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## APPLICATION OF AN ELECTRIC ANEMOMETER FOR INVESTIGATING THE VENTILATION OF MAMMALIAN BURROWS

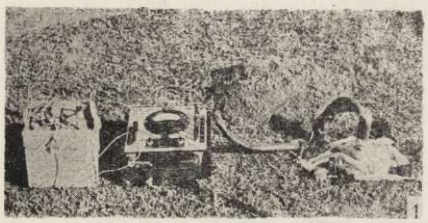
## ZASTOSOWANIE ANEMOMETRU ELEKTRYCZNEGO DO BADANIA PRZEPŁYWU POWIETRZA W NORACH SSAKÓW

Ecological investigations of subterranean habitats of animals, especially of mammals, form exceedingly interesting chapters of ecology. It is but lately that they have entered a stage of well-deserved development. This problem presents, from the technical point of view, many difficulties which can be partly overcome by the use of modern apparatus for measuring and registering. The introduction of a thermoelectric feeler into subterranean burrows renders possible a complex analysis of the microclimate of this milieu.

The problem of ventilation of the burrows of mammals living underground is one of the aspects of this question. As our preliminary experiments showed, the electric anemometer, manufactured by Günter Lange K.-G., Berlin, (German Democratic Republic) proved to be a most suitable instrument. Its technical data: sphere 0—0.5 m/sec. fed by a 6 V constant current, amperometer with a sphere of 1 mA, weighing 2.7 kg. (Fig. 1). Adaptation of this anemometer for investigation in underground conditions necessitated the construction of a special covering, for the feeler, thus insuring the thin platine wires against injuries caused by mounds of earth or plant roots. This covering, as to its dimensions, is identical with the original covering, but it has two windows, 4.0×5.5 cm. in size, which assure the flow of air. A wire net with large meshes was placed in the windows.

In our investigations we used an anemometer for measuring the ventilation in the burrows of a mole (*Talpa europaea* Linnaeus, 1758). It can be used for investigation in burrows at different depths, even up to 1 m. When introducing the sounding-rod of the anemometer into runs situated at a depth of 10 cm. we cut out, by means of a knife, a hole in the turf with a diameter corresponding to that of the head of the sounding-rod. We then removed the

earth that had fallen onto the bottom and into the runs, placing the feeler with its covering, adapted to soil research, directing the windows of the covering towards the outlets of the runs. Fissures around the sounding-rod were stopped by means of nylon sheets, which we covered with moist earth, pressing it lightly down (without damaging the runs). When the runs were deeper, we dug an opening with a spade, using a knife for final activities only (Fig. 2).



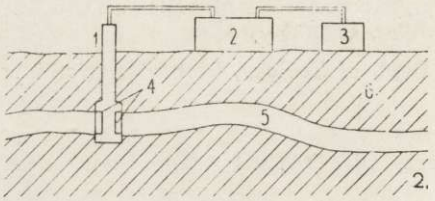



Fig. 1. Use of an electric anemometer in the terrain.
Fig. 2. Scheme of ventilation measurement in mole burrows by means of an electric anemometer: 1. Sound with feeler, 2. Amperometer, 3. Source of the current, 4. Windows in the covering of the feeler, 5. Burrow, 6. Soil.

Simultaneously with measurements of the rate of flow of air in burrows, measurements of wind velocity were made, 2. m. above the ground, by means of an inductive anemometer.

As the preliminary investigations showed, mole runs situated at different depths have a special system of aeration, strictly adapted to the configuration of the terrain (for instance its inclination), the quality of the soil and its vegetation. The rapidity of the flow of air in the burrows is distinctly dependend on the rapidity of the wind above the surface of the soil. Detailed results of these investigations shall be given in a separate publication.

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