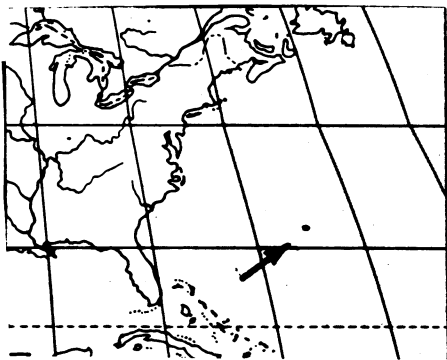


Then there was Schirra's cold, which his cabinmates appeared to catch. By the second day in orbit, the astronauts were consuming tissues, aspirin and decongestant tablets. The colds appeared to have little if any effect on the flight, although the astronauts' chief physician, Dr. Charles Berry, admitted that the behavior of microorganisms under space conditions is only sketchily understood.

Relatively little is known, in fact, about man's response to space flight, despite some 2,000 man-hours spent in orbit by Mercury and Gemini astronauts. Past flights have revealed losses of red blood cells, for example, equivalent to as much as a pint of blood. This may be in some way connected



Planned splashdown: off Bermuda.

with the pure oxygen atmosphere, but if so, the mechanism responsible is unknown. Calcium loss has also been common; although it has not caused permanent damage to any astronauts so far, the calcium balance takes so long to build back up after a flight that some remedy may be a necessity for long-term flights such as trips to Mars.

The Apollo astronauts were wired with electrodes to monitor their heart rates and respiration, but only for one man at a time. For the one- and two-man Mercury and Gemini spacecraft, each man could be monitored continuously. Keeping continuous track of the three-man Apollo crew, however, would take up too much space in the available communications band. As a result, the astronauts had to turn a switch in the cabin every eight hours to select a new subject.

Colds in space and limited health data notwithstanding, the next Apollo flight may well bring the moon for Christmas. One of four plans under consideration calls for as many as 10 orbits around the moon before returning to earth.

The flight after that will be the first manned test of the tricky and troublesome lunar module, and a flight or two later could land the first men on the moon.

XYY

Extra chromosome in court

Australian laborer Edward Hannel stabbed to death a 77-year-old widow. The jury this month acquitted him on grounds of insanity.

Daniel Hugon strangled a 62-year-old French prostitute in the Pigalle Hotel. The jury found him guilty last week but thought he should not be punished severely. He was sentenced to seven years in prison.

Both murderers, genetically speaking, are supermales. By some little-understood mistake of nature, each man was born with an extra male sex chromosome, which scientists recently have associated with a tendency toward crime.

These two cases mark the first trials in which a man's chromosomes directly confronted the law, and are expected to have world-wide implications for lawyers and geneticists alike. "As far as I know this is the first time a man has been acquitted on a murder charge because of his chromosome construction," says Dr. Digamber S. Borgaonkar, referring to the Australian case.

The issue has yet to be raised in U.S. courts but may come up soon when Richard F. Speck, convicted killer of eight Chicago nurses, appeals his death sentence. Speck also has one male sex chromosome too many.

Asked if he thinks this abnormal chromosome pattern is a justifiable defense of crime, Dr. Borgaonkar, head of the chromosome laboratory at Johns Hopkins University, replied, "I don't know yet. I haven't enough evidence to answer that." But if it is used, he believes such criminals should be remanded for psychiatric care, "not just released to the streets."

So-called supermales have an XYY chromosome pattern, one female or X chromosome inherited from their mothers and two male or Y chromosomes from their fathers. Normally, a man has one X and one Y. (Women have an XX chromosome pattern. There seems to be in women no corresponding chromosomal aberration and genetically related tendency to crime.)

After about three years of study of some 100 XYY men in prisons and mental institutions here and in Europe, a characteristic picture of a very tall, gangly, aggressive social misfit with a low intelligence quotient emerges, though Dr. Borgaonkar emphasizes that there is no hard and fast pattern. About 10 or 12 XYY's of average height are known, and he is currently working with an XYY man whose I.Q. is high—125. A search for XYY's among very tall basketball players and

other athletes was fruitless. And though there are estimates that one man in every 300 may have this genetic abnormality, Dr. Borgaonkar insists that such figures have little validity at this point because testing has been limited.

Nevertheless, he finds a valid association of the XYY syndrome with behavioral problems (not necessarily criminal), saying preliminary evidence shows that very few XYY persons have relatives with either psychological or criminal records.

Whether XYY males are really psychiatrically different from other men remains to be known. Some of the institutionalized XYY's who have been studied come from broken homes and poor environments that could account for their criminal records and antisocial behavior. The fact that many XYY's are unusually tall could also account for their adjustment problems.

The XYY chromosome syndrome apparently bears no relation to physiological disease, although high hormone levels and unusual heart patterns have been detected in a few such persons.

Though the legal picture is clouded by lack of firm scientific data and by lack of extensive precedent, Harold Ungar, an associate of the famed Washington criminal lawyer Edward Bennett Williams, observes that no single factor constitutes absolute defense. But he predicts this genetic abnormality will prove to be important in criminal trials.

When the defense relies on a man's mental condition, the law asks two questions. Is he mentally defective or insane? Did the condition cause him to commit a crime? "Often," Ungar points out, "we never get beyond the first question. But if a defendant has a peculiar genetic problem, we'd be more likely to get quickly from question one to question two."

From a lawyer's point of view, the jury's attitude plays as great a role as any definitive scientific testimony. "In a practical sense, the XYY condition may be important," Ungar says, "particularly if the man is accused of a bizarre or bloody crime."

If the crime is bizarre and the lawyer can prove that there is something bizarre about the defendant, the jury is more likely to accept a plea of insanity than it is if the crime was cold-blooded and well-planned. Lawyers find that even if a psychiatrist testifies that meticulous planning is a symptom of a man's derangement, it is often difficult to sway the jury, but the clear and unusual circumstance of an extra sex chromosome may be more convincing.