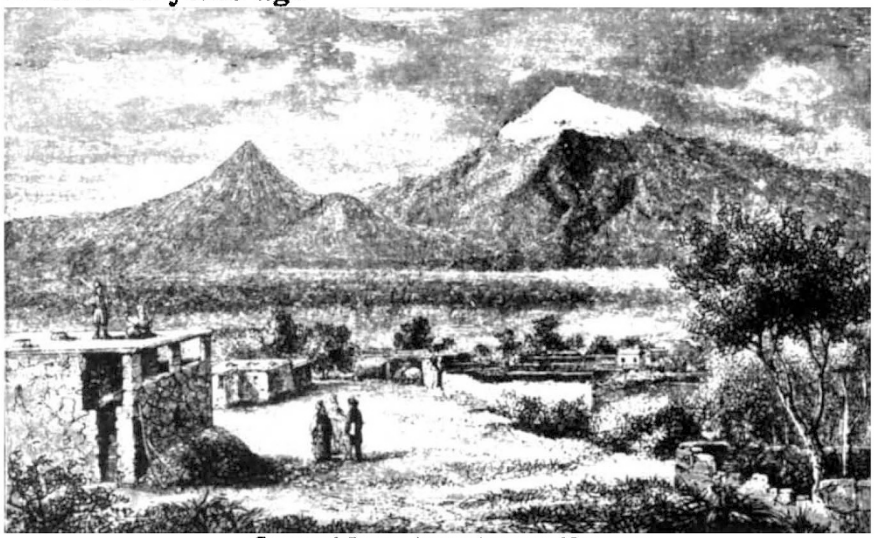
ducted in volunteer male prisoners in the USA in 1951–54 as part of a study on means of inactivating hepatitis virus in blood. The viral aetiology of hepatitis was in fact established by successful transmission experiments to volunteers first in Germany in 1942, in Palestine in 1943 and later by more extensive studies carried out in Britain and in the United States. Because a wide range of laboratory and other animals including monkeys, pigs, gerbils, jerboas, desert rodents and others had been inoculated with negative results permisison for human inoculation tests was sought and obtained (*History of the Second World War. United Kingdom Medical Series. Medicine and Pathology*, 252 (Eds MacNalty, A. S. & Zachary Cope, V.) HMSO, 1952). In the series of volunteer studies carried out in the USA in the early 1950s, serum samples from six blood donors, implicated in the transmission of post-transfusion hepatitis after a single unit transfusion, were each inoculated into groups of 10–20 male prisoners. Sera from five of the implicated donors induced hepatitis in recipients. The serum samples collected during these studies have now been tested by Hoofnagle *et al.* for evidence of infection with hepatitis virus type A and B, cytomegalovirus and EB virus. Two of the donor sera contained markers of hepatitis B virus and transmitted hepatitis B infection to all susceptible recipients, two of whom developed hepatic coma. The sera from the remaining three donors did not contain hepatitis B markers, but these sera were nevertheless infectious. A form of hepatitis was transmitted to nine volunteer recipients which could not be attributed to hepatitis A, hepatitis B nor to infection with cytomegalovirus or EB virus. The incubation period ranged from 18–89 d and the clinical illness was similar in most respects to hepatitis B. Of added significance was the finding of some evidence of persistent liver damage in one out of ten recipients who developed hepatitis type B and in two out of six volunteers who developed the unspecified type of hepatitis (non-A : non-B hepatitis).

In a recently completed survey on the efficacy of immunoglobulin (gamma gobulin) for the prevention of post-transfusion hepatitis, Knodell and colleagues (*Gastroenterology* **72**, 902; 1977) identified 44 patients with acute non-A : non-B hepatitis. Sixteen of the patients had persistent biochemical evidence of liver damage 6 months after the acute illness. In 10 patients the abnormality of liver enzymes continued for 1–3 years and liver biopsy in each patient revealed histological evidence of chronic liver damage. It was further observed that 9 out of 22 patients who developed evidence of chronic hepatitis received albumin solution as a placebo, whereas only 1 of 11 patients who were given normal immunoglobulin developed chronic hepatitis and none of 11 patients who received hepatitis B immunoglobulin. Further evidence for the existence of a third type of human viral hepatitis is provided by Dienstag and colleagues (*Ann. intern. Med.* **87**, 1; 1977) who investigated the cause of acute hepatitis in 45 patients admitted to a hospital in Los Angeles. There was no laboratory evidence of infection with hepatitis A, hepatitis B, cytomegalovirus or EB virus in 20 patients. It was noted that in nearly half of these patients infection followed the type of exposure traditionally associated with hepatitis B such as blood transfusion, plasmapheresis and occupational contact with patients.

These reports suggest the following: first, a carrier state of this newly recognised hepatitis agent since the infection is transmissible by blood transfusion (and probably by other routes) from apparently healthy donors; second, the infection must be common since pooled immunoglobulin seems to contain antibody as shown by the prophylactic efficacy of immunoglobulin in one study, and finally it seems that this infection may progress to chronic liver disease. The aetiological spectrum of viral hepatitis in man has thus been dramatically widened and there is an urgent need to develop specific laboratory tests for identifying this previously unrecognised virus or viruses. □

A hundred years ago



Great and Lesser Ararat from the North-east

So impressive a mountain, so long associated with man's faith and history, would have been appropriately placed among the most ancient landscapes of the earth's surface. Some scenes suggest only the changes of yesterday; others set us thinking of the earliest condition of our world. We naturally look for a kind of consonance between the venerable antiquity of the associations which gather round Ararat and the primeval character of the finds, on closer research, that while most of these ridges have received their latest upheavals at a recent geological date, they yet for the greater part belong originally to earlier periods of disturbance, some of them, indeed, bearing witness to many successive uplifts during a vast section of geological time. Yet further examination will bring before him evidence that along some of these lines of earth-folding, volcanic action has of old been abundant; and that the present Mediterranean volcanoes are but the lingering remnants of the chain of actively burning mountains which ran through Asia Minor and crowned the peaks of the Caucasus. And he will discover that just as there have been successive uplifts of the same axis or mountain-chain, so have there been widely-separated outbursts of volcanic activity during a long course of ages from the same focus of discharge.

In the middle distance is shown the alluvial plain of the Araxes. Below the snowy cone and icy cliffs of the Greater Ararat a deep cleft or recess appears with huge cliffs somewhat like the Val del Bove of Etna, and no doubt due to some of the volcanic explosions of the mountain. On the sky-line of this slope, towards the base of the larger cone, some of the late cinder-cones and craters appear. Some of these are still so fresh and perfect that they look as if they had been active only the other day and might blaze forth again to-morrow. The graceful outline of the Lesser Ararat rises on the left.

From *Nature* **17**, 10 January, 205; 1878.