Fluorite occurs in the form of a vein with an average thickness of over two feet. It has a north-east–south-west trend dipping steeply to the north-west and plunging to the south-west. It is traceable from the top of the 436' peak towards the south-west for a distance of over 450 feet along the south-westerly slope of the hill. The north-easterly extension, if any, is covered by the talus and boulders of brecciated basalts which also contain fluorite.

Fluorite is generally massive and occasionally ill-developed cubes are seen. It is coloured in shades of violet (dominant), yellow and green. Even by the most conservative estimate, 1,000 tons of the pure mineral can be envisaged from surface indications. Association of fluorite with a Carbonatitic intrusive body postulates the continuity of the mineralised horizon much below the ground-level and large reserves of the mineral can be expected from this locality.

The country rock in which the fluorite occurs is a calcareous rock (Carbonatite ?) associated with the upwarped brecciated basalts. Fragments of basalts within the calcareous rock, baking and hardening of the contact of basalts with the calcareous rock and the intrusive field relation of the calcareous rock are all strongly suggestive of the intrusive body being carbonatitic. Work on the detailed mineralogy of this is in progress.

About a mile north-west of the hillock, the Shursho hill forms another centre of volcanic eruption of alkalic rocks.

The traps of the conical hill and the Shursho hill are domed and dip at very high angles—a fact noted by Blanford[1] as early as 1869. The fluorite mineralisation is post-Trappean in age, genetically related to the alkalic complex, agreeing in these aspects with Amba Dongar.

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December 27, 1967.

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THE BEHAVIOUR OF *METOPONORTHUS PRUINOSUS* (BRANDT) (PORCELLIONIDAE, PERACARIDA) IN RELATION TO HUMIDITY

Of all the arthropods living on land, woodlice are probably the most ill-equipped for living in terrestrial environments. Because of its small size and the lack of any suitable morphological specialization for the conservation of body moisture, transpiration from a woodlouse is regulated by the prevailing temperature and humidity, identical to a manner these environmental factors affect a physical body.[1] Also, the slightly modified gills, the main organs of respiration in these crustaceans, cannot function away from saturated conditions.[1]

In spite of these disadvantages, *Metoponorthus pruinosus* has a world-wide distribution. It has been suggested that the survival of this species in arid regions might be due to its being able to find an optimal *niche*.[2] This implies that *M. pruinosus* has the ability to detect differences in their microenvironments.

For the analysis of the humidity orientation mechanism of the woodlice, two sets of experiments were performed: (*a*) In the first set, a rectangular wooden case, having a glass roof, was used. A lengthwise partition of copper wire-gauze divided the case into an upper and a lower chamber. Sulphuric acid solutions of various strengths were kept in the lower chamber to create different humidity gradients near the corners of the upper chamber. An evaporimeter was used to check the humidity levels. The woodlice were introduced through a small window in one side of the upper chamber, and counts were taken of the number of woodlice found in each corner. (*b*) The second set of experiments was performed using a modified olfactometer,[6] in which various humidities were maintained by forcing a constant current of dry air over different dilutions of sulphuric acid.

The data collected clearly showed that the woodlice, both nymphs and adults, were able to perceive small differences in the experimental humidity gradients within the temperature range of 24·2° C. to 28·5° C., and had a definite preference for saturated, or nearly saturated air.

A minority of *M. pruinosus*, in certain instances, was observed aggregating in less humid zones even when the choice for higher humidities was available. However, these individuals did pay frequent visits (from 4 to a

maximum of 10 visits during a period of 30 minutes) to the highly humid zones. Nevertheless, they spent most of their time in less humid environments. These reactions away from saturated conditions may have been for reducing the chance of "water poisoning", and perhaps of attack by fungi or other pathogenic organisms which thrive under wet conditions.[5]

Also, the nature of humidity reaction, in invertebates in general, depends on the state of their water reserves. Since the majority of the individuals showing a preference for less saturated condition were in their early stages of development, they may have higher body moisture contents than the mature ones, and consequently, were least susceptible to death by desiccation. Similar reactions have been reported in certain members of the genera *Forficula*,[4] *Allochironomus*,[5] and certain species of termites.[3]

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METACERCARIA OF *BUCEPHALOPSIS* (A PROSORHYNCHINE GASTEROSTOME) IN JUVENILES OF A TOAD AND TWO CYPRINID FISHES

ADULT bucephalid trematodes belonging to *Bucephalopsis* Dies, 1885 (Prosorhynchinæ Nicoll, 1914) and *Bucephalus* Baer, 1826 (Bucephalinæ Nicoll, 1914) occur in some of our freshwater siluroid fishes (Rai, 1967). Since the description of the life-history stages of *Bucephalus elegans* by Woodhead (1930), bucephalid metacerariæ have been recorded from several countries in a number of small freshwater fishes, among others, by Dollfus (1951) and Chubrik (1952).

During investigations on metacercarial incidence in our lower vertebrates—piscine and amphibian, numerous specimens of the juveniles (with four limbs and tail) of *Bufo andersonii* Boulinger and the juveniles of the two carps, *Aspidoparia morar* (Ham.) and *Barilius ovazardi* Day, were examined during April, 1967. The collection, made from a small pond developed near the banks of river Jamuna at Mathura, was thoroughly searched for the larval helminths occurring in the musculature and viscera. Of the 157 developing toads, 46 were found to harbour, in regions of subcutaneous tissues, musculature of fore and hind legs, muscles of the eye and mesentery, an infection with bucephalid cysts.

The nearly spherical and somewhat whitish cysts measured 0·23–0·38 mm. in diameter, the cyst wall being 0·009–0·018 mm. thick. The coverslip preparations of the extracted cysts revealed the well-developed and tubular excretory bladder full of dark contents, the prominent and sub-terminal rhynchus without papillar prominences, the pharynx, and the sac-shaped intestine containing different-sized globules with a yellowish-green tinge.

The morphological details including the excretory system and the developing gonads were evident in the fresh preparations of the excysted juveniles. The elongated body, with a broader anterior end, a somewhat narrower posterior end, measured 0·63–0·88 mm. × 0·23–0·35 mm. Minute spines covered the entire cuticle. The circular and sub-terminal rhynchus measured 0·12–0·14 mm. in diameter. Four groups of unicellular glands, lying behind the rhynchus, had thin and long ducts passing laterally towards the anterior end. The mouth, situated slightly behind the middle of the body, opened through a pharynx into the sac-shaped intestine. The tubular excretory bladder, anteriorly extending to some distance behind the rhynchus, opened through the excretory pore at the posterior end and, near the level of the pharynx, received the two transverse ducts formed by the anterior and posterior longitudinal collecting canals. The rudiments of the genitalia included the two rounded testes (situated symmetrically, in a line, or slightly obliquely behind the pharynx), the pretesticular ovary (lying just lateral to the pharynx or slightly posteriorly), the shell-gland mass (situated immediately posterior to the ovary), the developing uterus with its terminal part passing along the well-developed cirrus sac, and the common genital pore situated subterminally at the posterior end.

Measurements from the stained permanent mounts were: length 0·27–0·50 mm.; breadth 0·16–0·23 mm.; rhynchus 0·07–0·09 mm. in diameter; pharynx 0·04–0·06 mm. in diameter; testes of 0·02–0·027 mm., ovary 0·020–0·022 mm. and cirrus sac of 0·07–0·14 × 0·02–0·03 mm. in