

hæmophilic. Several human pedigrees show that hæmophilia may arise by mutation. The frequency of hæmophilia in London males certainly exceeds 1 in 100,000 at birth and may well exceed 1 in 30,000. A rough estimate of the mutation rate is 1 in 50,000 to 100,000 per *X*-chromosome per generation.

Several other sub-lethal dominant conditions, such as neurofibromatosis, seem to have frequencies, and therefore mutation rates, of the same order. The highest mutation rate known for any locus in *Drosophila* is about 1 in 300,000 for the white locus. Thus if we take the generation, and not, of course, the year, as unit, man seems to be somewhat more mutable than *Drosophila*. A full account of our investigations will be published elsewhere.

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A New Virus Disease of Tomatoes

IN 1931 the first appearance in Europe of the tomato virus disease known as 'spotted wilt' was recorded by this virus station¹. Since that date, the disease has spread through the length and breadth of Great Britain, and its ability to attack ornamental plants of all kinds has made the virus one of the major problems of the horticulturist.

In view of these facts, it may be worth while recording the recent appearance of an apparently new and equally serious virus disease of tomatoes. The virus in question was isolated from some diseased tomato plants sent in for examination, and the symptoms it produced on the various experimental plants differed from any with which I am familiar. On tomato the symptoms are briefly as follows. The first signs of infection, developed on the fifth day following inoculation, were pronounced yellowing of



FIG. 1. A new virus disease of tomatoes; the lesion in the stem at soil level (right hand plant) is characteristic.

the inoculated leaves together with the appearance of yellow or purple rings or circular necrotic spots. Later, the youngest leaves showed a tendency to twist round and become pale yellow in colour. The next development was the appearance of a gross lesion on the stem, at and just below soil level; this was followed by a general wilting and collapse of the plant (Fig. 1). The stem lesion appeared to be more characteristic of infection of younger plants.

The virus causing this disease has been differentiated from all the known viruses affecting tomatoes in the British Isles by ultra-filtration and immunity studies, by its physical properties and particularly by its symptom expressions on differential hosts. The unusual reaction of the virus upon cowpea, *Vigna sinensis* (Fig. 2), is alone sufficient to differentiate it from the viruses of the tomato streak group.

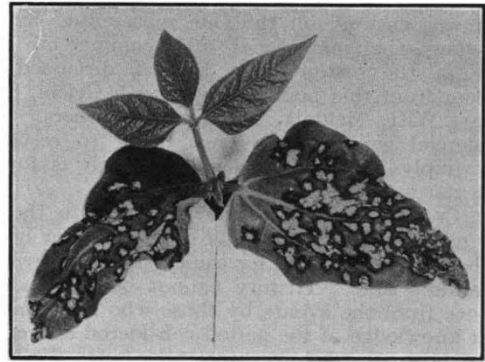


FIG. 2. The tomato virus upon cowpea; the virus is usually confined to the inoculated leaves.

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Pleistocene Coastal Deposits in Palestine

ANYONE who has travelled by train along the coast of Palestine from Haifa to Ludd cannot have failed to notice, soon after rounding the northern point of Carmel, a low ridge of sandstone running roughly parallel with the railway line and the sea. It begins 5 km. to the south of Cape Carmel, and continues for approximately 32 km.

The Crusader's Castle at Athlit was built with stone taken from this ridge, and more recently, in 1930, two big quarries were opened in it to the north of Athlit Station to supply the stone for the great breakwater of Haifa harbour.

The rock of which the coastal ridge is formed has generally been regarded by geologists as a marine formation of Pliocene age, and had not attracted the attention of prehistorians. In the course of a short visit to Athlit in April of this year we decided to devote some time to this problem, and two days were spent in a close examination of the area. In the quarry sections, which have an average height of about 13 m. and are more than half a kilometre in length, the following observations were made:

- (1) The ridge is mainly composed of wind-blown sand showing typical æolian current bedding, and containing comminuted shells.
- (2) A conspicuous layer of red earth varying in thickness from a few centimetres to 1 m. divides the sandstone into two approximately equal series.
- (3) In this layer a considerable number of flint implements were found at various points.