dark secret, but there are the inevitable hints, clues and interpolations, many from civilian applications, to give an idea of what is going on.

The biggest problem is engine noise. Steam created from the reactor's heat turns a turbine connected through a rumbling, clattering gearbox to the propeller drive shafts. The quiet sub will eliminate the gears by using the turbine to create electricity to drive a variable-speed electric motor.

Anything with moving parts makes some noise, however (including the sub itself slipping through the water), and most of it is detectable by sonar.

One way of cutting down vibration from machinery is to isolate it from its surroundings. Recording studios and test chambers requiring complete silence have already been built by suspending them from their outer structures by springs, or by floating them in trays of oil. Both techniques, Navy researchers reluctantly agree, could be applied to keeping vibration in, as well as out. Floors and walkways, even whole rooms, could be isolated in similar fashion.

Other isolation techniques involve balancing equipment on a cushion of air or in a magnetic field. So far, these methods have been applied largely to minimize friction in bearings, but they could also serve to filter out certain frequencies of noise. There are instruments capable of detecting both whooshing air and magnetic fields, but the elimination of the larger machine sounds may outweigh that disadvantage.

To reduce the quiet sub's self-noise (it roars its way through the water even when gliding on momentum alone), researchers are studying coatings to make the hull slip more easily along. A highly active Navy program that may give them a boost is one aimed at reducing the drag of torpedoes, using a plastic-like coating that simply dissolves away instead of offering resistance.

Another protective coating believed to be under study would absorb part of the energy from an enemy's probing sonar beacon, reducing the strength of the returning signal.

Active sonar, however, which sends out its own signal and listens for the echo, is not the main problem. "It's passive sonar that is really the enemy of the submarine," says one investigator. One passive sonar operator recently identified a particular Russian submarine by name just from listening to its noise signature, because he knew the sound of its broken ice-cream-making machine.

A boon to the quiet submarine's designers may well be a technique called thermoelectric cooling, in which electric current causes a sandwich of dissimilar materials to grow hot on one side and cold on the other. "A submarine is a natural candidate for cooling by thermoelectricity," says an engineer with a major Navy contractor. "The whole outer hull could act as a heat sink, and there would be no recirculating pumps or moving parts at all." The same method could replace countless cooling fans and blowers in various pieces of electronic and other equipment. Such a system is already being designed for the military for use in surface vans.

The designers agree, however, that it is impossible to make a submarine that is completely silent. Instead, the craft's noises must be made to blend in with the acoustic scenery. Almost everything underwater makes noise, much of it audible to passive sonar. Shrimp click their claws, lobsters rasp, rocks rattle, waves roar, and fish grunt, drum, whistle and even gnash their teeth. In addition, many marine denizens make sonar-like beeps, clicks and toots when looking for food, companionship or—like the human sonar operator—the enemy.

The problem in trying to make a sub sound like a local resident, says a high official in the Navy's sound-investigation program, is that living creatures make noises that are essentially random—a characteristic that is hard to duplicate with, for example, a smoothly whirring air conditioner.

BLACKSTONE RANGERS

Gang or emerging social order

The Blackstone Rangers is a gang on the South Side of Chicago with a membership ranging from 2,500 to 3,000, aged 12 to 23. Since 1959, when it first emerged as an identifiable group, the Rangers have been building spontaneously a political structure that intrigues social scientists.

Although an illegitimate group, existing outside established authority, the Rangers have been evolving an internal organization, a power base and community concern that seems to represent an emerging indigenous political leadership.

Ghettos are usually described as leaderless and socially disorganized. The process by which human groups create social order from disorder is not well understood, but those working in community mental health and acquainted with the Rangers believe this group may have begun such a process.

The Blackstone Rangers are currently under fire from Senator John McClellan's investigating subcommittee of the Senate Government Operations Committee. They are being charged with extortion and misuse of Government money, are labeled a Black Mafia, and accused of throwing marijuana parties and hiding an arsenal in the church used as a training center.

Their backers in the Office of Economic Opportunity have yet to have their day in court. That comes this week.

There has already been testimony before the committee on attempts by the gangs unit of the Chicago police to entrap the Rangers.

McClellan, an Arkansas Democrat, is a critic of OEO-type programs. A source of McClellan's outrage at this time, is a Federal grant of nearly a million dollars for a training program in the South Side, using Rangers in its planning and execution.

Only now and then have there been hints as to why the OEO chose to risk this kind of money in a venture with the Rangers.

Such grants are usually explained in terms of a social experiment. As the reasoning goes, no one has ever found a way to turn gangs around—an establishment term for making them constructive—except by destroying them. Possibly an effort involving their active participation would succeed where head banging had not.

Actually the situation is more complicated. For reasons no one understands, the Blackstone Rangers began turning around before the Government ever came in. While they continued active warfare with a rival gang, the Disciples, up to the time of the Federal grant in 1967, when a mutual pledge ended the war, the Rangers were at the same time working for some community improvement.

Twice they kept the South Side quiet while other parts of Chicago rioted. During the 1966 riots, Ranger leaders held a dance every night, with mandatory attendance from the rank and file. The dances lasted until curfew, which the Rangers enforced. Last April, following Dr. Martin Luther King's assassination, 1,000 Rangers manned the streets, keeping the peace (SN: 4/20, p. 389).

They can and do act in the community interest. The Rangers have been weeding out prostitution from the South Side, cutting down on hard narcotics traffic and organizing clean-up campaigns. When the hearings broke, the Rangers were negotiating with the Public Health Service to run a campaign against venereal disease; negotiations have come to a halt.

Dr. Richard Davis, dean of the school of education at the University of Wisconsin in Milwaukee has known the

Blackstone Rangers for three years.

He believes the Rangers represent something very new in Urban America. The political power of the Rangers is not duplicated by other city gangs, he says. And, he adds, "They are really representative of the community."

As an organization, the Rangers function with rules and regulations. Fighting between members is prohibited and when this norm is violated, the Ranger is punished. The group holds formal meetings to decide on action and then acts as an organization. This contrasts, says Dr. Davis, with the more typical small gangs which exist primarily for social reasons rather than political action.

For all their constructive action, the Rangers are no choirboys. They have grown up in violence, engaged in warfare with rival gangs and watched authorities engaging in illegal practices.

In mental health terms, this means that the healthy individual is not the one who adopts straight, square values, unrealistic to his environment. "For those guys to act in terms that would be considered healthy by the mainstream, they would be either sick or dead," says Harry Cain, chief of the center for study of metropolitan and regional mental health problems at the National Institute of Mental Health, Bethesda, Md.

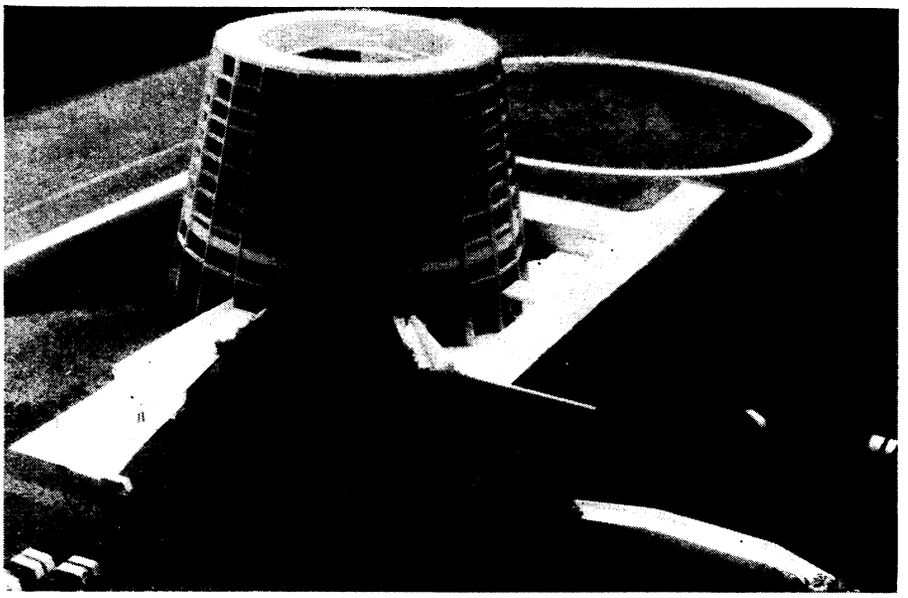
In getting funds, for instance, the Rangers have considered a number of alternatives—not all of them legal, says Dr. Davis. But when fund-raising threatened the community on one occasion, the Rangers put a stop to it. They had asked members to pay dues; however, most of the members were unemployed and they began squeezing money from non-Ranger youths. The practice was creating hostility in the community and the organization prohibited extortion. To make the ban feasible, they simply stopped collecting the dues.

When The Woodlawn Organization, a unit of 100 civic, religious and business groups with wide experience in community development, won an OEO grant to use in the South Side ghetto, the Rangers accepted it willingly. They were aware of the need for employment assistance and TWO was aware of the need to use their leadership as an integral part of the program.

The current hearings threaten, if they have not destroyed, the venture—which was admittedly a risky one. At the moment OEO has taken the proposal for renewed funds under review, and has given two small extensions to maintain a skeleton staff in the South Side. The outcome may well depend on testimony planned by OEO for next week's appearance before the McClellan Committee.

WESTON MONEY

High energy politics



Argonne

Tabletop model of Weston facility. Accelerator will be under ring in background

The fortunes of the big Weston, Ill., accelerator were going steadily downward until last week, when science, politics and civil rights combined to improve them.

The Atomic Energy Commission originally wanted to spend $77 million and start construction this year. The White House wouldn't even let AEC ask Congress for more than $25 million, however. And by the time the House of Representatives was finished, the appropriation had been trimmed to $7.1 million.

Besides imposing rigid economy, the House also forbade AEC to spend any money on construction at this time.

At this, the AEC took alarm. It had recruited a staff of experienced accelerator scientists headed by Dr. Robert R. Wilson, formerly of Cornell University, in the expectation that construction would begin, and it was afraid that these people would drift off to more rewarding positions if they were restricted to design studies.

The commission had one more chance—the Senate Committee on Appropriations—and it decided to make a push there for restoration of $7.9 million—to bring the total to $15 million—and removal of the restriction on construction.

It had powerful and successful support:

- Senator Everett M. Dirksen (R-Ill.), Minority Leader of the Senate, wrote to the Appropriations Committee asking it to restore the full $25 million.
- Representative Melvin Price (D-Ill.), chairman of the Subcommittee on Research, Development and Radiation of the Joint Committee on Atomic Energy, wrote, urging "that at least a minimal construction program should be undertaken during fiscal year 1969."
- Clarence Mitchell, director of the Washington Bureau of the National Association for the Advancement of Colored People wrote pointing out "the danger that the project will not be able to offer employment to other than professional and scientific personnel because of House restrictions. . . ." The project has a program in which men from poverty areas had been trained in running of earth-moving equipment, a trade that could earn them about four dollars an hour, if there were any construction to do.

In response to all this the Senate Committee recommended raising the budget to $20 million and giving the AEC authority for preliminary construction of the 200-400 billion-electron-volt machine.

A Senate-House conference to adjust differences between the House and Senate bills is a final hurdle, but the Senate Committee, in putting in $5 million more than the AEC was asking for, seems to have given negotiating room.

Atomic Energy Commissioner Gerald F. Tape says, "We have the two extremes in money, the House $7 million and the Senate $20 million. Experience shows these things usually end up somewhere in the middle. I'm hopeful that there will be some compromise that will allow some construction to go on."