

FRACTURES AMONG BIRDS

BY HAROLD B. WOOD, M.D.

BIRDS become subjected through injury or gunshot to the dangers of fractures of various bones. The bones most commonly involved by accident are those of the wings, legs and skull. Gunshot wounds may involve any bone and be the more serious in their results because of the damage to the softer tissues. The accidental fracturing of wing bones may occur during flight or be the result of antagonism. Fractures of the wing bones during flight may occur from collision, as with geese during migration, or from flying against trees or other objects, although birds are remarkably agile and accurate in dodging while flying, except in darkness.

Fractures of the legs may result from encounters, occasionally with traps or by other means. When birds become ensnared by traps, and not released, or get their legs hopelessly tangled by string and twigs while carrying nesting material, they are apt to starve to death, as did a robin we found hanging by the feet. Young birds may fall from nests and become caught in the branches and sustain fractures while trying to extricate themselves, as I found with a Black-crowned Night Heron. I have heard of no instance where any bird has self-amputated its foot to escape any trap, as I have known muskrats to do. Small sandpipers which have lost a leg are occasionally seen on the beaches. They have been caught by clams, and in trying to get free have pulled away from the crushed leg, but this cannot be classed as intended auto-amputation. I have seen several one-legged snipe which I believed were crippled by gunshot. Birds with but one leg probably have had the other completely severed at the time of the accident, and seem to get along fairly well.

Fractures of the skull of birds occur from collision and give immediate death. A warbler flew against my windowpane and died at once from a comminuted fracture of the base of the skull from the bill-on impact. This is analagous to the basal skull fractures sustained by some pugilists who get it on the chin. I picked up a freshly dead robin with a lateral fracture of the parietal bone, showing a sideways collision with an automobile.

When birds, or other animals, sustain a fracture they keep as quiet as possible, or use the injured part a minimum amount, to allow for spontaneous repair to take place. It may be doubtful if sepsis or other fatal disease often intervenes. A crippled bird is easily captured by predators. If the bird survives such dangers, self repair of the bone occurs. The crippled animal does the best he can to promote the healing of his wounds. A canine or feline will lick an open wound, thus decreasing infection, but I have

never known one to lick, and thereby disturb, a simple fracture where there was no skin injury. To what extent an animal can remain quiet until repair is complete depends upon circumstances. I have a healed fracture of the femur of a frog which repaired in correct position, but with much callus formation. The frog probably sat in a normal position on the bank of the creek with his broken leg beneath in the normal position, because in that relationship the bones would be in alignment and without muscular tension.

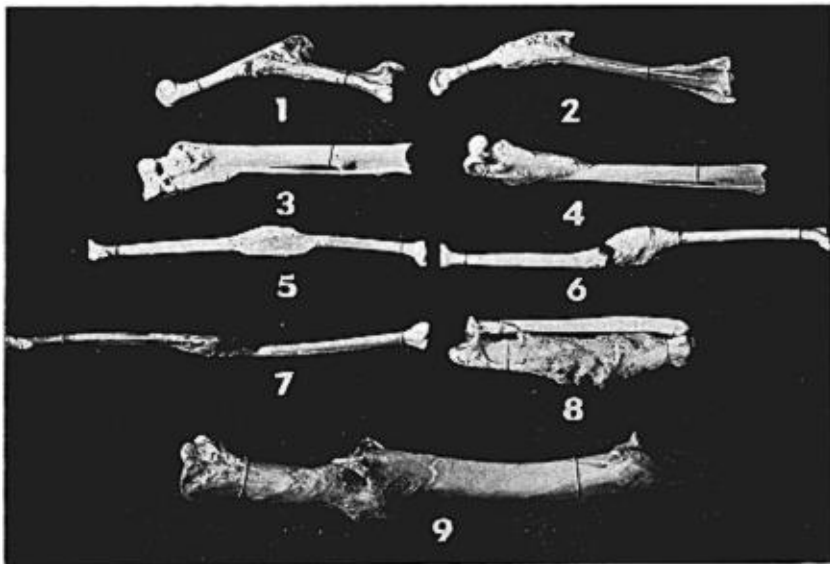
The natural repair of fractures among birds is doubtless very rapid but depends upon the amount of disturbance. A Robin with a greatly deformed and useless leg from a fracture probably let his leg hang down from a roost or sat with it extended backward. Deformity in repaired bones is the result of poor position holding the bones out of alignment, or from muscular tension. The length of time for repair of fractures probably depends mostly upon the size of the bone. The only information on this score collected was an experience of Olin Sewall Pettingill, Jr., of Carleton College, with a bantam hen which broke a tibia which healed completely by the sixth day, the bird being placed in a box small enough to restrict its movements.

The resulting deformity in healed fractures in birds depends upon the location of the fracture and upon what natural support the bone had had. When one of two parallel bones is fractured the remaining bone serves as a splint and thereby retards overlapping, and particularly angular displacement. This occurs with a fracture of the radius or of the ulna, in the higher animals, or their counterparts among birds or others. The ulna makes a better splint, however, than the radius, because it articulates with the humerus and is more stationary, and can withstand more forearm motion. Likewise, the tibia makes a more supporting splint than the fibula, through its articulation at the knee joint. When both of supporting bones are broken the displacement is extreme, largely from muscular contraction. When any fracture is comminuted, with several pieces of bone, or compound, with the bone protruding through the skin, the healing is more difficult and deformity more marked.

A fracture of a separate bone, as the femur, humerus or tarsus, produces a marked angular or shortening deformity, depending upon the bone involved, upon the species afflicted and upon the opportunity afforded for resting the part until healing is complete. There is usually much overlapping caused by the contractures of the muscles. The marked angularity of the deformity is doubtless due to the inability of the owner to rest its affected limb in a position to give normal apposition of the ends of the bone. A heavy wing, without any usable muscular support, droops downward. A broken leg cannot be properly placed beneath a resting bird, or is dragged along during locomotion or flight, hence the distal part is out of

alignment, and the angular deformity results.

All these deformities are well illustrated in a series of repaired fractures of wing and leg bones obtained from Pennsylvania birds



REPAIRED FRACTURES OF BIRDS

1. Tibio-tarsus of Ruffed Grouse (*Bonasa umbellus umbellus*) ad. ♂
2. Tibio-tarsus of Marsh Hawk (*Circus hudsonius*), ad. ♂
3. Tibio-tarsus of Eastern Goshawk (*Astur atricapillus atricapillus*) imm. ♂
4. Tibio-tarsus of Marsh Hawk (*Circus hudsonius*)
5. Radius of Eastern Goshawk (*A. atricapillus atricapillus*) ad. ♂
6. Radius of Red-tailed Hawk (*Buteo borealis borealis*) imm. ♂
7. Radius of Red-tailed Hawk (*Buteo borealis borealis*) ad. ♂
8. Ulna of Ring-necked Pheasant (*Phasianus colchicus torquatus*) ad. ♂
9. Ulna of Domestic Turkey, ad.

by Merrill Wood, Associate Professor of Zoology, State College, Pa., between 1932 and 1940. They show the results of having, or not having, an adjoining bone to support the fractured bone.

Do birds, or other animals, ever have permanently ununited fractures is a moot and interesting question. The existence of permanently unhealed fractures in birds must be very rare, if it

ever occurs. In the human race ununited fractures would be very common if proper, complete splinting were not applied in the beginning of treatment. Various ornithologists have reported to me that they have never heard of the condition among birds, with a partially healed fracture with motion between the ends of the bone. Dr. Herbert C. Clark, director of the Gorgas Memorial Laboratory in Panama, wrote they had not seen any ununited fractures in any wildlife, but have seen healed fractures with much callus and distortion in the femora of Blue-winged Teal, two monkies and an iguana. The only partial ununited fracture in a mammal learned about was seen by Richard Gerstell of the Pennsylvania Game Commission, who in 1933 saw a deer which probably had been shot several years before and sustained a fracture of the femur. When seen, there was about two inches of overlapping with fibrous tissue connecting the ends which gave considerable, definite movement.

What should be done when a bird bander traps a bird with a recent fracture is an important point to determine. Dr. Oliver L. Austin, than whom there is nobody better qualified to speak on the subject, wrote me in a personal letter that at their Cape Cod Station a large number of birds with healed fractures of the legs have been taken in the past ten years. "Cosmetically," he wrote, "the results are atrocious, but apparently the birds have not suffered any great inconvenience from the deformities, as evidenced by their general well-being. Fractures of the tarsus and leg bones are exceedingly common, particularly in the smaller birds. If they are splinted and the bird placed in confinement, [because the birds get restless] they do not unite readily and as a general rule the birds decline in general health very rapidly, and either they expire or we release them after removing the splints. If the fracture is in the tarsus," continues Dr. Austin, "I think the best procedure is to amputate the foot and part of the tarsus with a sharp pair of scissors and release the bird at once. This has been done in a considerable number of instances and the bird has remained in our vicinity and been retaken repeatedly in our traps apparently in good condition."

Fractures of the wings are a much more serious matter. For large birds, as gulls, Dr. Austin has found it impractical to feed the birds properly and it has been necessary to asphyxiate most of the large birds having serious wing injuries. This holds good whether the fracture is simple or compound. Dr. Austin further writes, "Along the shores from time to time we find gulls with broken wings; they are always greatly emaciated. It has been our practice to put them out of their misery. Several times we have tried to splint broken wings of smaller birds, but here again confinement appears to work so disadvantageously that we have been compelled to release the birds before union could be secured. Grain-eating birds if released

appear to get along very well, for we have on several occasions taken them in the traps with wings healed and apparently functioning. We have made no attempt to splint and confine insect-eating birds by reason of the impossibility of obtaining for them suitable food."

Studies in the surgical pathology of birds have enormous possibilities not only of developing interesting avian science but of determining practical means of helping the birds.

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GENERAL NOTES

Thrasher Adjusts Life Habits to Physical Disability.—That accident and circumstance may lead a bird to change from the status of summer resident to that of permanent resident is suggested by Brown Thrasher (*Toxostoma rufum*) no. 37-308978. This bird was banded April 5, 1937, at my home near North Little Rock, Ark., and returned for the summers of 1938, 1939 and 1940. Up to 1940, the thrasher left each September, presumably moving south, and other thrashers likewise disappeared from the neighborhood. Early in June of 1940, thrasher 37-308978 was discovered to have the right wing broken. For the rest of the summer it was given food (raw peanuts ground in a meat chopper, or crumbs and fragments of pecan kernels) under the spreading branches of a shrub. The bird remained through the autumn and winter, and at this writing, February 15, 1941, spends most of its time in a tangle of climbing roses close to the house. Several times a day pecan bits are thrown on the ground under the roses, notwithstanding that this free food is a hindrance to the trapping of White-throated Sparrows and Slate-colored Juncos.

That the thrasher stayed for the winter is not to be attributed to helplessness, for by September it was able to fly in a slow and labored fashion. In the first month of its injury, the bird often attempted flight, springing from a low shrub or a brush heap, and invariably it fell to ground after a few feet. It ran long distances across the open lawn, from shrubs jumped to the lower branches of a tree, and by long leaps ascended to the top. On August 10 it was seen to start from a limb about eight feet above ground and sail downward for perhaps 12 feet, and by the end of the month it was making level flights from tree to tree. From that time it made rapid progress, although it has never lost a noticeable awkwardness; and, at rest, the right wing is still drooped and held slightly away from the body. All summer the thrasher had evaded traps, but on November 12 was finally caught, identified and examined. However, little was to be learned of the injury, only that the last joint (wrist) of the wing was twisted out of normal position and immovable.

Before its accident, this thrasher had had a notable history. It not only nested in the same territory for three years, 1937, 1938 and 1939, but with the same mate—no. 37-308979. In the spring of 1940, the thrasher returned late, and alone, to find another pair of thrashers already in possession of the dooryard territory. On the morning of its arrival, April 11, there was much excited singing and smacking, with long flights through the trees. Only one bird sang, the unbanded male of the new pair. His mate, banded on the right tarsus, continually chased, jumped at and pecked at the newcomer, who was banded on the left tarsus and thus marked as a bird of my first season of banding, 1937. Apparent