1, *x*). Further studies on this species are in progress.

It may be mentioned in this connexion that recently Raghavan and Krishnamurthy[5] have reported the chromosome number of this species as $2n = 28$.

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Mustard-gas Mutation in *Aspergillus nidulans*

THE production of 'biochemical mutants' of fungi by means of ultra-violet or X-radiation has been reported by Beadle and Tatum[1,2] (*Neurospora* spp.), Fries[3,4,5,6] (*Ophiostoma* spp.) and Pontecorvo[7] (*Aspergillus* and *Penicillium* spp.). Following the use of mustard-gas (β,β′-dichlorodiethyl sulphide) in producing mutations in the vinegar fly (*Drosophila melanogaster*) by Auerbach and Robson[8], this reagent has been used by Horowitz *et al.*[9] to produce mutations in *Neurospora* spp. A method for isolating strains of *Aspergillus nidulans* deficient for a specific amino-acid, cystine, from a mixture of mutants produced by mustard-gas, is now described. These special mutants grow normally in presence of cystine but are unable to grow with sulphate as sole sulphur source.

A dark green 'conidial' strain of the mould, called *A*69 by Dr. Yuill who kindly supplied it, was found by Dr. Pontecorvo to be particularly suitable for the production of X-ray mutants. Seven-day cultures on 10 cm. Petri dishes of maltwort-agar were each exposed to the vapour from three drops of mustard-gas on a 3·5 cm. Whatman No. 1 paper ; $\frac{3}{8}$-in. disks of mycelium were removed. Those in which the viable count had dropped to about 3,000 (on cystine-containing medium) were used for isolation of mutants. Spore-suspension from a disk was incubated for 16 hr. in a thin layer of liquid cystineless medium (sulphate as source of sulphur). The suspension was then filtered through glass wool to remove a greater part of the already germinated spores, that is, those capable of using sulphate. By this means the number of viable spores were reduced 10–15 times. The technique is an adaptation of one used by Fries[10]. The resultant suspension was plated on cystine-containing medium.

At this stage in various experiments there have been noted morphological mutants of many types ; for example, white, yellow, yellow-green and cinnamon 'conidial' types, many white and one purple 'mycelial' types, 'perithecial' types and pigment producers. In the experiment quoted, 68 different morphologues (mostly white types) appeared from 640 viable spores. A control test on non-exposed material gave two morphologues out of 1,480. Dr. Pontecorvo has made similar observations on X-ray mutations.

Material from each colony was inoculated on to solid cystineless medium. Those inoculations which only grew a few spidery threads were tested on cystineless and cystine-containing media. Those giving no growth or only a few spidery threads on the former were checked against both media again. Four such isolates were obtained.

To date, thirteen such mutants have been obtained. Some of these tested by Dr. Pontecorvo form 'balanced' heterokaryons with some of his mutants deficient for certain amino-acids.

Full details of media, methods and observations on the exact nature of the biochemical deficiencies will be published elsewhere.

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A Vasodilator, Adrenolytic Substance in Aglomerular Fish Kidney

EXPERIMENTS were performed on aglomerular fish kidneys to establish the presence or absence of vaso-active substances. This communication deals with the presence of an adrenolytic, vasodilator substance in extracts of the aglomerular kidneys of the toadfish (*Opsanus tau*). The material extracted was tested for its vasodilator properties on the peripheral blood vessels and capillaries of the frog (*Rana pipiens*), and also for its adrenolytic ability, that is, ability to neutralize and protect against the vasoconstrictor effect of epinephrine.

Material and Methods. Toadfish (*Opsanus tau*), a marine fish which is a normal inhabitant of the deep waters of the Atlantic coast, were obtained by seining in Buzzards Bay off Woods Hole, Mass., and brought to the Marine Biological Laboratory. The fish were kept in aquaria supplied with a continuous stream of sea water and treated as indicated below. The fish were removed from the aquarium and placed in a solution of sea water containing 5–7·5 per cent of ether, C.P. Some fish were anæsthetized by being placed in a bucket containing cracked ice. The fish used varied in size from 8 to 10 in. in length. When anæsthetized, they were placed in a holder ventral side uppermost, and the abdomen opened by a V-shaped incision, commencing above the anal aperture, and extending anteriorly along both sides up to the pectoral fins. The kidneys were dissected free and weighed. Immediately after weighing, they were ground with sand and acid alcohol (95 per cent ethyl alcohol to which 0·1 per cent concentrated sulphuric acid had been added; *p*H approximately 3·5). After being thoroughly homogenized, enough acid alcohol was added to make the final volume approximately 4 ml. for each gram of kidney. Material and solvent were then placed in a shaker, shaken for twelve hours and treated further according to the method previously published[1,2].

The final product was dissolved in distilled water in an amount in which 1·0 ml. represented the equivalent of material obtained from 1·0 gm. of toadfish kidney. In preliminary chemical tests, it was found to be protein-free (sulphosalicylic acid test), negative with the biuret test, *p*H 4·5–5·0.

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