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QUANTITATIVE NOTES ON THE VARIATION OF WAX ON CEDAR WAXWINGS (*BOMBYCILLA CEDRORUM*)

MARY LOUISE AND JIM MYERS

Variation in the quantity and distribution of red wax "scales" or "appendages" in waxwings (*Bombycilla*) has been noted earlier, but there seems to be little quantitative data available on variation of individuals in free-ranging populations (see Arvey, Univ. Kansas Publ. Mus. Nat. Hist., 3, 1951:485-89). Banding 537 Cedar Waxwings (*B. cedrorum*) at Camp Towanyak, Johnson County, Kansas, during two "invasion" years (and 303 in the winter of 1965-66 alone) afforded us an excellent opportunity to quantify wax variation in this species.

Ridgway (Bull. 50, U. S. Nat. Mus., 1904:109) described the wax distribution on birds with "perfect plumage" as, "secondaries . . . with terminal appendages (flattened and expanded prolongations of the shaft) of scarlet, resembling red sealing wax." He goes on to say (*op. cit.*, 110) that birds with "imperfect plumage" lack the "red wax-like appendages [on the] secondaries." Although Ridgway does not mention of the occurrence of wax along the tips of the rectrices, Arvey (*op. cit.*, 486) points out that "the rectrices of all three species of waxwings [*B. cedrorum*, *B. garrulus*, and *B. japonica*] seldom possess the wax tips, unless the secondaries have the maximum number of tips. In these individuals, the pigment seems to 'spill over' onto the tail feathers. Eight is the maximum number of tips found on the secondaries. Rectrices with wax tips are more frequently found in *B. garrula* [= *garrulus*], and only occasionally in *B. cedrorum* [*sic*]." Of the 303 waxwings we banded in 1965-66, at least 60% were in the so-called imperfect plumage, lacking terminal red wax appendages on the secondary wing feathers, and an additional 10% showed either traces (or beginnings) of wax, or wax on only two or three secondaries. Of 53 museum skins of *B. cedrorum* Arvey examined, 17 (or 32%) possessed wax on their secondaries (*op. cit.*, 485); his quantification is similar to ours. Arvey found no tendency for males to possess wax more frequently than females (*loc. cit.*), although Ridgway (*op. cit.*, 110) mentions that waxwings tend to lack wax in the juvenile plumage.

On 13 May 1966, we trapped and banded two Cedar Waxwings that had wax on nine secondary wing feathers, and both of these had wax on most of the yellow-tipped rectrices. Of the 537 Cedar Waxwings we have banded, these are the only two that have shown wax on their rectrices or on more than seven secondaries; thus, only 0.37% of the wild birds we have examined have shown such supernumerary wax.

While the wax appendages on waxwings are probably subject to mechanical environmental removal, our observations would seem to be at least as quantitatively accurate as enumerations taken from specimens in various museum collections, which are, additionally, subject to the bias of collectors and inadvertent removal of wax during preparation and continued handling. Thus our observations support those of Arvey, and strongly suggest that the so-called "perfect plumage" is characteristic of only some 30% of Cedar Waxwings.

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MID-WINTER BIRD COUNT FOR 1966

JAMES D. RISING

Twenty bird censuses were taken by members of the Kansas Ornithological Society between 22 December 1966 and 2 January 1967; 114,861 individuals of 113 different species were counted in the state (see Table 1); the total of 113 species is 14 less than were recorded on the 1965 Mid-winter Count, but represents a figure that is characteristic of other recent Counts. Qualitatively, a few species were reported that are unusual in Kansas in the winter: Swainson Hawk (Wichita), Osprey (Kansas City), Pigeon Hawk (Wichita), Snowy Owl (Coffey-Lyon cos.), Roadrunner (Longton), Baird Sandpiper (Lawrence), and Vesper Sparrow (Junction City; Olathe). As mild weather characterized Kansas prior to the period of the censuses, none of these records is surprising excepting the Swainson Hawk. Sight records of this species from Kansas during the winter will continue to be unconvincing until better documentation establishes that stragglers do occasionally over-winter at this latitude. Quantitatively, numbers of Common Snipe (19), Belted Kingfisher (37), Brown Thrasher (21), Slate-colored Junco (7,832), Tree Sparrow (12,041), and Harris Sparrow (5,273), are all unusually high, and may reflect the mildness of the November and early December weather this winter. Numbers of some boreal species which wander sporadically into Kansas were low: Cedar Waxwing (84), Purple Finch (24), and Pine Siskin (0; compare with 1,297 reported on the 1965-66 counts). The Snowy Owl was the only northern species of "vagrant" status that was reported. The movements of these species do not seem to be, directly at least, dependant upon temperature or snow-cover. The five Pileated Woodpeckers reported indicate that this species is increasing in the state. The almost predictable regularity with which such species as the Brown Thrasher, Bewick Wren, and Field Sparrow have been reported from northern stations in recent winters may be correlated with an overall amelioration of the climate in Kansas.

Figures 1 and 2 reflect the numbers of Tree Sparrows and the combined numbers of Field, Fox, and White-throated Sparrows, respectively, reported from select stations on the 1966-67 Counts. In order to adjust, to some extent, for the inequality

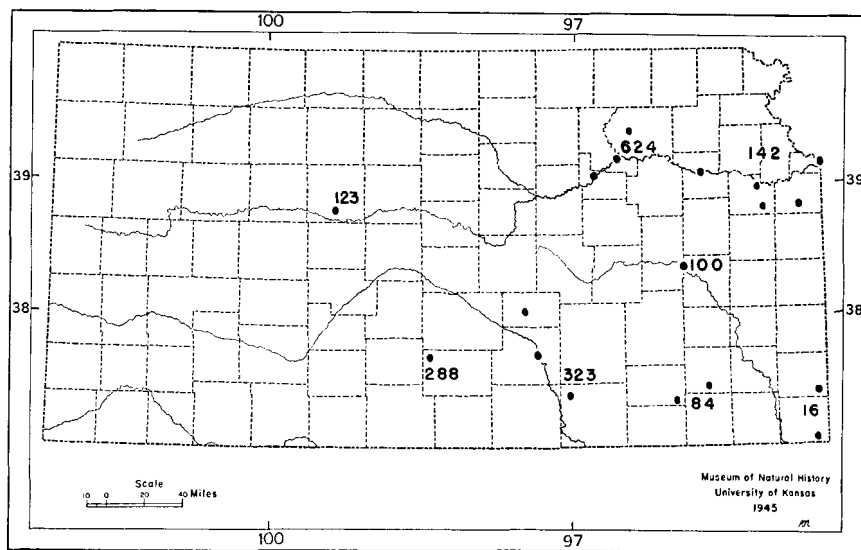


Figure 1. Numbers of Tree Sparrows (*Spizella arborea*) counted per eight party-hours of effort, averaged for eight general areas in Kansas (1966-67). [For explanation see text, p. 2].

of the field efforts from different stations, the total numbers of these species counted were divided by 1/8 the total number of party-hours of effort expended at each station, thus giving a total number of birds counted per eight party-hours in the field. Such adjusted numbers were averaged from stations close together. These data were selected to illustrate one possible use of data gathered on the annual Mid-winter Bird Counts. From figure 1 it can be seen that Tree Sparrows are present in lowest density in the southeastern corner of the state; additionally, there seems to be some indication that they are present in highest density in the "Flint Hills" area in the vicinity of the Junction City, Manhattan, Fostoria, Longton, and Udall stations (see Table 1). The numbers of the Field, Fox, and White-throated sparrows were combined because they all showed the same general distributional trends, and were singly reported in numbers too small to be illustrative. These three species, all common in migration, tend to withdraw south of Kansas in the winter, but remain in highest density in the southeastern corner (see Figure 2). Space does not here allow further analysis of the data, but Johnston (Bull. Kansas Ornith. Soc., 13, 1962: 14-15) has shown that Harris Sparrows present a different distributional pattern in "hard" winters than in "light" winters, and it is likely that these species would likewise show such annual variation.

Baldwin City (same as previous years, Douglas County). December 26; 31 party-hours (7:30 a.m. to 5:00 p.m.); open grassland 10%, cultivated fields 5%, brush 40%, woodland 20%, lakes 25%; temperature 28°F; cloud cover 100%, wind NE at 3 mph, ground 75% snow-covered; water areas 50% open; miles: 168 by car, 11 on foot; 18 observers in four parties: Margaret Boyd, I. L. Boyd, Roger Boyd, Marshall Fahl, Martha Fahl, Ruth Fahl, Charles Ford, Janet Hey, Nancy Hey, Katharine Kelley, Dick Mauk, Fred Mauk, Mamo McKaughan, R. F. Miller, Tom Ruhlen, Jim Wilson, Larry Wilson, and Amelia J. Betts (compiler).

Baxter Springs (15-mile circle, center Baxter Springs airport, Cherokee County). December 27; 9 hours (8:00 a.m. to 5:00 p.m.); open grassland 5%, cultivated fields 5%, brush 30%, woodland 50%, lakes and rivers 10%; temperature 34°F; cloud cover 100%, wind SW at 0-5 mph, one inch of rain; ground 100% snow-covered; water areas 50% open; miles: 70 by car, 5 on foot; two observers in one party: Trudy Rising, Jim Rising (compiler).

Camp Naish (400 acre plot, 3 miles E Bonner Springs, Wyandotte County). December 28; 7 hours (9:30 a.m. to 5:00 p.m.); open grassland 10%, brush 30%, woodland 55%, lake and river 5%; temperature 22°F; cloud cover 95%, wind NW at 10-20 mph, trace of snow (six inches on

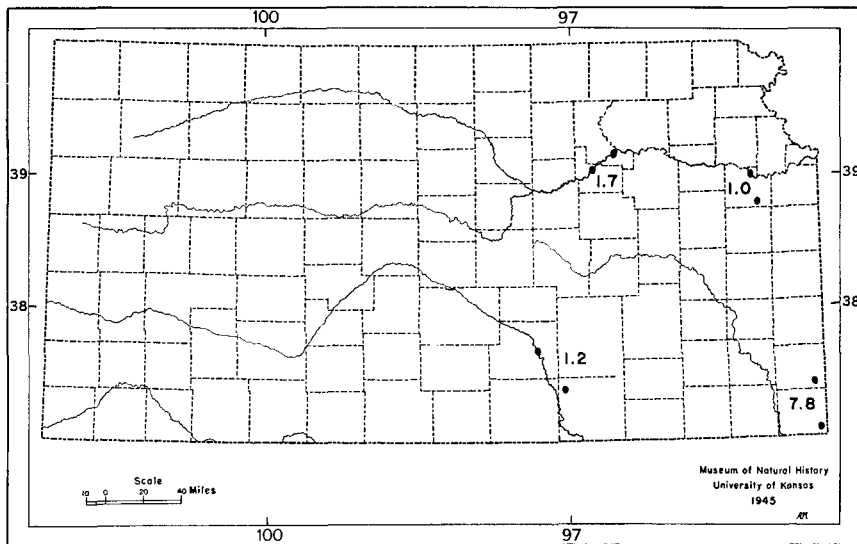


Figure 2. Combined numbers of Field Sparrows (*Spizella pusilla*), Fox Sparrows (*Passerella iliaca*), and White-throated Sparrows (*Zonotrichia albicollis*) counted per eight party-hours of effort, averaged for four general areas in Kansas (1966-67). [For explanation see text, p. 2].

ground); ground 100% snow-covered; water areas frozen; miles: 3 by car, 10 on foot four observers in one party: Marc Dever, Craig Duncan, Becky Hixon, and Stan Roth (compiler).

Coffey-Lyon counties (same as previous years). December 22; 28½ party-hours (7:30 a.m. to 5:00 p.m.); open grassland 40%, cultivated fields 20%, brush 10%, woodland 20%, lake and river 10%; temperature 28°F; 90% cloud cover, wind N at 20–25 mph, no precipitation; no snow on ground; water areas 100% open; miles: 70 by car, 10 on foot; three observers in one party: Marc Marcellus, David Parmelee, and Edward J. Ryan (compiler).

Fostoria (Fostoria and Blue River area, Pottawatomie County). January 1; 8 hours (9:00 a.m. to 5:00 p.m.); open grassland 50%, cultivated fields 13%, brush 30%, woodland 6%, lake and river 1%; temperature 18–40°F; no cloud cover, wind SW at 5 mph, no precipitation; ground 100% snow-covered; water areas 3% open; miles: 47 by car, unknown on foot; six observers in one party: Louis Davis, Bernard Plummer, Rowena Plummer, Howard Webster, and Mabel Willis and Eunice Webster (compilers). Additional species seen in count period: Ring-necked Pheasant, Wild Turkey (1), Great Horned Owl.

Halstead-Newton (same as previous years, Harvey County). December 31; 8¾ hours (7:30 a.m. to 5:20 p.m.); sand prairie 12%, hedgerows and cultivated fields 43%, woodland 35%, town and cemeteries 10%; temperature 10–37°F; cloud cover 0 to 25%, wind SW at 2–8 mph, no precipitation; ground 90% snow-covered; water areas 10% open; miles: 54 by car, 5 on foot; seven observers, five in one party and two watching feeders: Ralph Bartel, Marie Dettweiler, Kamala Platt, Robert W. Regier, Edna L. Ruth, Suzanne Wedel, and Dwight R. Platt (compiler). Additional species seen in count period: Sharp-shinned Hawk.

Hays (15-mile circle, center 6 mi S, 3 mi W Hays (i.e. Antonino), including Fort Hays Kansas State College campus and farm, Kansas State Agricultural Experiment Station grounds, Rohr-Jacobs (formerly Wann-Madden) Lake, the Harold Kraus farm, and points along Big Creek). December 31; 8 hours (8:00 a.m. to 5:00 p.m.); temperature 4–36°F; partly cloudy, little wind, ground 100% snow-covered with 10–12 inches of newly-fallen snow; water areas 100% frozen; seven observers: D. N. Husted, D. Liesveld, L. E. Olson, E. K. Schroder, T. Schroder, G. W. Tomanek, and T. R. Mollhagen (compiler).

Junction City (same as previous years, Geary County). December 26; 27 party-hours (5:30 a.m. to 5:30 p.m.); open grassland 45%, cultivated fields 20%, woodland 20%, lake and river 12%, juniper scrub and pines 3%; temperature 25°F; cloud cover 95%, wind N at 5 mph, no precipitation; ground 20% snow-covered; water areas 15% open; miles: 193 by car, 12½ on foot; eight observers in three parties: Dennis Knuth, Bob LaShelle, Dave Marvin, Phil Marvin, Judith Vick, Phil Watt, Celia White, and Thomas Shane (compiler). Additional species seen in count period: Snow Goose, Sharp-shinned Hawk.

Kansas City (same as previous years, Wyandotte and Johnson counties). January 1; 24½ party-hours (6:00 a.m. to 5:00 p.m.); temperature 20–40°F; clear to partly cloudy, wind 0–5 mph, no precipitation; ground 90% snow-covered; water areas 10% open; seven observers in two parties: Felicia Bart, James Myers, Stanley Nelson, Donald Nepstad, Clarence Schutty, Bernice Tatum, and Mary Louise Myers (compiler). Additional species seen in count period: Snowy Owl, Red Crossbill.

Kingman County (Kingman County Game Management Area, Penalosa). December 30; 9 hours (7:30 a.m. to 5:30 p.m.); open grassland 60%, cultivated fields 20%, brush 8%, woodland 10%, lakes and rivers 20%; temperature 10–34°F; clear in a.m., cloudy in p.m., wind NW at 0–3 mph, no precipitation; ground 100% snow-covered; water areas 5% open; miles: 36 by car, 5 on foot; three observers in one party: John Boyer, Danny Walker, and Byron Walker (compiler). Additional species seen in count period: Bald Eagle, Mourning Dove, Rock Dove.

Lawrence (same as previous years, Douglas County). December 22; 58 party-hours (1:30 a.m. to 5:00 p.m.); open grassland 15%, cultivated fields 5%, brush 20%, woodland 40%, lakes and rivers 20%; temperature 24–31°F; cloud cover 100%, wind NE at 13–20 mph, no precipitation; no snow on ground; water areas 99% open; miles: 247 by car, 38 on foot; 32 observers in 10 parties: Mrs. Ethan Allen, Mrs. L. E. Anderson, Dr. and Mrs. Wm. Balfour, Al Bjelland, Mrs. Cairns, Mr. and Mrs. B. Chewning, Marc Dever, Craig Duncan, Martha and Ruth Faulh, Alice and Henry Fitch, Mrs. Richard Garrett, Dr. and Mrs. E. R. Hall, Ann Hambleton, Becky Hixon, Regan and Richard Johnston, Rebeka Leibengood, Dianne Miller, Mrs. Nelson, David Niles, Steve Oakson, Stan Roth, Lory Sciefelbusch, Lee M. Sonnenborn, Tracy Sonnenborn, Lynn Woodward, and Jim Rising (compiler). Additional species seen in count period: Short-eared Owl, Bohemian Waxwing.

Longton (15-mile circle, center in Longton, Elk County). January 1; 12 party-hours (8:00 a.m. to 6:00 p.m.); open grassland 40%, cultivated fields 20%, brush 10%, woodland 20%, lakes and rivers 10%; temperature 25–40°F; no cloud cover, wind NW at 10 mph, no precipitation; miles: 50 by car, 2 on foot; two observers in one and two parties: H. L. Albright, Sylvia Albright (compiler).

Manhattan (same as previous years, Riley and Pottawatomie counties). January 2; 55 party-hours (7:00 a.m. to 5:00 p.m.); open grassland 35%, cultivated fields 5%, brush 30%, woodland 10%, lakes and rivers 15%; towns 5%; temperature 15–35°F; cloud cover 100%; wind N at 0–30 mph, snow flurries; ground 100% snow-covered; water areas 5% open; miles: 474 by car, 51 on foot; 29 observers in six parties: D. Coppersmith, M. Davidson, L. K. Edmunds, K. Geyer, H. T. Gier, E. Heyne, D. Heyne, N. Herman, H. Huestetter, S. R. Johnson, D. Knuth, J. LaShelle, L. Latschar, M. Latschar, E. Lewis, Mr. and Mrs. Eugene Lewis, T. Lewis, Dan Marvin, Dave Marvin, P. Marvin, C. R. Marzulf, M. Ruff, O. Russ, T. Shane, S. M. Soper, J. Vick, P. Watt, and J. L. Zimmerman (compiler).

Marion (15-mile circle, center Marion, Marion County). January 2; 8 hours (8:00 a.m. to 5:00 p.m.); open grassland 20%, cultivated fields 20%, brush 15%, woodland 20%, lakes and rivers 25%; temperature 18°F; cloud cover 85–95%, wind N at 20 mph, light snow; ground 100%

snow-covered; water areas 5% open; miles: 50 by car, 2 on foot; one observer in one party: D. Eugene Enos (compiler). Additional species seen in count period: Ring-necked Pheasant, Carolina Wren, Brown Thrasher, Robin.

Neodesha (15-mile circle, center 2 miles S Neodesha, including points in Montgomery and Wilson counties). December 29; 7 hours (10:00 a.m. to 5:00 p.m.); open grassland 50%, brush 25%, woodland 20%, lakes and rivers 5%; temperature 25°F; no cloud cover, wind slight, no precipitation; ground 90% snow-covered; water areas 30% open; miles: 51 by car, 2 on foot; two observers in one party: Judith Neill and Robert Neill (compiler).

Olathe (15-mile circle centered on intersection of K-7 and K-150, Johnson County). December 30; 20½ party-hours (7:30 a.m. to 5:00 p.m.); open grassland 40%, cultivated fields 25%, brush 20%, woodland 20%, lakes and rivers 5%; temperature 38°F; cloud cover 10%, wind SE at 10 mph, 5 inches of snow falling; ground 95% snow-covered; water areas 5% open; miles: 163 by car, 10 on foot; 13 observers in three parties: Dr. Ivan L. Boyd, Roger Boyd, Mike Clark, Bruce Crane, Gene Crane, Mark Crane, Dennis Hayes, Richard Hannon, Ethel Hower, Cristine McGaveren, Joe Sanders, Edward Scott, Dr. Ray Wackly, and Dean Crane (compiler).

Pittsburg (15-mile circle, center Kansas State College, Pittsburg, Crawford County). December 24; 28 party-hours (7:00 a.m. to 5:30 p.m.); fields 35%, wooded streams 60%, towns 5%; temperature -5 to 31°F; no cloud cover, wind S at 6-12 mph, 8 inches of snow falling; ground 100% snow-covered; water covered with thin ice; miles: 16 by car, 7 on foot; three observers in three parties: Gladys C. Galligar, T. M. Sperry, and Bessie Boso (compiler). Additional species seen in count period: Marsh Hawk, Banded Owl, Brown Creeper, Robin, Myrtle Warbler, Purple Finch, White-throated Sparrow.

Topeka (same as previous years, Shawnee County). December 26; 25 party-hours (8:30 a.m. to 5:00 p.m.); farmlands 40%, mixed woodlots 30%, bluestem pasture 20%, lake shore 10%; temperature 22-30°F; overcast all day, wind E at 5 mph, trace of snow; water areas mostly frozen; miles: 324 by car, 1 on foot; 20 observers in five parties: L. B. Carson, Elizabeth Fisher, Roberta Foote, Antoine Gravib, Grace Holcombe, Clovis Knecht, Eugene Lewis, Eulalia Lewis, Tim Lewis, A. J. McCallum, June McCallum, Esther Miller, Janis Miller, T. W. Nelson, Benson Powell, II, Paul Powell, Ronald Price, Joyce Thompson, Esther Thorne, and Orville O. Rice (compiler). Additional species seen in count period: Ring-necked Duck, Great Horned Owl, Red-breasted Nuthatch, Carolina Wren, Red Crossbill, White-crowned Sparrows, White-throated Sparrow.

Udall (15-mile circle, center Udall, including Arkansas and Walnut rivers, Cowley and Sumner counties). December 28; 10 hours (7:35 a.m. to 5:00 p.m.); deciduous woods 30%, fields and pastures 50%, marshes 10%, streams 10%; temperature 3-26°F; clear, wind SW at 2-5 mph; 3 inch snow cover; water areas except rivers frozen; miles: 85 by car, 30 by plane, 3 on foot; one observer in one party: Max C. Thompson (compiler). Additional species seen in count period: Cedar Waxwing, Common Grackle.

Wichita (same as previous year, Sedgwick County). December 26; 32 party-hours (8:00 a.m. to 5:00 p.m.); open grassland 10%, cultivated fields 20%, brush 10%, woodland 10%, lakes and rivers 50%; temperature 23-32°F; cloud cover 100%, wind N at 10 mph, no precipitation; ground 100% snow-covered; water areas 40% open; miles: 180 by car, 20 on foot; 22 observers in four parties: Galen Abbott, Ruth Abbott, J. Walker Butin, Phil Butin, Rick Butin, Wallace Champeny, Don Ferguson, Doug Ferguson, James Fisher, Eunice Goode, Walton Goode, Ken Kaufman, Nathan McDonald, David Miller, Malcolm Miller, LuRay Parker, Catherine Penner, Marilyn Penner, Kenneth Slaughter, Margaret Werner, Ralph Wiley, and Carl S. Holmes (compiler). Additional species seen in count period: Canvasback, Ring-billed Gull, Common Grackle, Lincoln Sparrow.

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REVIEWS

Birds of North America. Chandler S. Robbins, Bertel Bruun, and Herbert S. Zim. Golden Press, New York, 1966. 340 pp., profusely illustrated. Price, \$2.95.—This book is a soft-cover field guide, with illustrations by Arthur Singer. It is overall of high quality, and is a beautiful job of inexpensive book making; it must be strongly recommended to everyone doing field identification. I do not consider the book to be perfect, but the kinds of things to which I object are trivial, and I shall not mention them. Consider: the geographic scope of the book is enormous—nearly an entire, relatively large continent; almost every species is illustrated in color; and, an audio-spectrogram of a call is provided for many species. There is also for each species a range map; these necessarily (because of the scale) omit details, but are nevertheless useful. This in the aggregate represents an enormous amount of information that, being largely accurate, interesting, and useful, can only be highly praised.—R. F. JOHNSTON.

NOTES AND NEWS

Members are urged to plan to attend the Annual Meeting of the Society for 1967, which will be held on 6 and 7 May at Junction City. The general announcement and call for papers and best birds go out to members soon, if not in fact with this mailing of the *Bulletin*.

Membership in our Society has hit the 300-mark, the largest in our history.

It has become increasingly clear that the most effective conservation organization in North America is the Sierra Club. Despite its name, the club is not merely concerned with mountains in California. A case in point is the recent examination of the virtues of damming the lower Colorado River in Arizona's Grand Canyon. Part of the effective fight to keep the dams out was carried by the Sierra Club, and as a consequence its status as an organization to which tax-deductible donations may be made has been called into question. The claim is that in urging people to be active in the democratic process, the club became a lobby unit and lost its tax-exempt status; the Bureau of Internal Revenue has brought the charges. Members of the KOS who can afford to maintain membership in two or more conservation groups are urged to become members of the Sierra Club now; membership is \$14 the first year and \$9 thereafter. You may write Sierra Club, 1050 Mills Tower, San Francisco, California 94104—R. F. J.

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