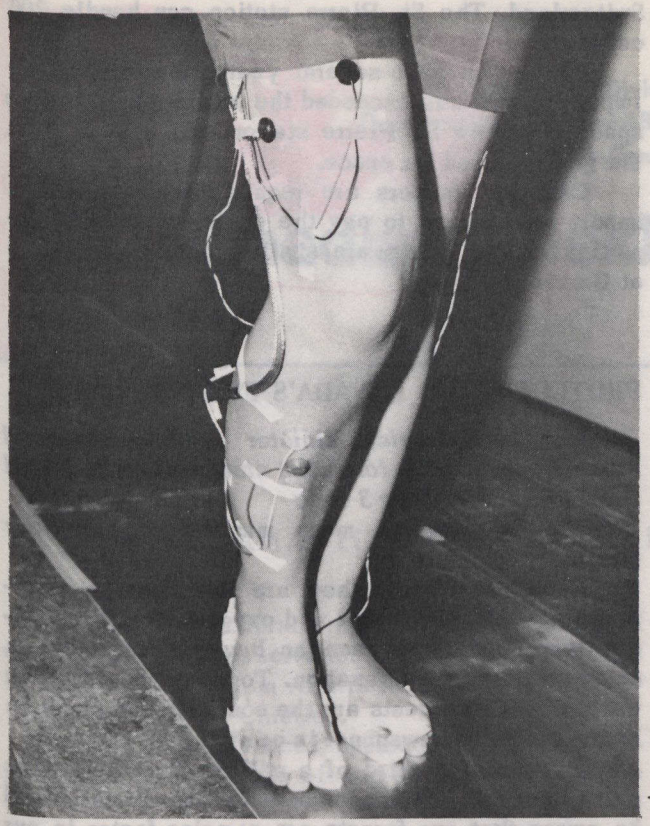

Footswitch electrodes and electromyographic electrodes taped on leg of test subject.

various joints with the passage of time; the individual co-ordinates of the points of movement in the plane with time; and the time variations of angles between the lines constructed from each joint to the joints at the opposite extremes of the limbs or members of immediate concern.

In earlier work, Dr. Milner and Mr. Quanbury, with Dr. John V. Basmajian of Queen's University's Department of Anatomy, undertook a study of the electrical stimulation of leg muscles. In one series of experiments, the subject was lifted onto his toes as if he were leaning forward five to 10 degrees. In the most successful cases it was possible to lift the subject off his heels and on to his toes while standing vertically. A tentative conclusion was that it was reasonable to expect that surface electrical stimulation can maximally and usefully evoke about 40 per cent of the maximum volitional force.

"The value of our work," says Dr. Milner, "will depend on the ability to relate joint trajectories to specific abnormalities and deficiencies as well as to extract pertinent programming data for electro-stimulation of useful muscles. We hope eventually to gain a full understanding of the detailed, complex process of human locomotion."

STUDENT DRUG-USERS

A comparative study of the use of drugs in high schools in three cities of Eastern Canada has shown that a large percentage of the students who smoke marijuana use other drugs as well, amphetamines and LSD being the most popular. The study was a joint effort of Dr. Paul C. Whitehead, Dalhousie University in Halifax, Dr. Reginald Smart, Addiction Research Foundation in Toronto, and Mr. Lucien Laforest, OPTAT (Office de la Prevention et du Traitement de l'Alcoolisme et des Autres Toxicomanies) in Quebec. The questionnaire and the research techniques used in the three-city studies were developed by Dr. Smart.

The Toronto portion of the combined study was conducted in 1968. Both the Montreal and Halifax portions were done in 1969.

The data in the study were obtained from 927 students (of a total of 12,562 who filed questionnaires) who admitted having used marijuana at least once in the past six months.

RESULTS OF STUDY

The results of the combined studies showed that 6.6 per cent of all Halifax students, 6.9 per cent of those in Toronto, and 8.6 per cent of those in Montreal smoked "pot".

As for the use of other drugs among students who had tried marijuana, over 40 per cent in Halifax and Toronto, and 30 per cent in Montreal had used stimulants. Relatively low rates of glue-sniffing among marijuana users were found in Halifax (13 per cent) and Montreal (12 per cent), but the Toronto rate was 26 per cent. Barbiturates had been used by 16 per cent of Toronto smokers and by 30 per cent of Halifax smokers.

In all three communities, levels of LSD use were uniform at about 30 per cent. Halifax and Toronto had higher rates of opiate use (22 per cent and 20 per cent respectively) than Montreal, which had 14 per cent.

In their combined paper, presented in February to the National Research Council Committee on Problems of Drug Dependence in Washington, and later revised for publication in Canada, the researchers stress that the most obvious finding is that the rate of users of other drugs, of those who have used marijuana, is much higher than the rate of users who have not used marijuana.

They show that the rates of tobacco-and-alcohol use are two to three times higher among marijuana-users than among non-users. Furthermore, three times as many smokers, compared to non-smokers, have used tranquilizers, six times as many have used glue, nine times as many have used stimulants, and 11 times as many have taken barbiturates.

The ratios for LSD, other hallucinogens and opiates are even more striking. The researchers add that 24 times as many marijuana-smokers as non-smokers have used hallucinogenic drugs other than

(Over)