

# REMOVAL AND COLLECTION OF EXCRETA FROM DOGS IN EXPERIMENTS LASTING SEVERAL DAYS

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In experiments conducted in insulated rooms, the experimenter cannot make any changes or correct any mistakes which develop in the course of the proceedings. Information concerning the conditions of vital activity of the dog, its physiological state, and its position in the room may be obtained from time to time only by means of electrical signals from pick-up devices attached to the animal or to the room.

The methods of collecting the excreta of experimental dogs in connection with some preliminary experiment (exteriorization of ureters, formation of fistulae), and also methods for obtaining samples of urine are unsuitable for use during prolonged experiments. Metal receivers, fixed by straps to the dog's body, can obviously be used only in experiments of short duration, for they are insecurely fixed, they irritate the skin, restrict freedom of movement, and make the animal very restless [1].

The sanitary appliances which we have developed consist of a special receiver for urine and feces, fixed to the pelvis, and a "brassiere" secured to the shoulder girdle to fix the receiver to the dog's trunk. The apparatus

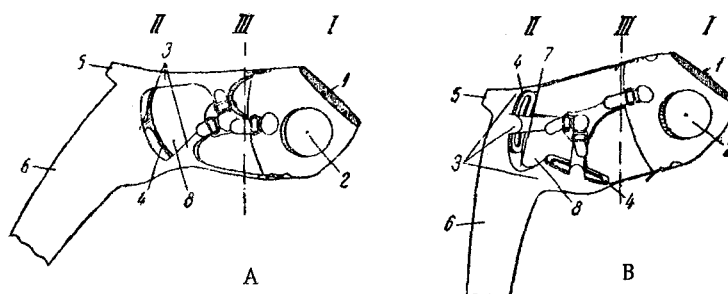


Fig. 1. Scheme of the sanitary appliance for female dogs (A) and for males (B). I) "brassiere;" II) receiver for urine and feces; III) harness; 1) hole for head; 2) hole for fore-limb; 3) girdle; 4) obturator; 5) hole for tail; 6) funnel; 7) bridge; 8) hole for hind-limb.

covers only a small part of the body surface and does not interfere with normal heat exchange and thermo-regulation, as shown by actinometric measurements. The "brassiere" of the sanitary appliance is made of rubber-impregnated stockinet and has two holes for the fore-limbs and one large hole for the head. The edges of the head hole are reinforced by a strip of cloth glued around the circumference (Figs. 1 and 2).

Two types of receiver have been developed; one for males and one for females.

The collecting apparatus for females consists of the following parts:

1. A girdle cut out from rubber-impregnated stockinet, with straps for connecting the receiver for urine and feces to the "brassiere," fits closely to the dog's body above and below in the pelvic region. An obturator and funnel are fixed to it (see Figs. 1, 2, and 3).

2. An obturator made of soft foam rubber. In size and construction, it conforms exactly to the underlying part of the body, against which it fits snugly and constitutes a seal around the oval hole for passage of the urine and feces. Across this oval there is a bridge fitting against the perineum. The dog's tail also passes through the upper half of the obturator hole.

3. The funnel for the receiver of urine and feces, consisting of a long tube of vulcanized rubber, narrower at its lower end, along which the urine and feces drain. The funnel is bent to a slight angle, and dips down over the neck of a metal reservoir, kept under the floor of the room. The funnel is long enough to allow the dog to stand up, lie down, and carry out certain movements. In its posterior wall in the upper part there is a hole with a rubber sleeve, shaped like a truncated cone, through which the dog's tail passes. The rubber sleeve fits closely around the

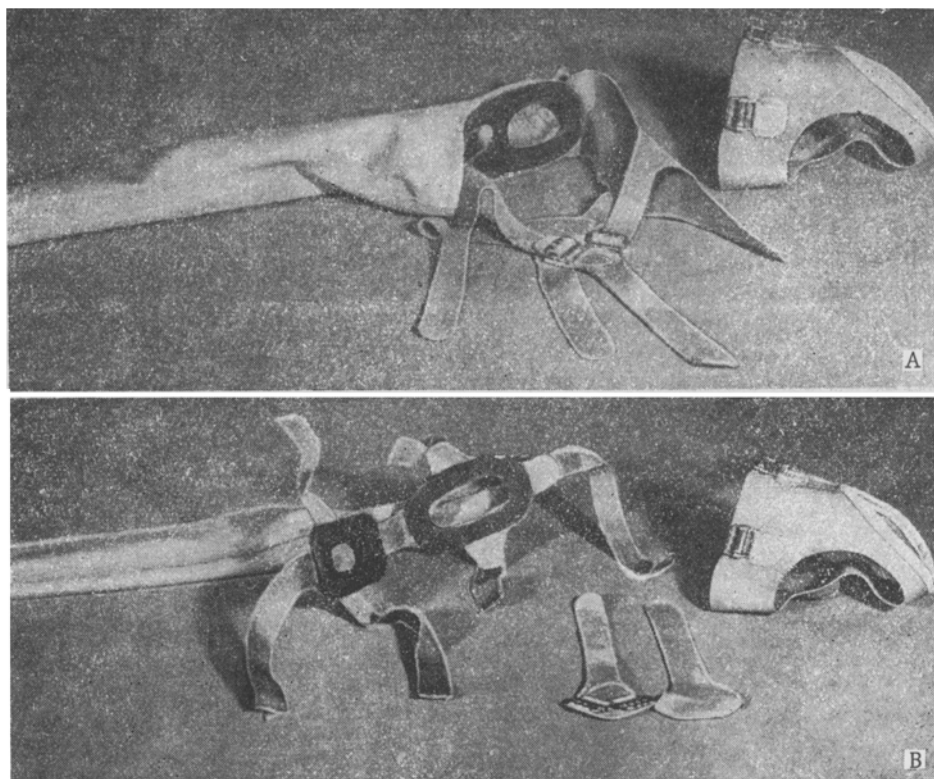


Fig. 2. Sanitary appliance for females (A) and for males (B).

tail but does not impede the blood supply or chafe the skin. A partition can be made to run the whole length of the funnel from the perineal bridge to the reservoir, in order to collect the urine and feces separately. The appliance for males must have two separate obturators for collecting the feces and urine. The main difficulty is to provide a bridge between them which will not injure the scrotum nor chafe its skin, and yet fit securely against the animal's body, without destroying the unity of construction of the appliance.

The appliance for males has two oval obturators. The upper one surrounds the anal orifice and the base of the tail, while the lower one fits over the pudendal region and surrounds the animal's penis. The posterior edge of the lower obturator lies between the base of the corpora cavernosa and the scrotum. The two obturators are joined by a bridge, or partition, 22-25 mm wide and about 80 mm long. The base of this bridge is made of steel wire, the ends of which curve around the obturators in a ring. The bridge is covered with rubber externally, and the surface facing the dog is covered with chamois leather. Because of the elasticity of the bridge, by the use of moderate force it can be bent to any shape to suit the individual measurements of the experimental animal. By altering the shape of the bridge, the distance between the two obturators can also be regulated. Both obturators open into the rubber funnel.

The "brassiere" and receiver are connected together by adjustable straps and self-tightening buckles. The "brassiere" has four buckles. The girdle of the receiver has six straps connected to it (3 above and 3 below). There

are also two separate harnesses, each carrying a strap and two buckles. By means of these harnesses the length of the straps can be controlled accurately, thus ensuring that the appliance is fixed securely to the animal's body.

Before the appliance is fitted to the animal, penicillin ointment is spread liberally over the perineal and inguinal regions. Deodorant and hygroscopic substances, for example, dried moss and activated carbon, are placed inside the reservoir (unless the excreta are to be chemically analyzed). For an experiment lasting 3 weeks, the capacity of the reservoir should be 6-8 liters (for small dogs weighing 6-8 kg).

During preparation for the experiments the animal must be systematically and regularly trained, so that it is accustomed to regular defecation and urination while wearing the sanitary appliance and fixed in the hermetically closed room. To prevent the development of reflex inhibition and retention of feces and urine, accompanied as a rule by restlessness in the dog, the animal should be made familiar step by step with the restricted space of the room, the means of fixation, the wearing of the sanitary appliance, and the material of its "clothing."

Trials have shown that if these conditions are observed, the sanitary appliance will work satisfactorily during experiments lasting as long as 20 days.

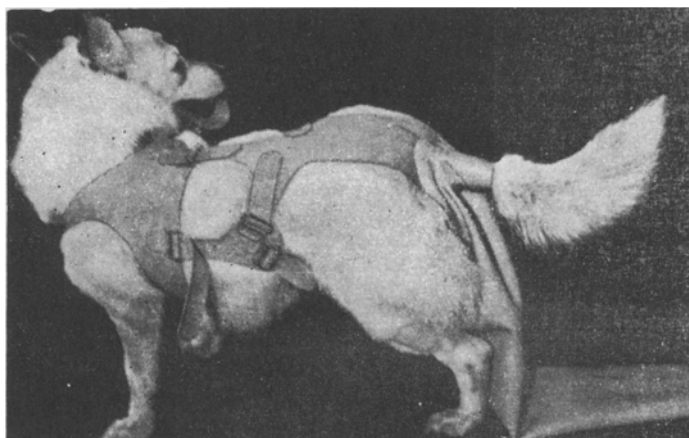


Fig. 3. The sanitary appliance fitted to a dog. Viewed from below and the side.

#### SUMMARY

A device below and from the side, the removal and collection of excretions of dogs in an isolated chamber in extended experiments. This device is made from rubber-impregnated stockinet and is placed on the animal. Excretions are collected into a special reservoir. This device functioned well without traumatizing the animal, providing freedom of movement for 20 experimental days.

#### LITERATURE CITED

1. H. F. Haberland, Die operative Technik des Tierexperimentes. In: Abderhalden's Handbuch der biologischen Arbeitsmethoden. Abt. XIII. T. 3c. S. 410, 1934.