60% when *e* antigen was detected in the inoculum compared with 31% when *e* antigen was not detectable. The *e* antigen was detected in 74% of inocula accidentally sustained in maintenance renal dialysis and transplantation units, which are recognised hepatitis "high risk" areas, compared with 20% in other clinical units and the resulting incidence of hepatitis was 22% and 6% respectively. It was pointed out that if the correlation of *e* antigen and infectivity is indeed better than indicated by the results of this study, and the correlation is not merely an indirect reflection of some more specifically related phenomenon, then improvements in the sensitivity of the test will be of great value and the potential application to the problems of the transmission of hepatitis B virus will be almost limitless. □

# Soil structure discussions in Adelaide

*from I. J. Smalley*

A meeting of the Soil Physics Commission of the International Society of Soil Science was held at the Waite Research Institute, University of Adelaide, on August 23–27, 1976. The topic was Modification of Soil Structure and the proceedings edited by W. W. Emerson, R. D. Bond, and A. R. Dexter) will be published by John Wiley, London.

AUSTRALIA is the driest continent and it is also the saltiest. This fact causes great problems for Australian agriculture, and for the new town builders at Monarto, particularly as the irrigation water often carries a significant proportion of dissolved salt. But a salty clay can make a good cricket pitch, as J. R. Harris (CSIRO Division of Soils) pointed out in his paper on the maintenance of soil structure under playing turf. Different sports impose widely differing conditions. The soil structure of a cricket wicket requires fine structured clays of high bulk density to be maintained in a condition in which plasticity is retained when wet. When dry, the bounce height of the cricket ball and the ability to withstand intensive playing wear at the surface are important characteristics to match against soil properties. At the other extreme of the soil structure scale, bowling and putting greens are generally constructed on coarse-structured sands where the emphasis will be on free drainage of surface waters and free rolling of the ball.

Discussion of sporting applications however, occupied only a very small proportion of the meeting; sessions were held on forces between colloidal particles, soil geometry, soil strength, soil tillage, soil management, soil permeability, measurement of aggregate stability, organic matter and aggregate stability, oxides and soil aggregation, organic material and soil structure, modification of soil structure with organic polymers—in all over fifty papers were presented.

The use of soil conditioners (admixtures to preserve a desirable soil structure) was discussed at some length and the meeting was to a large extent a continuation of the annual discussions on soil conditioners (see *News and Views*, **258**, 483; 1975). There is growing interest in conditioners as they become more economic and are seen to be effective. Soil conditioning is based on several more or less basic phenomena. One is aggregation of soil particles, which itself depends on adhesion between particles and binding material. In nature, the adhesive product is humus, an ill-defined polymeric material originated by organic matter. Soil conditioners are chemically similar and indeed provide adhesive forces between soil particles. J. P. Quirk and A. M. Posner (Universities of Adelaide and Western Australia) and their coworkers presented recent data on polyvinyl alcohol, particularly with respect to adsorption behaviour on different soil colloids. It seems that there are significant conformational differences between polyvinyl alcohol adsorbed on clay surfaces and on the hydrated aluminium oxide, gibbsite.

Some fundamental studies on soil structure and strength were reported. J. N. Israelachvili and G. E. Adams (Australian National University) have measured the forces between two mica surfaces in $KNO_3$ solutions. The results exhibit all the essential features characteristic of an interaction involving repulsive double-layer forces and attractive van der Waals forces (see also *Nature*, **262**, 774; 1976). R. C. Foster (CSIRO Division of Soils) presented ultramicromorphological data on some South Australian soils. Soils from irrigated pastures contained large amounts of organic materials, mainly plant remains in various stages of decomposition. Phytoliths were common, but the soil largely consisted of highly compressed and distorted cell wall fragments containing much polyphenolic material. Layers of clay particles down to 0.1 m thick were trapped between the organic layers. Near living roots and also sometimes at considerable distances from them, polysaccharide mucigels up to 20 μm thick occurred.

J. E. Lloyd (University of Sydney) described a torsional shear box designed to measure the strength of seed beds. The identification of interest of participating engineers and agriculturists was here most noticeably achieved. In general the engineers at the meeting probably learnt more from the agricultural specialists than *vice versa*, but now that the engineers have decided that soil structure at the single particle level is important no doubt they will contribute more and more to this developing subject. □


## A hundred years ago

THE obstruction at the entrance to New York Harbour known as Hell Gate was successfully removed by an explosion of dynamite on Sunday afternoon without any of the disasters that many people anticipated. The mass to be removed was about 70,000 cubic yards. The number of borings was 3,500; the number of galvanic batteries 200, placed in an explosion-proof chamber at a distance of 200 feet from Hell Gate. The diameter of the borings was uniformly 3 inches, and the depth varied according to circumstances, from 3 to 11 feet. Fifty thousand pounds of dynamite were used. The shock was not perceptible, not even glass being broken. A vast volume of water and smoke was driven about fifty feet into the air. All the charges were exploded, and the rock is stated to have been thoroughly removed. The explosion was heard at a distance of ten miles, and a tremor like a slight earthquake was heard in New York City and the localities contiguous to Hell Gate. The work has been in progress for seven years.

EARTHQUAKES were felt on the night of September 12–13, at Salonica, and in South Italy, at Reggio. Two motions were observed in the last city, the first one being the most notable, both having taken place on the 13th, between 12 and 1 o'clock, local time. Another earthquake was felt at Salonica, on the 14th, at 5 o'clock in the morning. The Reggio commotions were propagated to Messina and vicinity. They produced quite a sensation, although not destructive.

THE splendid orang-utang in the Berlin Aquarium died last week of consumption. Its friend and playfellow, the chimpanzee, died the next day of consumption and grief. The young gorilla, the one living specimen ever brought to Europe, which we referred to some months ago, is still alive, but ailing. Hamburg not long ago offered 100,000 marks for the gorilla; it is feared that he will soon be sold for less.

From *Nature*, **14**, September 28, 496, 497; 1876.