nutrient agar medium. Motility is observed in glucose-ammonium acetate solution after five days of incubation at 34°–35° C. Endospores and microcysts are not formed.

The bacterium differs from *Azotobacter*, *Beijerinckia* and also from the previously reported organisms[1,2] in cultural, physiological and morphological characters. It differs distinctly from *Derxia gummosa* (Jensen *et al*)[3]. in its morphological life-cycle, having cells of smaller size, for assimilation of carbon from sucrose and development of feeble growth in ammonium sulphate glucose-agar. In view of its general resemblance culturally and physiologically to the genus *Derxia*, this new organism can be included in the same under a new specific name *Derxia indica* sp. nov.

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ENTOMOLOGY

Mating of Virgin Queen Honey Bees (*Apis mellifera* L.) following Mandibular Gland Extirpation

Mandibular glands have been suggested as a possible source of an odour that attracts drones to virgin queens for mating[1]. The experiments in this report concern attempts to determine if virgin queens without mandibular glands can mate. Data discussed here are made more significant by the discovery, made after these experiments were conducted, that the mandibular glands are indeed the primary source of mating attractant odours[2].

Nedel[3] first extirpated mandibular glands from a living queen. One of these queens did not mate when given the opportunity, and on this basis he suggested that the mandibular gland was necessary for mating to occur. Gary and Morse[4] and Gary[5] independently developed another technique for mandibular gland extirpation that was used in the following experiments conducted during 1961.

A mature queen cell within hours of emergence was placed in each of five nucleus colonies containing approximately 3,000 bees on June 27. Virgin queen flight was prevented by queen excluder material placed over the colony entrances. On June 30 the mandibular glands were extirpated from the virgin queens. During the gland extirpation, the queens were out of the colonies for 52–77 min. Queen excluders were removed when the queens were returned to their respective colonies. Dead bee traps[6] were attached to colony entrances to collect the bodies of any queens cast from the colonies.

One queen was found dead in the trap 24 hr. after gland removal. Two queens did not mate and were superseded within two weeks. The remaining two queens mated and produced normal worker brood until they were killed two weeks later for a chemical analysis.

In a similar experiment the mandibular glands were removed on July 28 from six virgin queens three days old. In this experiment colonies containing approximately 30,000 bees were used, and dead bee traps were not used. One month after gland removal two of these queens had mated and were laying normally. Incision scars confirmed previous gland removal on both queens.

The extirpation of mandibular glands does not necessarily render a virgin queen incapable of mating. Since some virgin queens without mandibular glands duly mated, it is indicated that drones utilize supplementary stimuli such as vision to locate virgin queens in flight.

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A Diuretic Hormone in *Rhodnius prolixus* Stål

The fifth-stage larva of *Rhodnius* takes very large blood meals[1], and a rapid diuresis follows[2]. The experiments reported here demonstrate that the diuresis is caused by a hormone released into the hæmolymph from the ganglionic mass in the mesothorax.

When the Malpighian tubules, attached to the top part of the rectum, are isolated from a recently fed insect and placed in a drop of hæmolymph under liquid paraffin, they produce urine; and the rate of urine production can be estimated by measuring the size of the drop which appears at the rectum. The rate is at first high, but soon falls to a very low level. If hæmolymph from a freshly fed insect is now added to the hæmolymph bathing the tubules, a further burst of urine production follows. Hæmolymph from an unfed insect has no effect.

Several lines of evidence show that the factor responsible is a hormone liberated from the large fused ganglionic mass situated in the mesothorax (which comprises the meso- and meta-thoracic and all the abdominal ganglia).

The activity of breis of various tissues in insect Ringer was tested by adding them to the tubule preparations. The central nervous system possesses considerable activity; all other tissues tested have no activity. By determining the dilution at which each of the active breis produces a standard effect on the production of urine by tubule preparations, it is possible to measure the activity of each of the parts of the central nervous system. Thus, in arbitrary units per unit of dry weight, the activity of the brain is 6, that of the subœsophageal ganglion 3, the prothoracic ganglion 1, and of the fused ganglionic mass 50.

The fact that ligating the fed insect anterior to the ganglionic mass has no effect on urine production demonstrates that structures anterior to the ganglionic mass are not involved. Thus decapitation is without effect on the normal response. On the other hand,

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