with different food habits.

To test the tartar emetic technique, I used false-bottom walk-in traps to capture five species of birds at a feeder during the first week of September in the Sierra Nevada Range, elevation 8100 feet, Mono County, California. All trapped birds were weighed and banded before the emetic was applied. After several initial trials, a 1.5% solution rather than a 1% solution was found to shorten the response period from about 25 min to an average of 10 min, without harming the birds. For the fringillid species—Cassin's Finch (*Carpodacus cassinii*), White-crowned Sparrow (*Zonotrichia leucophrys*), Fox Sparrow (*Passerella iliaca*), and Dark-eyed Junco (*Junco hyemalis*)—which proved less sensitive to the chemical, the dosage to body weight ratio was from 0.01 to 0.03, or about 0.5 cc for 30 g of body weight. For the one corvid species, the Steller's Jay (*Cyanocitta stelleri*), the dosage was based on Kadochnikov's work with Starlings and Rooks and was in a ratio of 0.007 to 0.009 with body weight, or about 0.8 cc for 100 g of weight.

The chemical was introduced by a 1-cc disposable plastic syringe and 18-gauge needle inserted into one end of a short length of size P.E. 190 Clay-Adams Intramedic Polyethylene Tubing. One person alone could successfully complete the entire procedure: with one hand the bird was restrained and the bill either held or wedged open, while the other hand inserted the free end of the tubing part way down the esophagus to prevent the bird from spitting up the chemical. With the tubing in place, the plunger on the syringe was depressed immediately and the apparatus removed.

After administration of the chemical, the bird was placed in a holding cage with the floor completely lined with newspaper. To keep the bird moderately inactive, a dark cloth was placed over the cage. After regurgitating, the birds were allowed to recover for several minutes and then were released. All flew off immediately. A number of individuals were retrapped or observed several days later and appeared to be in good condition.

The wild bird seed mix used at the feeder consisted of the following seeds in approximate percentages based on number: 23% milo (*Sorghum vulgare*), which is a large seed; 65% unhusked red and white millet (*Panicum mileaceum*), a small seed; 1% oats (*Avena sativa*), a large seed; 9% cracked corn (*Zea maize*), a moderately large seed; and 2% rape (*Brassica napus*), a small seed.

Eight Steller's Jays were trapped and dosed with the emetic. Five of the eight disgorged food material within an average of 14 min. One individual's sample contained only insect material. The seed material consumed by the other four jays consisted almost entirely of the large seed milo. Samples from one adult and one juvenal jay contained only milo; and a sample from the one other juvenile contained milo, several husked and unhusked millet seeds, one fragment of corn, and two rape seeds. The sample from the fourth jay contained much milo, one oat seed, and several husked and unhusked millet seeds. Two factors may have accounted for the lack of success in the other three birds. One regurgitated only liquid, indicating that it was probably caught before it had a chance to feed. Of the remaining unsuccessful attempts, one jay had several seeds in its throat pouch, which apparently were not removed by the emetic.

The one Cassin's Finch trapped—a juvenile—regurgitated in 14 min only small seeds, unhusked millet, and a single rape seed. All three juvenal White-crowned Sparrows dosed regurgitated seed material after an average of 13 min. All samples consisted only of millet in both a husked and unhusked state. Of the two juvenile and four adult Fox Sparrows trapped and dosed, the two juveniles and three adults responded to the emetic. Response time averaged 15 min. One food sample from an adult did not contain any seeds, while all the others consisted of millet that had been husked and split. The emetic was administered to five Dark-eyed Juncos (three adults and two juveniles). For the three birds that responded, reaction time was about 10 min. Only one adult and one juvenile provided seed samples, which consisted solely of whole, unhusked millet.

For some species studied, the data show a possible correlation exists between a higher dosage to body weight ratio and decreased reaction time.

Results of the emetic tests were as might have been predicted. The jays primarily disgorged the larger seed types, whereas the fringillids disgorged the smaller seeds, indicating some seed preference related to body or bill size.

Just prior to this investigation, Prŷs-Jones, Schifferli, and MacDonald studied the tartar emetic using a method similar to mine to compare the percent of response among granivorous, omnivorous, and insectivorous passerines, and to obtain follow-up data on the survival of House Sparrows (*Passer domesticus*) that had been dosed with emetic (1974, Ibis 116: 90). Their data indicated that more

individuals of insectivorous species may respond to the emetic and that recapture rates of House Sparrows that had been dosed and did regurgitate were comparable to recapture rates of controls that had not been dosed.

Further studies are indicated to determine how representative the regurgitated food matter is of the actual stomach contents. For members of the Corvidae, other methods might be used in conjunction with the emetic technique to empty throat pouches. In general, the tartar emetic food sampling technique appears to be successful, reasonably harmless to birds, easy to use in the field, and an excellent alternative to sacrificing individuals for a food study.

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***Laniisoma elegans* in Peru.**—Norton et al. (1972, Auk 89: 889) have reported new Ecuadorian records of this little known cotinga, which was first described from the mountains of southeastern Brazil but has since been found in scattered localities along the eastern base of the Andes from Venezuela to just south of the Andes in Ecuador, with a single record from about 16° S in Bolivia. At least two forms are recognizable in the Andean part of the range: *venezuelensis* in Venezuela and probably northeastern Colombia (Blake 1961, Fieldiana-Zoology 44: 35), and *buckleyi* in Ecuador. The single Bolivian specimen has been described as a third subspecies, *cadwaladeri*, the validity of which needs to be checked by further material. This note reports two Peruvian specimens, which help to fill the large gap in the known range of the species between Ecuador and Bolivia and constitute an addition to the avifauna of Peru.

Recently while examining the cotingas in the collection of the Alexander Koenig Museum in Bonn, I found a specimen of *L. elegans* that had been placed among the superficially similar species *Pipreola arcuata*. It was collected by P. Wyrwich on 20 December 1961 at the Hacienda Flor near Puerto Victoria on the Río Pachitea, a tributary of the Río Ucayali, in an area of tropical rain forest at an altitude of about 350 m above sea level. As the Alexander Koenig Museum has no other specimen of *L. elegans*, H. E. Wolters kindly allowed me to take the specimen to Tring for comparison with others in the collection of the British Museum (Natural History). This Peruvian bird is a female, apparently adult. In the main it agrees well with the type of *L. e. buckleyi*, also a female. The chief differences are that the beak is shorter and noticeably narrower (length from tip to posterior edge of nares, 13 mm compared with 14.5 mm in the type), the yellow of the throat and upper breast is paler, and the barring on throat and upper breast is a good deal heavier. Wing and tail measure 98 and 60 mm respectively, compared with 102 and 63 mm in the type. The weight is given on the label as 45.8 g. Until more is known of individual variation and age differences in the species, it is reasonable to assign this specimen to *buckleyi*.