

imprinted on the American psyche. If the shoot-out still flavors the masculine ideal in this country, it can perhaps be changed.

Gun ownership may be viewed as a masculine fashion comparable to gambling, heavy drinking, dueling and jousting, contends Dr. Humphrey Osmond, director of the bureau of research in neurology and psychiatry at the New Jersey Neuropsychiatric Institute. And, he says, like any other fashion, it can be changed by fashionable leaders.

Dr. Osmond rejects the Freudian notion that guns represent male virility and therefore would be difficult to uproot from society. If that were true, then, according to the psychoanalytic view that women suffer from penis-envy, they should also be very keen on guns. "But they are not," says Dr. Osmond.

Dr. Berkowitz can see no reason why American men should be more susceptible to the male symbol than men of other nations where guns are less prevalent.

"Rather than perceiving this oddity in terms of some gigantic flaw in the Republic," says Dr. Osmond, "I think we would be far better advised to see it as one of those peculiar and dangerous habits which many nations have developed from time to time."

Men have always been given to romantic notions about physical valor and bravery, he explains.

Byzantine youths during the time of Justinian instituted racing rivalries between two factions named the Blues and Greens. Over the years, the betting game took on political tones and before it ended it resulted in civil violence verging on war.

Only 200 years ago Englishmen felt compelled to go about armed in readiness for a duel. Political figures were in danger of assassination not by a lone gunman, says English-born Dr. Osmond, but by hired swordsmen posing as duelists. "Today the man who goes dueling in either Britain or the United States would be considered not brave or honorable but silly, irresponsible and barbarous," he says.

Gambling, once a sign of masculinity, has met a similar fate, as has heavy drinking. Cigarette smoking is fast losing status as a sign of sophistication. Researchers studying the prevalence of smoking have found the habit in decline among the educated, upper middle classes.

The point is that all these habits, whether rooted in fashion or not, represent quite serious medical and social hazards. The same is true of widespread gun ownership.

Dr. Berkowitz has found that the very presence of a gun serves to pull out aggression in the angry individual. In his well-known experiments on col-

lege students (SN: 10/14/67, p. 381), Dr. Berkowitz first made them angry, then offered them the chance to administer electric shocks to each other. The students gave stronger jolts when rifles were in the room than when they were not, though they denied the difference.

This effect does not work on adults who aren't angry, says Dr. Berkowitz, but research indicates that children may be more susceptible. A child given a toy gun later displays stronger aggression whether or not he is angry, says the psychologist.

A cause-and-effect relationship between the availability of guns and high homicide rates cannot be established. But the correlations are strong. Compared to other countries, the United States has a very high homicide rate—10,000 a year, of which 6,500 are committed with guns. By contrast, England, with a quarter the population of the U.S. and with strong gun controls, has about 200 murders a year, 30 or so with guns.

Gun measures now under consideration by Congress would not disarm the American people who currently own an estimated 50 million to 200 million private firearms. Assuming that few women own guns, this means that some 50 million adult men own an average of one to four guns apiece.

"This is simply beastly behavior," says Dr. Osmond, and he suggests a means of speeding a transformation in cultural fashion.

Women, preferably high status, fashionable women, are the key. They can redefine masculinity and make the American gun toting male appear "not merely unheroic but impotent and absurd," says Dr. Osmond. "He can be apologized for, made fun of and encouraged to put his energy in other directions." Substitutions, such as non-violent games requiring dexterity, "can and must be found," says Dr. Osmond.

Though women have not often taken a direct hand in changing men's violent,

valorous behavior, there is some precedent for it not only in "Lysistrata," but in the better documented case of Eleanor of Aquitaine, queen of a medieval duchy in southwestern France.

Returning from the Crusades with a new appreciation for civilized manners, Eleanor set about changing standards among the smelly, quarrelsome men of the court. "She insisted that these overgrown stable boys and brawlers smarten up. They were forced to wash, clean their nails, comb their hair, eat decently and be less quarrelsome," says Dr. Osmond. In a very brief time, the woman wrought a "remarkable" transformation in male fashion.

More recently, the British in Malaya substituted boar hunting for head hunting through the prestigious influence of the colony's King and Queen. The secret is "using high status figures who set up new standards of excellence," according to the psychiatrist.

Women in the United States have so far abdicated their responsibility in helping to change the dangerous games and habits of American men, he contends. If they do not choose to remain silent, they have two alternatives: "They can join men in warlike acts and help annihilate the human race or they can exert a very great influence on men's warlike behavior."

In regard to gun toting, says Dr. Osmond, "I suspect that few people have realized that this relatively small matter could have so great and damaging effects."

Europeans who have lived through periodic bloody convulsions now point the finger at the United States. But Dr. Osmond believes their greater caution with guns may be attributed to the painful shocks of two world wars on their own home ground. "Violence is maintained by great romantic ideals," he says. "You've got to be a glutton for punishment to maintain the glamor after picking up pieces of bodies in the streets."

PHARMACOLOGY

Wobbly myth of the standard dose

The development of a new drug, from first conception to the pill bottle on the druggist's shelf, is supported by the most refined theory and best laboratory techniques available. But the whole exact structure rests on a wobbly myth: the myth of an average human being, for whom a standard dosage of any drug can be prescribed.

The fact is that the same dose of the same drug given to individuals of the same build, sex, age, and a dozen other characteristics can produce wildly different levels of the drug in the patient's blood.

That's why one of the sorest needs in medicine today is for new techniques to monitor and measure the effect of a drug on an individual.

There are indications that the need may soon be met. A conference of scientists from universities, Government research agencies, and the drug industry, at the National Bureau of Standards in Gaithersburg, Md., has laid out a wide range of esoteric physical techniques to study the metabolism of drugs—what happens to drugs when they enter the body.

Out of these techniques could come

a method to test a drug's absorption in an individual patient right in the doctor's office—if resistance from private practitioners can be overcome.

Among the techniques discussed were gas-liquid chromatography, the separation of particles according to their differing speeds of diffusion; radioactive labeling aiding the tracing of drugs and their metabolites through the body; radioautography, in which a thin slice of radioactive-drug-labeled tissue is placed against film, exposing it in a pattern which reveals the distribution of the drug in the tissue; and fluorescence spectrometry, oscillographic polarography, X-ray diffractometry, nuclear magnetic resonance and mass spectrometry—all sophisticated techniques traditionally in the physicist's, not the physician's arsenal.

Most physicians will maintain hotly that their prescription of a drug for a patient is based on long training and experience; and they are right, in most instances. But on top of the different absorption rates among similar patients, human beings may react very differently to the same blood levels of drug. To cap the confusion, identical doses of a drug given to the same individual at different times may have a different therapeutic effect.

Given the variation in effect of standard drug doses, it would be ideal if instruments could be put in the doctor's office which would directly measure not simply blood levels but the intended effect itself.

According to Dr. George J. Cosmides of the National Institute of General Medical Sciences, a member of the Drug Research Board of the National Academy of Sciences and one of the organizers of the Gaithersburg meeting, the techniques and instruments already exist. What is needed is miniaturization of both the hardware and the price tag.

Dr. Cosmides predicts that such miniaturization is coming and will revolutionize the prescribing of drugs. He adds, though, that such a prediction made at a medical meeting would get him laughed down; doctors who learned to prescribe by the seat of their pants are more comfortable sitting down than paying for newfangled machinery.

His pessimism is backed up by reactions from private physicians. Many admit freely that dosage is not an exact science, but they insist that it need not be. One private practitioner says that the dose for most drugs is not critical; a doctor simply prescribes what he knows to be an amount in excess of that required for the therapeutic benefit he wants.

Another doctor agrees. He says there is little need to achieve a minimum dosage in most cases because few of the often used drugs are very toxic.

HEALTH PROGRAMS

Super-bureaucrat challenged

President Johnson's attempts to reorganize the executive departments have often run into trouble from a Congress organized along its own lines. Executive changes mean power changes in Congressional relations.

Last week, the President was trying again. As part of the long-pending third phase of the reorganization of the health side of the Department of Health, Education and Welfare (SN: 4/13, p. 353), he implemented a decision to make HEW Secretary Wilbur J. Cohen coordinator of the sprawling, \$15.6 billion health and health research programs operated by some 15 Federal agencies. But the task he laid out will tax even Cohen's abilities as a super-bureaucrat—abilities honed over several decades of Federal service during which he has been principal architect of many of the programs now identified with the Great Society.

Cohen, on paper at least, will be the Government's policy-maker for such questions as:

- The rationality of the doctor draft in relation to the health needs of the rest of the nation.
- The suitability of the health research programs of the National Aeronautics and Space Administration, the Atomic Energy Commission and the Veterans Administration, in relation, for instance, to the needs of his own department's Regional Medical Centers (heart, cancer and stroke) program.
- The wisdom of policies that make available to veterans, through Veterans Administration hospitals, health care more sophisticated than that available to the public at large.

Cohen's ability to make decisions stick in these and similar areas will depend on his ability to win Presidential support, issue by issue, as well as to deal with the Congressional committee structure. These are problems which have hamstrung other coordinators.

Within his own department, he may have more success. The establishment of the new Consumer Protection and Environmental Health Service, for example in HEW, should give him little trouble. But even here he will have to cope with such watchdog committees as the Subcommittee on Intergovernmental Relations which, under Chairman L. H. Fountain (D-N.C.), regards itself as guardian of the militancy of the Food and Drug Administration and critic of the form, if not the function, of the National Institutes of Health.

Highly organized pharmaceutical manufacturers have expressed interest in having Dr. James A. Shannon's National Institutes of Health become scien-

tific monitor—a kind of court of last resort—over FDA regulatory decisions regarding drug matters.

Shannon, who has been seeking leverage for several years by which to make money available for expanded programs in pharmacology and toxicology, is proposing that NIH have some \$50 million for an FDA-monitoring role.

Any such role now, since it would require revision of the Food, Drug and Cosmetics act by Congress, would come principally under the eye of Representative Fountain, who is wary of any move that might diminish FDA's new-found effectiveness.

Food and Drug, then, remains essentially unchanged under the reorganization, despite the fact that it becomes, rather than an independent agency in HEW, a piece of the broader consumer agency which includes as well the Air Pollution Control Division, radiological health functions, urban and industrial health and the Communicable Disease Control Center in Atlanta. Charles C. Johnson, Jr., assistant commissioner of health for environmental services in New York City, and a sanitary engineer by training, will head the new agency.

Under the new arrangement, plugged into FDA are likely to be such functions as the supervision of milk and shellfish production which had been Public Health Service functions. And FDA will seek its own ways to take advantage of the toxicological and pharmaceutical capabilities now widely scattered in the divisions of NIH, but ultimately to be coordinated.

WORLD HEALTH

Debugging the jet set

According to international quarantine regulations, all international flights originating in countries where disease-carrying mosquitoes could be aboard should be sprayed before they land. An insecticide from an aerosol bomb, most often DDT, is used.

This procedure, even if followed to the letter (as it often is not), still leaves the possibility that many insects jet from one country to another. One reason is that the aircraft's air conditioning system removes the aerosol spray before it has had much chance to affect mosquitoes or other insects.

World health authorities have now approved a system that should end this problem:

Tomorrow's jumbo jet planes and their passengers will be disinfected in flight by a 30-minute automatic vapor