

Case History of a Case of Probable Bone Marrow Anthracosis. D. Miller.
 Hygiene, 34, 1950-1951 (Dec. 1959).

A case history is presented in which aspirations of bone marrow, taken from both the sternum and iliac crest during examinations for an anemic condition, demonstrated a foreign material to be present. This material was presumed to be carbon on the basis of its appearance, its resistance to the action of strong acid, and after ruling out other possibilities. Although the patient had worked over 40 years in the manufacture of bricks and had a very heavy exposure to mineral dusts, he specifically denied any prolonged contact with coal dust. The resemblance to an incident previously described (1927) in the literature in which there was an anthracosis involving the bone marrow, is noted. Deposition of mineral dusts in extra-pulmonary sites, especially in the lymphatic drainage of the liver and spleen, has been shown to occur in some cases of pneumoconiosis.

-- APCA Abstr.

PHYSICAL ASPECTS OF THE ENVIRONMENT

Implications of Space Radiations in Manned Space Flights. W. H. Langham.
 Aerospace Med. 30, 6 (June 1959).

Based upon present physical measurements of ionizing radiations in space, 2 major radio-biologic-problem areas in manned space flights are suggested. These are: (1) the biologic effects of densely ionizing primary cosmic-ray particles and (2) the effects of the particulate radiation belts, the Van Allen layers, associated with the earth's magnetic fields. The dose from secondary radiations in the earth's atmosphere at an altitude of about 50,000 feet is only about 100 mrad per week in the northern latitude where it is at a maximum. The primary cosmic particles consist of about 80% protons, 19% alpha particles, and a nucleus of elements of atomic numbers greater than 2. Above the earth's atmosphere, the primary cosmic-dose rate drops to about 60 to 70 mrad per week. There is only inferential information regarding the relative biological effectiveness of this radiation, since no accelerators exist which are capable of producing particles in the laboratory analogous to the heavier high-energy components of primary cosmic rays. It seems unlikely that the existence of a heavy primary cosmic ray problem should be a deterrent to low-orbiting manned space flights of the near future. The rough estimate of the dose rate in the 2 Van Allen layers is 10 and 100 rads per hour and the thickness of the belts 2,000 and 4,000 miles respectively. Knowledge is needed about the characteristics of this radiation before the hazard may be evaluated and steps taken to alleviate it.

-- J. Occ. Med. Abstr.

Development of Heat Pyrexia. J. Gold.
 J. Am. Med. Assn. 173, 1175-1182 (July 16, 1960).

In a study of heat stroke, more than 250 observations were made on healthy adult human subjects. Data were obtained on body heat storage, sweat rate, sweat replacement, blood pressure, venous pressure, oxygen consumption, blood gas analysis, hemoconcentration, and hemolysis; and on cardiac output, cardiac shadows, and auscultatory and electrocardiographic findings. During extreme heat exposure there was an increased venous pressure and operational arteriovenous shunt (or its functional equivalent) in the presence of cardiac arrest. It is postulated that (1) the primary event in the circulatory collapse of heat pyrexia is not cardiac failure, (2) the cessation of sweating is the result of rising venous pressure, (3) older persons are more susceptible because of irreversible circulatory changes, and (4) the effective treatment may be the intravenous administration of saline solution together with rapid digitalization.

-- Editor's summary