importance of measuring both tissue repair and injury to increase the usefulness of dose-response paradigms in predictive toxicology. Supported by The Burroughs Wellcome Fund.

Ramsey, P. R. and *W. C. LeBaron*. LTU. N. Kinler and G. Linscombe. LDWF. Changes in nutria pelts with Cu and Zn supplements.—Qualitative differences in pelt condition have long been noted between nutria populations from southeastern and southwestern Louisiana coastal marshes. These differences were hypothesized to result from dietary influences. Populations from each region were sampled and placed on a 42-day feeding trial, wherein groups from each region were fed a basal diet, 2× Cu, or 4× Cu in a 2×3 randomized block treatment design without replication. A similar trial followed with Zn as the supplement. Of 45 variables examined, dietary copper significantly affected 33, whereas dietary Zn affected 3 of 7 variables. Differences in forage composition and/or utilization between the two populations are strong candidates as the causal agents of the pelt quality differences seen between the two populations.

Rao, P. S., R. S. Mangipudy, and H. M. Mehendale. NLU. Colchicine antimitosis alters the final outcome of isopropanol-potentiated carbon tetrachloride hepatotoxicity.—We investigated the mechanism involved in animal survival after significantly enhanced liver injury. Male Sprague Dawley rats were treated with isopropanol (2.5 ml/kg, po) 24 h prior to CCl_4 (1 ml/kg, ip) administration. Serum enzymes, hepatic glycogen levels, and ^{3}H-Thymidine (^{3}H-T) incorporation into hepatonuclear DNA were measured during a time course (0–96 h). Maximum injury was observed at 36 h in both groups (ISOP + CCl_4 & CCl_4) as evidenced by elevated serum enzyme levels which was concordant with minimal tissue repair. Maximum ^{3}H-T incorporation occurred at 48 h in both groups, which indicated stimulated cell division. The wave of tissue regeneration was sustained up to 72 h in the ISOP + CCl_4 group but returned to control levels in the CCl_4 group. Antimitotic intervention with colchicine led to increased mortality due to unrestrained progression of liver injury. These findings suggest that isopropanol-enhanced liver injury is overcome by sustained and augmented stimulation of tissue repair which permits recovery from CCl_4 injury. These results underscore the importance of tissue repair in the final outcome of hepatotoxicity. Supported by The Burroughs Wellcome Fund.

Rhodes, D. J., J. L. Hayes, and B. L. Strom. USDA-FS. Retention of internal and external markers in bark beetles (Coleoptera: Scolytidae) during gallery construction.—Retention of markers used in mark-release-recapture studies of bark beetle dispersal is essential for the determination of their post-dispersal fate. Retention of the internal marker (rubidium, Rb) and external marker (fluorescent powder) during gallery construction and feeding was quantified over time by allowing marked southern pine beetles (SPB) to excavate/feed on untreated host material. Although both groups were detectably marked, significant differences in Rb concentration were found between fed and unfed Rb-marked beetles at 24 and 48 h. Ninety percent of the SPB marked with fluorescent powder were detectably marked after 96 h.

Saugey, D. A. USFS. D. R. England. SAU. Distribution and status of Rafinesque's big-eared bat (*Plecotus rafinesquii*) in southern Arkansas.—Rafinesque's big-eared bat is one of the least known North American bats and is currently designated a sensitive (C2) species by the U.S. Fish and Wildlife Services. Recent investigations of the natural history of this bat in the Gulf Coastal Plain of Arkansas have yielded information concerning distribution, maternity colony size, composition and site selection, juvenile mortality, utilization of abandoned water wells as hibernacula, and movement activities. The majority of occurrence records are of maternity colonies and hibernacula containing numerous individuals, which suggests that this species is more common than previously believed.

Trinca, K. G. NLU. The use of visual landmarks as territory borders by the cicada killer wasp.—Male cicada killer wasps (*Sphecius speciosus*) defended mating territories of approximately 1 m^2 on a grassy lawn without visual landmarks. The territories were mapped using grid markers placed at 1-m intervals; 30 wooden dowels were laid on the ground to provide visual landmarks. No dowel coincided with a territorial boundary, and each dowel was at least 1 m from other dowels. On the following day, we remapped the territories and found that the wasps had modified their territories so that the dowels defined the territorial borders. Of the 29 dowels that were in defended areas, 28 were used as borders (G=33.54, df=1, P<0.001. These results suggest that landmarks may improve defensibility by increasing the stability of boundaries.

PHYSICAL SCIENCES DIVISION

Chemistry Section

Barghouthi, S. and *R. Eschette*. SLU. The interaction of antiepileptic drugs with model membranes.—We are studying the interaction of some selected antiepileptic drugs such as carbamazepine, primidone, and the new drug, vigabatrin, with model membranes (phospholipid bilayer vesicles) and glycoproteins. Carbamazepine and primidone are frequently used together to treat epilepsy, but there are no studies on possible antagonistic action between these two drugs. Such possible interactions are of clinical significance considering the fact that the serum drug levels of these drugs are very important to stop episodes of reoccurring convulsions in epileptic patients. On the other hand, vigabatrin is a new medicine that has been approved in Europe but not in the U.S.A. Vigabatrin is being tested and is soon to be approved by the FDA in the United States. Some data on the mechanism of action of vigabatrin is available, but more studies are required in order to completely understand the biochemistry of this drug. Also, because the drug is at the experimental stage, the cytotoxicity of the drug must be considered.

Boenig, D. L. and M. S. Delaney. MSU. Saturation of steric effects due to chelating tertiary diamines used in the anionic polymerization of ethylene initiated by n-butyllithium.—Steric effects due to the chelating diamines of the type N,N,N′,N′-tetraalkyl-1,2-ethanediamine have been shown to reach a maximum effect when the alkyl substitutents are butyl or larger. With alkyl groups of butyl or larger, the rate of polymerization is essentially the same. In polymerizations using N,N,N′,N′-tetraalkylpropanediamines, the maximum steric effects are observed with alkyl substitutents of propyl or larger. Some effect of larger alkyl groups was observed on the amount of buyllithium actively polymerizing ethylene.

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