Legion disease: Tracking a killer

It's ironic that while scientists pursue life on Mars and hold the potential to create new life forms with recombinant DNA, they're also tracking a human life-threatening entity of major proportions. What has killed 27 persons who attended the American Legion Convention in Philadelphia July 21 through 24 and has made 152 other conventioneers seriously ill?

The victims suffered high fever, malaise, muscle aches, respiratory complaints and headaches. Autopsies of those who died indicated viral pneumonia. Scientists from the federal Center for Disease Control in Atlanta joined Pennsylvania health officials in looking for a viral cause, particularly for the swine flu virus which purportedly may strike Americans this coming fall. They collected throat swabbings, garglings, blood samples, urine and fecal specimens from both living and dead victims as well as lung tissue from the dead victims. They submitted the biological materials to electron microscopy and to fluroescent antibody tests. Electron microscopy can magnify viruses 200,000 times. The fluorescent antibody test consists of putting antibodies to a particular virus in the presence of a biological material. If the virus in question is present, the antibodies will attach to it and glow. Neither technique revealed the presence of a virus.

Next the scientists used fluorescent antibody tests to check the materials for disease-causing bacteria, even looking for bacteria that cause diseases as exotic as plague and the deadly African lassa fever. No signs of a bacterium. What's more, the "Legion disease" did not appear to be spreading to persons who had not attended the convention, strongly suggesting that the culprit was not an infectious organism. So this week the search turned toward poisons, and here scientists are using techniques like gas chromatography, atomic absorption and neutron activation. At least one major class of poisons—heavy metals—should be ruled in or out by the end of this week, CDC officials told SCIENCE NEWS.

Meanwhile toxicologists around the United States speculate what kind of poison the killer might be. Allen Goldberg, a toxicologist with Johns Hopkins University School of Medicine, suggests a hard-to-detect weed killer could have caused the type of pneumonia the Legionnaires had, or perhaps a poison used in construction. Abraham Stolman, a forensic toxicologist at the medical examiner's office in Hartford, Conn., suggests that the victims may have drunk something from cadmium-plated cans. Persons have died in the past from drinking lemonade from such cans because the heavy metal cadmium is very toxic. "Who knows, it might even be rat poison." he says.

The strange thing, however, is that no Philadelphians, with the possible exception of a woman working in a bank across the street from the convention, were struck by the disease, and especially none of those working in the hotels where the conventioneers stayed, ate and socialized. If an environmental poison were the culprit, it seems that it would have struck a number of natives, particularly those working in the hotels, as well as the Legionnaires. Might the disease have been triggered by some kind of foul play? Stolman, who has had extensive experience in tracking the use of poisons in murders and suicides, doesn't think so. "It seems to be accidental more than anything else," he observes. "If anyone had anything against the American Legion, they'd have to do the whole group in."

This is not necessarily the case, of course. Even more suggestive that the disease may not have been an accident is that a similar fever struck the Odd Fellows' national convention two years ago September in Philadelphia. That outbreak killed 3 conventioneers and hospitalized 19 others. On the other hand, both the Odd Fellows and the Legionnaires stayed in the same Philadelphia hotels, including the Bellevue Stratford, the Legionnaires' main convention hotel, and both could well have been poisoned by a chemical escaping accidentally from one of these hotels.

The CDC scientists are as suspicious of the immediate environs of these hotels as they are of the hotels themselves since one of the Legion convention victims was a bus driver who was in town for only seven hours. However he, like most other Legion conventioneers, watched the Legion parade from the sidewalks outside the hotels. According to David W. Fraser, CDC's chief disease detective, there are grates in the sidewalks, trees, a subway entrance and a median strip in the road near the Bellevue Stratford. Any of these openings or objects could be the source of a toxic substance that could make people sick who stood near it for a long period of time, say while watching a parade, but leave others unaffected if they were just passing by or waiting for a bus. □

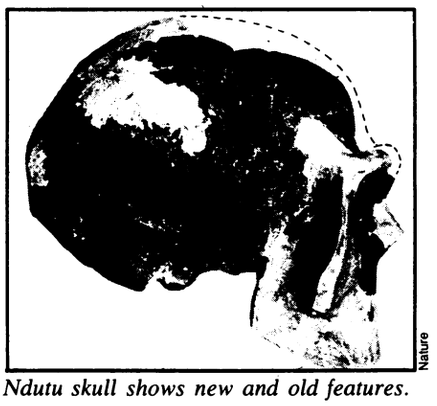
Another enigmatic skull from East Africa

The old missing-link theory has fascinated amateur anthropologists for years. Since Darwin's time, at least, searches and false claims have been made for the so-called missing evolutionary link between *Homo sapiens* and our more primitive ancestors. Serious researchers, however, have tended to discount the missing-link theory in favor of a more gradual evolutionary trend in which a distinct intermediate species would not be necessary.

Even if there is no missing link, a skull has now been recovered that seems to fit that description and may help fill a gap in human evolutionary theory. The skull was discovered in the fall of 1973 by A. A. Mturi of the Tanzanian Department of Antiquities. Since then, it has been carefully cleaned and reconstructed by R. A. Clark of the Johannesburg Medical School Department of Anatomy. Clark describes it in the Aug. 5 NATURE: "The cranium is remarkable in that it seems to form an evolutionary link between *Homo erectus pekinensis* and *Homo sapiens*, having features in common with both."

The shape of the occipital bone, the form of the mastoid region, the almost vertical forehead, the inferred bulge over the eyes and the thickness of the vault all suggest *Homo erectus*. Certain characteristics of the parietal bone, the more vertical sides of the vault, the presence of a styloid process and the absence of a sagittal torus (ridge along the top of the skull) suggest *Homo sapiens*.

The skull was found during excavations around Lake Ndutu, not far from Olduvai



Ndutu skull shows new and old features.

Gorge in Tanzania. Preliminary dating suggests that the site may have been occupied between 500,000 and 600,000 years ago. Among the 270 pieces of stone and animal material excavated at the site were 20 recognizable stone tools and 94 animal bone fragments, including horns and antlers. Mturi says this "seems to suggest that the area was probably a butchering site, though the presence of a hominid skull among the collection in such a context would be rather enigmatic."

The site, of course, isn't the only enigma. The question must now be answered as to how the Ndutu skull fits in with present theories of human evolution, if it does. The distinct characteristics of this skull may, says Clark, "warrant the creation of a new subspecies of *H. erectus*." This will be determined following full comparative studies. □