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## THE MILITARY USE OF THE HOMING PIGEON

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[EDITOR'S NOTE. The following article will be read with greater interest if the reader understands the author's opportunities for the study of the homing pigeon. Mr. Lincoln entered the military service of the United States early in 1918, at which time he was Curator of Ornithology in the Colorado Museum of Natural History. He was soon transferred to the Signal Corps and until March, 1919, served as Pigeon Expert, having charge of various lofts, in the Western Military Department, from Washington to southern California.]

The use of birds as bearers of messages has been practiced for many hundreds of years. Pliny, in his Natural History (Book 20, Paragraph 24) states that on occasion the Roman knights took swallows with them when attending the races at Rome. At the conclusion of an event they were stained with the colors of the winning chariot and released, to fly back to their nests and thus carry the news of the victory. On the authority of one Fabius Pictor, he also records what is probably one of the first uses of a bird as a messenger of war. He states (*loc. cit.*) that when a certain Roman garrison was besieged by the Ligurians, swallows were surreptitiously taken from the city to the army advancing to raise the siege and there released to return to the beleaguered town with knotted strings attached to their feet, the number of knots indicating the number of days before relief was to be expected.

The use of pigeons for this purpose also is very ancient, particularly in the Orient from where it was brought to the attention of Europe at the time of the first Crusade, when the Saracens were found to have the birds in regular service for the conveyance of information. So efficient was this pigeon post that the Christian commanders found it expedient to employ falcons to intercept the winged messengers.

Although the flying and racing of pigeons continued publicly and as an amusement, it was not until the Franco-Prussian War of 1870 that pigeons again were of conspicuous service. During the siege of Paris, constant communication with the outside world was maintained by this means. The birds, from two private lofts, were



(Photograph from U. S. National Museum)

*CHER AMI*

A Feathered Hero of the World War

taken out of the city and over the heads of the besieging army by means of balloons. Microphotographs of military dispatches, private letters, and even newspaper items, were set up, printed upon thin films of collodion, and entrusted to them for their return flight. It is said that in some instances these films carried as much as 30,000 words and a regular tariff was charged for the transmission of messages by pigeon post. Upon receipt, they were enlarged and made legible by photography. Subsequently, the German, French, Belgian, and other European governments established pigeon corps as a part of their military intelligence systems.

In the South African War of 1899-1902, experiments with these birds forms an interesting part of the history of that conflict. The pigeon post at Durban marked the beginning, and scores of messages were carried from one part of the English army to another. Early in the sieges of Ladysmith, Kimberly, and Mafeking regular communication was established from the troops cooped up in the towns to the outside world. It is said that the first message of Sir George White, who conducted the defense of Ladysmith, was carried by pigeon, and this means of liaison was continued until the supply of birds in the city was exhausted.

Coincident with the entrance of the United States into the World War was the appearance before the American public of these birds as messengers of exceptional merit, although it is doubtful if the wonderful work done by the "doves of war" is fully appreciated outside of restricted military circles. Since they have won so many laurels, a brief account of the ideal bird and its ancestry will be of interest.

The homing pigeon may be likened to an amalgam. Credit for its origin belongs mainly to the Belgians, long renowned as fanciers of the first class; and to the English, who have done much toward its perfection. By careful selective breeding, carried on through several centuries, the present fusion has been produced, which, in common with other types of domesticated pigeons, traces its primitive lineage to the Bizet or Rock Pigeon (*Columba livia*) or the closely related *Columba intermedia*. The most immediate ancestry of the modern homer is traced, however, to three distinct types, the English Dragoon, the Smerle, and the Camulet. The Dragoon is of the Carrier type and is noted for its physique; the Smerle, a Belgian bird, that is an apparent relative of the "Owl" group of pigeons, has an inherent "homing instinct"; while the Camulet, a small bird related to the "Tumblers," is noteworthy because of its ability to fly hours at a time. As will be

noted, these prominent characters have been combined to a remarkable degree in the homing pigeons of today.

The Carrier Pigeon is an entirely distinct bird, larger than the homer, with large wattles and ceres, without conspicuous homing ability, and is bred almost entirely for show purposes. Custom and popular vernacular have, however, so linked the term "carrier" with the message-bearing homer, that during the World War, the former name came to have general application. Evidence exists that experiments were once made in an effort to use Carriers, Dragoons, and Horsemen for the transmission of messages, but with only moderate success. At one time the names "Flying Antwerp" and "Antwerp Carrier" were in use, at once suggestive of the attention given to these birds by the Belgians, but the term "Antwerp" has become gradually attached to the homing pigeons that are bred only for show purposes and are never flown.

The general coloration and markings of the racing homer are similar to those of the pigeon of the farmyard or the city streets, as they occur in a variety of color combinations known as red, black, blue-checkers, blue-bars, magpies, and others. Colors generally have no relation to the quality of the birds, but the checkers (particularly the blacks and blues) and the blue-bars are generally preferred for military use because of the reduced visibility when in flight. White homers are sometimes bred but have not proved popular with modern armies.

The typical bird of high quality is a trim, racy bird, in contrast with the more stockily-built squab-breeder. The forehead is well developed, frequently prominent, probably indicative of the superior intelligence that characterizes them, while the eye is exceptionally bright, clear, and expressive. The primaries are obviously of great importance and when the wing is fully spread it should make a straight line and show no interstices between the feathers.

The greatest difficulty experienced by the personnel of the pigeon service during the World War was overcoming a tendency on the part of other branches to look upon pigeons as a joke, and it was necessary to develop a feeling of confidence that the birds would deliver their messages even under the most adverse conditions. Anyone who has had first-hand knowledge of their achievements will, however, entertain a strong conviction regarding their efficiency. A little thought on this subject will suffice to explain the reasons which are well illustrated by the report of a French signal officer and which deals with their performance at the Battle of Verdun. In that major engagement

pigeons established a record of efficiency between 97 and 98 per cent, and frequently were the only means of communication between the "zone of advance" and the rear echelon. The intensity of shell-fire in modern warfare often renders liaison by radio or telephone impossible, while runners are always delayed and visual signals are likely to be obstructed by smoke, dust, or fog. Pigeons, however, are undeterred by such conditions and can and do bring accurate information concerning the situation of the troops in action, within a relatively short space of time.

In the Meuse-Argonne offensive 442 American pigeons were used which delivered a total of 403 messages over distances varying from 20 to 50 kilometers without the loss of a single important dispatch. These birds had received only five days training on account of the hurried notice of impending attack, and in view of the frequent changing of loft positions the performances of certain individuals were nothing short of marvelous.

Unquestionably the most famous of the birds was "Cher Ami," which is credited with the saving of Major Whittlesby's "Lost Battalion." Released with its message on October 21, 1918, at 2:35 P. M., during an intense machine gun and artillery action, it delivered its message 40 kilometers distant in 25 minutes. Examination showed that one leg had been shattered and that the bird's breast had been pierced by a machine gun bullet. The message tube, still intact, was hanging by the ligaments of the injured leg. Although not immediately fatal "Cher Ami" died June 13, 1919, from the effects of the wound, and is now mounted and preserved in the United States National Museum.

Another interesting case is that of a bird known as the "V. C. Pigeon," which is mounted at the Royal United Service Institution, Whitehall, London. This bird was released with a message on October 4, 1917, at 1:50 P. M., and was struck by a bullet that broke one of its legs, drove the message tube into its body and then passed out of the back. In spite of these fatal wounds, and a drenching rain, the bird homed to its loft the following morning. The message probably had lost its usefulness but the record is of exceptional interest in showing the strength of the homing instinct.

Practically all branches of the military service have found need for the pigeons, although their greatest use is with infantry in front line trenches or attack, and with air-craft. The birds that "go over the top" are placed in baskets made to hold 2, 4, or 6 birds usually strapped to the back of the infantryman or cavalryman charged with

their care and who remains close to the officer responsible for the preparation of messages. To prevent injury to the birds through jolting or jostling of the baskets, the birds are fastened in light corslets made of webbing which immobilize their legs and wings, but allow free movement of the head and neck. By means of elastic bands attached to the four corners of the baskets and to the corslets, they are then suspended horizontally in positions that while probably not entirely comfortable, are at least safe. Before releasing pigeons that have been so confined, it is necessary to allow them opportunity to stretch and flap their wings, which may be done while the bird is held in the hand, although a better method is to permit them a short liberty in a basket, box, or such other suitable receptacle as may be at hand. Pigeons accompanying aircraft are not placed in corslets but are put into baskets divided into compartments of one bird each.

The messages are written on thin rice paper and placed in carriers or capsules made of thin aluminum, which are attached to one leg of the bird by means of copper bands. Message carriers strapped across their breasts have been tried but are not so satisfactory, as they interfere to a certain extent with the free movement of the wings. Small capsules inserted in the crop, can be used successfully, but no useful purpose seems to be gained aside from a possible greater assurance against loss, although a message properly inserted in a leg carrier, crimps itself in such a way as to seal the tube and eliminate danger of loss in transit.

In the mind of the ornithologist, the homing instinct of these birds will be immediately associated with the migratory instinct that each spring causes untold thousands of native birds to traverse vast distances of land and sea in a journey north to breeding grounds, and back again in the fall. Basically, the two are the same although our knowledge is most incomplete of the fundamental reasons responsible for this faculty.

For the sake of a parallelism, reference may be made to the data that have rapidly accumulated since the advent of the banding method, and which show innumerable cases of wild birds that have returned not only to the precise summer and winter homes, but also to given points on the route followed in a previous season. Fanciers are not lacking who claim that homing instinct is all "bosh" and that it is the training given by the owners that is responsible for the ability of the pigeons to return to their lofts. In the opinion of the writer such

statements show more or less disregard for the facts and are illustrative only of the conceit of the fancier. There can be no doubt that proper training adds wonderfully to their efficiency, but training starts with a natural fact firmly established, viz., the inherent fondness of the bird for its home and its intense eagerness to get back to it when forcibly removed to a distance. Failure to recognize the sense of direction leaves obstacles that are seemingly unsurmountable when attempting to explain the return of any bird to its nest through dense fog or from long distances at sea. Dr. John B. Watson has\* graphically shown that individuals of the Noddy and Sooty Terns, which reach the northern limit of their breeding ranges on Dry Tortugas Islands, Florida, could be taken several hundred miles farther north and when released, would return to the colony over areas that they certainly had never before seen.

Homing instinct, or sense of orientation, is a faculty possessed not only by homing pigeons and migratory birds, but also by many insects, fishes, and mammals. The facility with which experienced hunters and woodsmen locate tiny camps or other points in wooded or mountainous country seems frequently due to an application of this talent.

In the case of the homing pigeon efforts have been made to connect homing instinct with other senses, but the results obtained are inconclusive. Disturbance of the columella, or the semicircular canals of the inner ear, will destroy the homing instinct, but as the particular function of the canals is that of balancing or equilibrating the individual, the results of such experiments can not be considered as establishing the seat of this instinct. Furthermore, such operations, even when performed by the most skilled anatomist, are of the greatest delicacy, and the subsequent failure of the bird to perform properly, might be easily due to other causes resulting from the operation. Similarly, closing the auditory passage with wax would be sure greatly to annoy the bird so treated, causing it to make frequent stops, and finally by developing intense nervous irritation cause exhaustion with attendant disturbances.

In the light of present knowledge the homing instinct of the pigeon should be considered as a specialized form of migration developed and exploited by man through training and selective breeding.

Other factors contribute largely to the effectiveness of the instinct and these are the qualities that respond to systematic training. The

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\*Watson, John B. "The Behavior of Noddy and Sooty Terns." Pub. No. 103, Carnegie Inst. Wash., Paper VII, pp. 187-225, pls. i-xi, March, 1909.

most important is an acute vision coupled with a wonderful memory. The working of these faculties is readily demonstrable and may be illustrated by citing the case of a bird trained by the writer at March Field, California, and repeatedly flown from the summit of Mt. Rubideau, near Riverside, about nine miles air line from the loft. Upon first toss from this point, the customary circling (known as "finding direction") delayed the bird so that between 20 and 25 minutes were required for the trip. Subsequently flights rapidly cut down the time until upon a few occasions (under favorable wind conditions) the flight was made in nine minutes. This course became so well known to the bird that it was repeatedly released from the outstretched hand, pointed toward March Field, and was observed to fly from sight, apparently without varying a degree from a straight line. The maximum speed developed by this bird (60 miles per hour) is exceptional for—although cases are known of even greater rates—the average flying speed of the Homing Pigeon is more nearly 35 miles per hour.

This retentive memory coupled with other qualities constitutes the foundation upon which is built by good training the efficiency of the bird as a messenger. Effective training of homing pigeons depends largely upon the skill and patience of the pigeoneer, for, although fundamental rules may be prepared for his guidance, ultimate success usually results from his own ability. In fact, the selection of suitable personnel is easily the most important feature in the military use of this bird.

Lofts are almost invariably stocked with young birds. Old birds that already have received training can be trained to home to a new loft, but if of any value at all they will be sure to return to their original loft at the first opportunity. After the birds have become thoroughly accustomed to their new home (usually 4 to 6 days), they are allowed to go out on their own initiative. First liberation is generally permitted in late afternoon before the birds have had their final feeding. The normal young bird will perch on the landing board or loft roof, making short flights therefrom, gradually extending these ventures. They are then called into the loft by a rattle in the hands of the keeper and fed. Civilian fanciers frequently whistle, but a can containing pebbles or grain has been found preferable at military lofts. This practice is continued twice a day until the pigeons become thoroughly familiar with the external appearance of the loft and its surroundings. Six or eight weeks may be spent in these exercise flights before additional training is given. They are then taken in baskets for short distances (under one mile) and released singly and



in groups. Great care must be used in this first training to select days when weather conditions are favorable. They are always released hungry and are fed immediately upon trapping in at the loft.

The distance is gradually increased up to five miles, certain birds always flying from the same direction which—in the case of military birds—is the sector to which they will be assigned for the transmission of messages. After the five-mile flight has been made on a few occasions, the distance can be rapidly increased to 10, 15, 20, 25, 50, and 100 miles. Pigeons used in warfare are rarely called upon to fly distances in excess of 50 miles and the great majority of the messages brought in will be from distances under 20 miles. Well-trained birds are entirely reliable for such distances. They are, however, capable of much longer flights, and among racing pigeon clubs the 500-mile race is always a special feature. On the Pacific coast a regular course is between San Francisco, California, and Seattle, Washington, the winning bird making the flight in a single day. A prize hen owned by the U. S. Department of Agriculture made the 580-mile flight from Chicago, Illinois, to her loft at Beltsville, Maryland, in 15 hours and 40 minutes. The fastest time made by a railroad train between Washington, D. C., and Chicago is 19 hours.

Although the homing pigeon is a diurnal bird, some interesting work in night flying has been done. The French have been the pioneers in these experiments and some wonderful results have been recorded. Birds trained for such work have been tossed on dark nights as late at 10:00 P. M. at distances varying from 18 to 40 miles and have returned in good time. American pigeons in the Canal Zone also have shown exceptional results in flying at night, but from a practical point of view, no reliability can be placed on them when flown after dark. Special training is, of course, necessary, and the lofts must be equipped with special lighting arrangements, while it is questionable, because of the other means of communication that are always available when darkness descends, whether the attempt is really worth the effort.

The reputation of the homer is, however, well established and its usefulness as a carrier of war dispatches insures it a prominent place among the communication methods that will be employed by the armies of the future.

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