Research Concept for a Superior Ambush Detection Dog

by

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1. Dogs in Military History. Dogs have been used by armies since ancient times. In both World Wars they have provided assistance for scouting patrols, worked under fire as messengers, and performed sentry duties. In selecting dogs for these roles the criteria have been simple. A scout dog seemed to work like a hunting dog; a messenger dog must be rugged and resourceful; a sentry dog alert to warn the handler of intrusion. No dogs were specifically bred for these missions, and breeds of dogs donated or purchased by the Armed Services were categorically trained according to a standardized training plan. No dog has ever been bred specifically for ambush detection.

2. In reviewing ambush detecting research the staffs of the Research Plans Office and the Life Sciences Division, OCRD, DA have considered numerous biological systems. In the two years devoted to a general survey it became obvious that the long military experience in the use of scout dogs commended the dog most favorably for Army needs but that the full biological potential of the dog was not being exploited.

3. It is important to recognize that the scouting requirements of the soldier in the field under combat conditions, with a variety of terrains, are fundamentally different from sentry or guard duty. The jungle battlefield differs from the rocky slopes of mountains, arid wastes are unlike the rice paddies of Asia; therefore, ambushing detection and concealment pose different problems. One outstanding feature of the military scout dog is his adaptability to this changing pattern of terrain and climate. This makes the dog especially attractive for the proposed research to develop this animal as an improved tactical detector system.

4. Army Requirements for Ambush Detecting Dogs. To obtain an objective view of the Army requirements for ambush detecting dogs it is necessary

to reconsider the entire subject. The requirements may be stated as follows:

a. A satisfactory dog must be rugged and sturdy. The physical demands of combat conditions require an animal to be capable of long hours of work, with a minimum of food and water, healthy, and able to withstand the rigors of extremes of climate and terrain.

b. A physically satisfactory dog must be alert, willing to work, not timid but also not hostile. He must have a stable temperament so that his day-to-day performance can be depended upon. When working, the ambush detecting dog must repeat his detection signal again and again. He must be intelligent enough to understand the nature of his assigned task, but he must be unfailingly dependable in giving the proper sign to his handler. Even though the signal is not acknowledged by his handler, the dog must repeat the message and not seek an alternate path to the solution of the mission. Scientific studies in animal behavior and practical dog breeders have demonstrated that dogs can be bred with these desirable behavioral characteristics.

c. Olfaction undoubtedly plays an important role in the performance of the dog under conditions of field detection. However, it is not the only sense the dog uses. There are innumerable cues and sense modalities that go to make up the repertoire of dog behavior. Even though this subject has been studied intensively for many years, we do not know how the animal collects the assembly of sensory information and processes it in his built-in computer to give the read-out of performance. We do know that the working abilities of the dog are reproduced in a dependable manner in his offspring. This important genetic fact has been demonstrated. Dogs that are recognized as good hunting dogs or guide dogs for the blind produce progeny that also are dependable

workers. No attempt has been made to breed dogs possessing special behavioral traits for military requirements. The German shepherd is currently the military standard breed for sentry and scout dog missions. In this dog, emphasis has been placed on his attack and guard capabilities.

d. Experience dictates that a double-coated dog will prove most satisfactory for Army requirements. In a hot climate the double-coated dog loses the inner coat; the outer coat prevents sunburn. In the cold the double coat provides adequate protection. The outer coat should not be too long for this encourages infestation by parasites and is too difficult to groom. Coat color may be a significant factor in providing camouflage in some military situations.

e. Military logistics may require a very small dog. Such an animal would consume a small amount of food and water, would be able to penetrate narrow tunnels, and would impose a small weight-cube requirement. We know the dog can be fed rations available to troops. It is proper to consider an assortment of body sizes, colors, and capabilities to meet the Army needs for ambush detection. There is every reason to view these animals with different specifications in much the same light as an assortment of specialized military instruments--each with special performance capabilities.

f. We now know that castrated or ovariectomized as well as normal dogs will work for their handlers without the distraction of sex. If the surgical operation is performed after the dog reaches an adult age there is no interferance with the animal's performance of its assigned mission. Twenty years' experience with guide dogs for the blind has proved that such an animal remains healthy, able to work long hours under the adverse conditions of modern urban living, and is not diverted while working by dogs of the opposite sex.

Those concerned with the humane treatment of animals have raised no objections to the spayed guide dog. It may be desirable for the Army to consider the use of spayed animals in its current working dog program. Spayed dogs have an advantage in ambush detection. These animals would not be distracted by another dog of the opposite sex or a chemical scent planted to deceive the detector dog. It is conceivable that the performance of a normal animal might be impaired by sex lures. However, no reports of deceptions of this character have been received.

g. The one dog-one handler team is not a requirement for ambush detection. It is well recognized that any trained dog is able to work for any trained handler. Therefore, the present Army one dog-one handler team concept is outmoded and unsatisfactory. There is sufficient evidence that experienced trainers routinely work with any arbitrarily selected trained dog. This does not deny the importance of a close rapport between an individual dog and an individual handler. Inevitably this will develop, and certain men will prefer certain dogs, but it is unrealistic to require, as is necessary now, the man or dog to return for training if the counterpart is lost. Obviously two dogs and two handlers would provide a redundancy in the system. On the other hand, it may be possible for a single handler to control more than one dog--a system that appears to work well for hunters.

h. The ambush detecting dog should be unleashed to search while he is working. This requires a dog that knows how to keep track of his handler while searching. The staff of the Limited War Laboratory is to be congratulated upon its success in establishing the feasibility of a radio monitoring device on a free-ranging ambush detecting dog that signals the remote handler. A properly

trained dog is able to range ahead of his handler at least 100 meters or more. When he has detected an ambush this device will signal his handler who is out of sight. At this point the handler and dog have completed their mission and the military commander has the responsibility for appropriate action.

The Limited War Laboratory feasibility study is ready for exploratory development into a more efficient dog-tactical system. The availability of a telemetering link between dog and handler adds a new dimension to the use of dogs in ambush detection. Therefore, one can conclude that these requirements have been identified and are judged to be attainable.

5. Present Army Dog Training Program. At the present time the military dog procurement requirements are coordinated at Lackland Air Force Base, San Antonio, Texas. It is understood that the Air Force has approximately 2,000 German shepherd dogs scheduled in the recruiting program. The Air Force depends upon donations or purchase of animals from civilians. However, the military requirements for physical fitness, temperament and trainability account for a very high rejection rate. A review of the US Army Dog Training Center at Fort Benning, Georgia, revealed that the dogs available to them cost about $400 each. Despite the preliminary AF screening, an average of about 25% of these dogs paid for by the Army are rejected as unfit for Army use. Under the present system, it has required heroic efforts on the part of a number of dedicated men to produce the present Army dogs. Therefore, it appears appropriate for the Army to consider a dog breeding program to meet the Army and other services' needs for detector dogs.

In the proposed research program to be described a number of important new concepts are introduced that will produce superior ambush detecting dogs. These

dogs from selected stock will be better trained and will work more satisfactorily as a specialized dog tactical system. In addition, the dogs will cost less than the dogs secured and trained in the present military dog program.

6. Experimental Breeding Program. The feasibility of breading a superior dog for ambush detection has been thoroughly explored in conferences with experts in genetics and animal behavior. It is the opinion of these competent scientific advisers that we can achieve this goal by a selective breeding program. However, the specific physical and behavioral characteristics must be described. The breeder must be able to measure the physical and behavioral features of the dogs. Knowledge is available from the fields of genetics and animal husbandry for us to breed the animals with the desired physical features. However, the development and control of canine behavior by selective breeding is a relatively new field. Modern researches in this area by Scott and Fuller have proved the significance of behavior-genetic analyses in understanding individual and breed differences. The role of heredity in the development of behavior in the dog has been defined at least partially in quantitative terms.

The art of selective dog breeding by experienced dog breeders has evolved to the point where certain behavior features in the offspring approach 100% predictability. In one breeding program 95% of the puppies selected at 3 months of age eventually achieve the required criteria of alertness, stable temperament, willingness to work, lack of timidity or hostility, and are physically sound. These are working dogs required to perform tasks very similer to those necessary in an ambush detecting dog. This breeding program required nearly 20 years to develop. Today we have the promising and usual opportunity to use this new knowledge of breeding and biopsychology to apply to the production of the kinds of dogs the Army needs.

From the viewpoint of the dog breeder "trainsbility" is a very desirable characteristic in a dog. This means a willing worker, intelligent, not too aggressive, yet pliable and dependable in harness when working. The behavioral scientist is interested in the assay of these behaviors and how to measure aggressiveness, intelligence, and reliability of performance. With these tools that he now has at his disposel, the geneticist can select progeny to produce more suitable dogs. In addition to increasing the performance quality of the dogs, nearly all dogs bred will be satisfactory animals for training. It is clear that psychobiology has come of age, and in this area, at leaat, we can breed dogs better than the best available today.

7. Time to Produce Superior Dogs. There is a limit to the extent of improvement in "trainability" in the dog. Given a small number of desirable animals to begin the breeding program, it will require one calendar year plus a training period of three to six months to produce the first generation of offspring; from four to five calendar years for the best possible dog to be produced. It is anticipated that a continued significant improvement in the performance ability via genetic selection will not be found after the fourth or fifth generation. In other words, the breed will have become essentially stabilized. On the other hand, we can take advantage of the selected stock that has been produced in similar programs. Breeding animals from this source taps the reservoir of past experience, and we need only add or modify to meet the military requirements. To avoid costly genetic errors this variation must be conducted by experienced geneticists. A large number of animals for breeding and subsequent selection will shorten the time required to reach the goal.

It is rare indeed that a research program can simultaneously supply a usable commodity that is also the experimental item. The urgent Army need for

dogs today can be met partially by using the discarded dogs from the proposed breeding program. These animals will be physically sound, and while not ideal for ambush detection they would be superior to currently acquired stock for training purposes. This aspect of the breeding of superior ambush detecting dogs can be considered a "fallout" or a "plus" that will contribute to the Army Dog Training Center program at Fort Benning, Georgia.

As described in the consideration of the physical features of the dogs to be produced, the coat, the size, and the color can be determined to meet the Army needs. No breed of dog has been selected. It is clear that a number of breeds have attributes for the type and character of dogs that we desire. It may be most desirable to breed several unique types for Army requirements.

The best estimates that have been made suggest approximately 1,000 dogs a year would be produced by this breeding program. By the second year, between 600 and 700 dogs a year would be available for use by the Army. As the breeding selection continued, the quality of the dogs' performance in ambush detection would improve. At the conclusion of this research we would know how to breed animals that could be used by military and police agencies. Breeders could use this information to establish breeding production programs with economic advantages.

8. Summary. The current concern for ambush detecting dogs is related to the fighting in Vietnam. However, it should be applied to other areas of the world as well. Ambushing is an old military problem, and the future requirements can be met only by a sound, long-term basic research program. Drawing upon the centuries old experience of the military effectiveness of dogs in sentry, scout, and ambush detection, the proposed research should be recognized as the development of an acceptable tactical detection system by the highest levels of the

Defense Establishment. The Army should consider this dog as a high quality special detection system under the control of a trained soldier. It is a system requiring no logistic support foreign to the military services. Intensive reviews by experienced military personnel and qualified scientists support the validity of the proposed research. If in response to long-term national policy US military forces must develop maximum effectiveness in limited war situations, it is necessary to utilize the full potential of the dog as the soldier's co-worker in detecting ambush.