1. Two rats, which had been previously trained to traverse a narrow runway in order to be rewarded (*J. Comp. Physiol. Psychol.* **69**, 601, 1969), were simultaneously introduced at the opposite ends of the apparatus. When they met at the middle of the runway, the rat which pushed the partner was classified as winner. Δ^9-THC injected in one of the rats before the first contest increased its probability to be winner in most of the pairs tested; when injected in previously loser rats it promoted an inversion of the classification.

2. Pairs of rats trained in a modified Skinner box, with the lever and the water deliverer at opposite walls (*Nature* 213, 533, 1967), acquired a stable pattern of behavior in which one of the animals performs the bar pressing (worker rat) and the partner obtains the reward (non-worker rat). Δ^9-THC administered to non-worker rats increased their "parasitic" behavior. On the other hand, when administered to the worker rats it promotes an inversion of the social pattern, that is, the worker rats stop bar pressing and begin to obtain the reward.

Similar experiments were performed with chlorpromazine, amylobarbitone and mescaline. The results are tentatively explained by suggesting that Δ^9-THC is able to impair the perception of rats to known environmental stimuli, leading to a "deconditioning effect" without loss of motivation.

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Tetrahydrocannabinols (Δ^9-THC and Δ^8-THC) and state-dependent learning in rats

The aim with the present study was to answer two main questions: (a) do tetrahydrocannabinols impair the acquisition of a simple position—learning task, (b) is it possible to establish differential responding in the same learning-situation when using tetrahydrocannabinols?

Method: A T-shaped water-maze was used in the present experiments. It is *a priori* suggested that this method provides some advantages over more commonly used techniques, thus no food reward or electric shock has to be used.

Experiment I: 32 male albino rats were divided into four groups. Each group was trained to swim either to the left or to the right side of the maze. The groups were given ten trials a day for six consecutive days. The following two days the animals could not get out of the water when swimming to the previously learned position but had to go to the opposite side. The administration of the drug (Δ^8-THC 20 mg/kg i.p.) was given thirty minutes before the training.

Group I:	Initial training	drugged,	reversal training	drugged
Group II:	»	nondrugged,	»	nondrugged
Group III:	»	nondrugged,	»	drugged
Group IV:	»	drugged,	»	nondrugged

No drug-state change effect on the learned position response was observed but the groups showed marked differences in performance during reversal learning. The effect of the drug was to retard reversal learning and the effect of change of drug-state was to facilitate reversal learning for group IV. However, it was shown that reinstating the conditions prevailing during the initial training for group IV eleven days after the completion of the reversal training led all these animals once more to chose the "drugged" side of the maze.
Experiment II: Two groups of rats were trained to differentially swim to one side of the maze when drugged and to the other side when nondrugged. The states (drugged and nondrugged) changed from day to day. This procedure continued until a perfect performance was established i.e. the imposed state determined the choice of position. All injections of Δ^9-THC and solvent were given i.p. thirty min before the sessions. The groups were drugged with 5.0 and 10.0 mg/kg respectively. The results show that rats can learn to respond differentially in a T-maze on the basis of Δ^9-THC *vs.* solvent only. However, there was an impairment of learning of the Δ^9-THC associated position as compared to the nondrug associated position within the same subjects. This differential responding is stable, indicated by retest performance after two weeks of rest.
Conclusions: a) Cannabis, when given in doses mentioned impairs acquisition of a simple maze task b) when acquired, however, drug performance is very stable c) rats are able to respond differentially to cannabis state and normal state d) learning under influence of cannabis is state-dependent.

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Influence of smoking hashish on higher nervous activity in man

The investigations were carried out on 16 healthy and unfatigued "naive" volunteers—university students (8 females, 8 males, aged 18 years) during the early and late forenoon hours under standard conditions. The method of artificial conditioned speech connections was adopted. Each of the investigation-sets consisted of two optic, two complex tactile, and two acoustic associations. Three trials were always performed: before administration, and 15 and 75 min after smoking a cigarette with (4 mg, 8 mg, 16 mg) or without THC.

The criteria for the evaluation of the results were the number of repetitions necessary for mastering the given task (NNR), then the number of correct responses (NCR) and the frequency of responses (FR) during the first eight repetitions. The assessment of the results was