ounces of onion seeds were mixed well with known concentration of sticker in a litre flask and well shaken. When the seeds were completely moistened, the excess of the solution was drained off. Two ounces by weight of each of the fungicides were added to the flask separately and vigorously shaken so that the seeds were uniformly coated with the fungicide. It was then dried in shade and sown after two days in the field. There was 100% germination in all the treated seeds, when they were sown in the germination box in the laboratory. Periodical observations were made to study the germination of the seeds under field conditions. Data were collected till the crop was three months old, and the determination of the relative efficacy of the treatments in the field was based on the percentage of decrease in the amount of smut infection as compared with control plots (Table I).

TABLE I

Percentage of healthy onion plants compared with control for each treatment by four fungicides replicated four times

Replications	Treatments				
	Thiram	Flit-406	P.C.N.B.	Arasan	Control
1	100·0	94·94	99·75	99·43	93·93
2	99·5	99·32	99·98	99·74	93·75
3	100·0	100·0	98·18	99·17	95·37
4	100·0	99·86	99·54	98·98	93·33
Average	99·87	98·53	99·36	99·33	94·09

It can be seen from Table I that the average incidence of smut in control (untreated) was 5·91 whereas it was 0·13, 1·47, 0·64 and 0·67% respectively in treatment with Thiram, Flit-406, P.C.N.B. and Arasan. In view of the superiority of Thiram over others, it will be used for pelleting seeds for distribution to the cultivators by the State Agriculture Department.

It is also of interest to note that, even in the absence of the onion crop since 1960, the smut has survived in the soil for about 2½ years. This is not unusual; the ability of the smut to survive in soil for as long as 15 years in the absence of susceptible host has been reported.[2]

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* Original not seen.

COHERENTLY DRIVEN MOLECULAR VIBRATIONS AND LIGHT MODULATION

THEORIES of Raman lasers have concentrated attention on the individual molecular processes of Raman scattering and on the normal Raman emission. Very intense light beams in dense matter produce interesting higher-order Raman effects, particulary through excitation of intense coherent molecular oscillations at infrared frequencies. These modulate the original light and its Raman-scattered radiation, producing Raman and anti-Stokes lines of many orders, frequently without a threshold condition for generation, and in some cases with highly directional radiation patterns.

By using what is known as the "giant-pulse" technique laser beams from a ruby laser rod have been known to develop a peak power of 500 million watts per sq. cm. When such a pulsed beam is focussed by a lens on to a Raman-active liquid the molecules of the illuminated liquid are subject to an oscillating electric field of enormously high intensity. In a recent communication to *Physical Review Letters*, August 15, 1963, Townes *et al.* discuss from theoretical considerations the effect of very intense electric fields on the natural oscillations of radiating molecules and their interaction with the incident radiation. They deduce a number of interesting conclusions.

One of the deductions is that anti-Stokes radiation of frequencies $\omega_0 + \omega_r$ is emitted in cones in the forward direction around the initial beam at angles determined by the vibration frequency, the polarizability of the molecule and other parameters.

(For an excellent photograph in colour of the Raman laser effect produced in benzene, see *Scientific American*, July 1, 1963.)—(*Physical Rev. Letters*, 1963, **11**, 160.)