

indicator

Out of the libraries
stride the slaughterers.
The mothers stand
clutching their children, and
stare searching the skies numbly
for the inventions of scholars.

Bertolt Brecht

Murphy Talks Shop

The following is an extract from an interview between the Indicator and George Murphy, Vice-Chancellor and Dean of Student Affairs.

INDICATOR:

Could you describe what you think the role of the university is in American society and specifically, which activities (i.e., research, graduate work, undergraduate work), you think are most important and why.

MURPHY:

The role of the university seems to be changing at this point in time and neither the direction of change nor the eventual outcome is entirely clear to me. The American university, traditionally, has tried to respond to a series of roles described for it by society within a context of higher education, which goes back several hundred years. It's been a process of adjusting then existent societal demands to the traditional roles of the university as an ongoing institution. The problem that this changing role now suggests is that society is putting many demands on today's university—demands which are in many ways conflicting. The need for the university to interpret those demands into its own terms is perhaps more important than it's ever been and more difficult than it's ever been. Let me suggest a couple of examples to make clear what I am saying.

It was easy enough for the university of the late 1800's to address itself through schools of agriculture, through agricultural extension to questions of how do I get more and better milk from my herd of cows and how do I grow bigger and better ears of corn, and all of the kinds of responses which the Morrill Act and the Whole evolution of an agricultural society put to the university. Additionally, I suspect, from something of an historical perspective, there was a uniform sense of purpose, there was an agreement on what the nation was about and therefore what the university should be about.

I think to a very large extent this continued into the early 1900's as schools of commerce and business administration addressed themselves to the kinds of issues which the national purpose, if I may use that phrase in quotes, then suggested. Corporate structure, business management, accounting techniques, and the beginning of industrial psychology, became legitimate goals of the university.

The difficulty now, is not that those kinds of demands have changed in their nature so much as the kinds of issues which are now being put are so much more difficult to resolve. It's no longer how do I organize my plant or how do I breed my cattle. Questions now address themselves to war and peace, poverty and race, and the kinds of issues which do not lend themselves to problem-oriented research of the traditional university. In addition they come a good deal closer to home, on a good many more toes, than the kinds of easier questions the university is used to addressing itself to. The absence of any real national purpose, or I guess more properly, the combination of national purposes which we now seek, makes priorities very difficult to assess, in terms of what society

(continued to page 2)



The University at War

NOTE: During the summer the SDS did a research project that had as its goal finding out in what ways the university is connected with the military and the war in Viet Nam. This is the first article in a series that reports the results of that project.

The purpose of the SDS project on government financed research at UCSD is not to create feelings of horror and indignation among the student body—we are not concerned with purifying the University. Rather, the research project was the way in which we discovered—and feel it is essential to pass it on—just how intimately universities are involved in the policies and goals of the United States government. We have begun to see stopping military recruitment and ROTC on campuses can only be the beginning of a movement against US imperialism. This series of articles, published under the title 'THE UNIVERSITY AT WAR', will demonstrate, at least in part, the 'uses of the university' in order to lay to rest the notion of the ivory tower 'house of the mind', to dispel the myth of this value-free, neu-

tral university and to show that the university's function is to perpetuate the economic and social order of the society and to give the technical expertise necessary to implement the ruling class's policies around the world. Specifically we will be dealing with the relationship between the Department of Defense and the University.

INTRODUCTION

Like any other institution in the US, the University has done its share to perpetuate imperialism.* By training officers for the military, by defending military recruitment and by having many

*Imperialism: Imperialism is the name given to that stage of capitalism in which production is concentrated in monopolies, banks assume major roles in financing, massive export of capital occurs i.e. investment in underdeveloped countries, and the world is divided up into 'spheres of influence' by the capitalist powers. It is the system that—in order to survive—must make colonies of other countries, use their raw materials and land, control their economy, enslave their people.

of the faculty actively engaged in Department of Defense research, the University is significantly aiding the war in Viet Nam and is a willing tool in the hands of big business, the government and the military. This is what 'university complicity' means. The University is not the 'house of the mind' that the administration and faculty pretend it is; it is more than the 'pure' research center that graduate students and science faculty often think it is. The University is what society's controlling interests want it to be.

Throughout the US's involvement in Viet Nam in the 50's and 60's, government leaders continually proclaimed that US forces were needed there to protect 'our interests'. What 'our interests' are and how the US attempted to protect them enables us to understand capitalist society in ways that the liberal administration—whether government or university—will attempt to cover up.

WHO OWNS WHAT

A relatively small group of people de-

(continued to page 3)

The University at War cont.

side what the interests of the United States are around the world. Less than one half of one percent of the population of the US controls the economic and hence political activities of this country. *Fortune Magazine* lists 500 of the biggest industrial corporations (out of 300,000) which account for 50% of the industrial profit in the US; the 50 biggest banks (out of 14,000) which account for 35% of the bank assets in the US; the 50 biggest life insurance companies (out of 1,650) which account for 85% of the insurance assets. The often overlapping boards of directors and the top management of those corporations—those who own and control the means of production—are the ruling class.

The previously mentioned relationship of ownership and control of the means of production defines the ruling class. They are 'a social upper class which owns a disproportionate amount of the country's wealth, receives a disproportionate amount of a country's yearly income and contributes a disproportionate number of its members to the controlling institutions and key decision making groups of the country.'¹ (These paragraphs are intended only to suggest the idea of the American ruling class. For more detailed and concrete analysis read Domhoff,² Mills,³ and Sweezy.⁴) Even though there may be disagreement within the ruling class on various issues (Dem. vs. Rep., pro-ABM vs. anti ABM) they are inevitably concerned with preserving their position of control and maximizing profit. They have an interest in the success of the existing economic system as a whole.

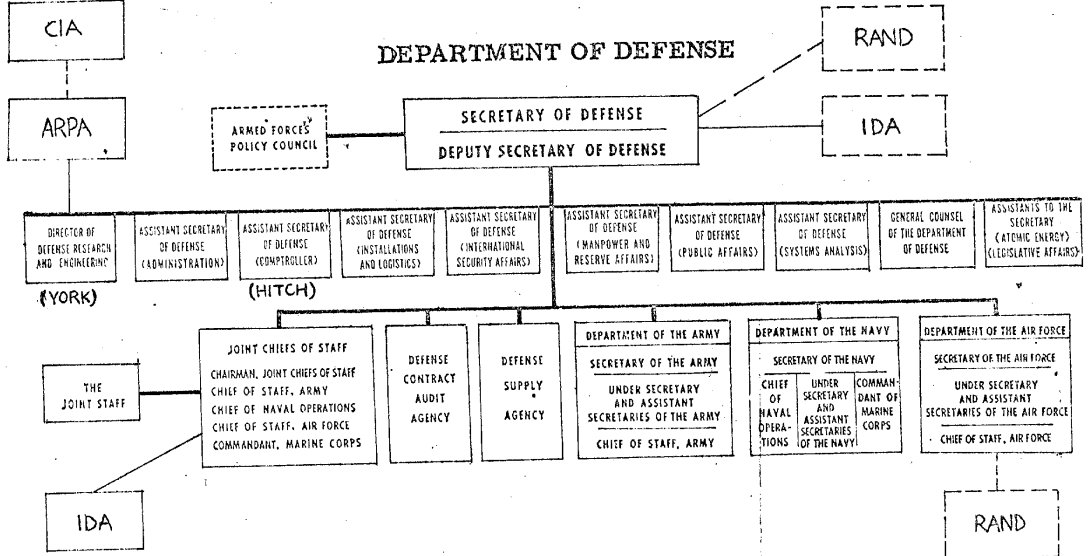
The most obvious ruling class control over the University is the Board of Regents, some of the most powerful and wealthy men in the state. It is their duty to oversee the running of the University of California. By their positions in big business, the media, agriculture and government, the Regents make sure that the University is run in the interests of the ruling class.

At the other end of society is the working class. The working class produces the wealth of this country. This statement is not a metaphor nor only an abstract theory. Quite literally, what going to the job everyday means in a worker's life is producing by his physical labor the steel, cars, planes, etc. that allows another class to become very wealthy.

There are many illusions among students as to what we will do when we finish school. College graduates are often super clerks or super technicians. Boeing Aircraft, for example, has a room filled with hundreds of men—all graduate engineers—lined up in rows, each in front of a drawing board, designing aircraft in assembly line fashion. Nearly 50% of all students drop out of school and get jobs, working class jobs. They become lower level technicians, clerks, secretaries and factory workers. Of the remaining students, most enter jobs that are objectively working class in nature, jobs like the graduate engineers at Boeing, teachers, scientists, and social workers. These are jobs in which the people work and produce and provide services for another class—the ruling class. Only very few students will enter the ruling class. As students, we should realize that, objectively, our interests are bound up with the interests of the working class as a whole, and not those of the ruling class.

IMPERIALISM AND THE MILITARY

U.S. corporations have invested large amounts of capital in Third World countries where they can make huge profits from cheap labor and raw materials. As the rate of profit declines within the United States, U.S. corporations look to underdeveloped countries for markets and resources to exploit. More than 50% of the raw materials used in production in the U.S. comes from outside this country, and more than 60% of the world's wealth is controlled by the United States.



Hence the economies of many Third World countries are controlled and dominated by U.S. corporations—and more than 50% of the profits made by these corporations in the Third World returns to the U.S. ruling class. By controlling the economies of these countries, by supporting Pro-American dictator governments and by armed intervention the U.S. makes sure that this exploitation, imperialism, continues. These are the interests of the U.S. ruling class in the Third World.

And the military is there to protect them. U.S. troops are in every Latin American country. U.S. troops are in Thailand and Korea. U.S. troops intervened in the Dominican Republic in 1965, and have been waging war in Viet Nam for many years. The U.S. fleet is all around the globe. The United States has military alliances with countries all around the globe and sends military aid to almost every dictator in the world. For what purpose?

To protect Ellsworth Bunker's, Averill Harriman's and Abe Fortas' sugar interests in the Dominican Republic. To keep the markets and resources of Southeast Asia open to U.S. exploitation. To prevent "friendly" dictators from being overthrown in Latin America.

The Department of Defense is an organization that wages war, develops counterinsurgency movements, carries out imperialist national policy, and consumes approximately 80 billion dollars a year. To list the expenditures of this department is a formidable task. In 1966 the hearings on Defense Department appropriations required 2,136 pages to record. The number of projects, programs, departments, analyses, etc. is staggering. All this planning, all this money works toward the same end: protection of U.S. investments.

ENTER THE INTELLECTUALS

Prior to 1960, things were not going well for the planners in the Defense Department. Generals were the strong men in the Department and they generally tried WWII solutions to national liberation movements. The Department stagnated, new ideas were not forthcoming and U.S. investments were in danger. Committed to fight in places like Viet Nam, they did not know how to carry out the struggle.

In January of 1961 President Kennedy took office and things began to change. He realized the nature of the struggles of the future and set out to make the military capable of fighting guerrilla war. Kennedy and MacNamara understood that in the re the oppressed peoples of the world be rising up to throw out the United States from their lands, so they then set out to overhaul the Defense Department. Long range planning with emphasis on guerilla warfare was begun.

Cost analysis, systems analysis, operations analysis—these were the procedures enforced by MacNamara and his assistant Charles J. Hitch, now president of the University of California. Civilian control was firmly estab-

lished and intellectuals began to take over the job of military planning. Kennedy's pets, the Green Berets, were greatly expanded and given new responsibilities. Sent to Viet Nam, Laos and Bolivia, they helped train dictator's armies to crush guerrilla movements. The 1st Air Cavalry division was assembled marking the first major attempt to completely mechanize a fighting force. Policy planning groups were instituted at the highest levels. Their purpose was to introduce technological developments into the military as fast as possible. The powers of the Directorate of Defense Research and Engineering were expanded. New emphases were given to that position. Prior to Kennedy, this post was concerned mainly with nuclear war and missiles. Now the Directorate, which controls all research throughout the Defense Department, has new tasks. Under its control are Tactical Warfare Programs, Southeast Asia matters, Strategic and Space Systems, Chemical and Biological Warfare, and the Advanced Research Projects Agency (ARPA). It is through ARPA that CIA money is channeled; it is through ARPA that some of the programs and policies used in Viet Nam were evolved.

Kennedy, MacNamara and Hitch also recognized the need for highly trained people in the Defense Department. Every field of the natural and social sciences is represented in military research. Psychologists, sociologists, anthropologists and philosophers have heard the call and work for the military. Their job is to study the populations of countries like Viet Nam and Venezuela. They write handbooks for the Green Berets, develop psychological techniques, and advise on political factors.

SELL OUT

This need for science and technology was met in two ways: massive government funding of basic research at universities and industry, and the development of 'non-profit' organizations such as RAND and IDA. The massive funding of basic research has brought the universities and the federal government so close together now that separation is virtually impossible. Besides the Defense Department, this funding was accomplished through several agencies. Among them are the Atomic Energy Commission (AEC), the National Science Foundation, the National Aeronautics and Space Administration (NASA), and the Public Health Service (PHS).

These agencies are concerned with developing a large scientific base upon which technology can expand, hence aiding industry and the government. The AEC is concerned with developing nuclear power. It makes all the nuclear bombs for the military and also funds research in solid state physics and high energy physics. More than a quarter of a billion dollars goes to the University of California from the AEC. NASA is primarily concerned with the development of missile technology and the space program. The

military has a keen interest in the space program, for as the RAND corporation said in 1946: 'Since mastery of the elements is a reliable index of material progress, the nation which first makes significant achievements in space travel will be acknowledged as the world leader in both military and scientific techniques.'⁵ The NSF supports research in physics, chemistry, math and the social sciences. By telling people that their research is neutral and pure, they hope to build the illusion that science can be advanced without the military, industry and the ruling class being aided. The PHS which funds biology and social sciences also puts forth the same line: research is neutral. However, as science and technology have advanced, the US's ability to expand its industry and to exploit has increased.

The massive funding by the government in all of the basic sciences has had the purpose of strengthening the ruling class's grip around the world. As universities receive more and more money from the government, they fulfill their purpose in serving the ruling class.

PROFESSIONAL MANDARINS

The RAND Corporation

The RAND corporation is the first and the most famous of the military 'think tanks'. It was organized after WWII when military leaders realized that it would be imperative to maintain the partnership that had been established with university scientists during the war. Its stated objectives are to study and do research on intercontinental war which 'in this context is interpreted in the broadest sense as including the pursuit of the twin objectives of decreasing the probability of thermonuclear war or other war (an objective more commonly termed the arms race) and of stemming or reversing the advance of communism'.⁶ By providing a campus like environment and informal working conditions, RAND's founders were able to recruit academic scientists who spurned the discomforts of Pentagon employment.

RAND's staff is now, about 1100 persons, 600 of whom are research professionals. RAND's budget is about 22 million, two-thirds of which comes from the Air Force, the rest mostly from other government departments. RAND produces reports on such things as space technology, rocket engines for strategic weapons, the statistical theory of radar detection, the theory of games, econometrics, nuclear propulsion, optimal design structures for military aircraft, bomber and fighter design. Since WWII, however, military problems have changed. As a 1963 report of the RAND Corporation so wisely states: '...such problems as those of Berlin, Korea, Cuba and Viet Nam cannot be resolved merely by nuclear weapons.'⁷ And so RAND research has moved to areas other than merely weapons; to include, among others, 'the interaction of political and mil-

(continued to page 4)

The Uni-War cont.

itary factors in the conduct of limited war and cold war, weapons and tactics for limited war and counterinsurgency operations.⁸ Recent RAND reports include studies of Red China 'Viet Cong Motivation and Morale', 'Support Systems for Guerrilla and Limited Warfare', and 'Politics and Economic Growth in India'.

RAND was among the first groups to discuss conditions following a nuclear war. They helped popularize terms like 'overkill', 'megadeaths' and 'minimum acceptable destruction' through their scenarios, which is the method RAND uses to analyze their problems.

The Institute for Defense Analyses

Perhaps even more overtly connected to universities than the RAND corporation is the Institute for Defense Analyses. IDA was formed in 1956 by five top universities: MIT, Stanford, Tulane, Case Institute and the California Institute of Technology. In the IDA publications, the section entitled 'How IDA Came To Be' What It Is' explains that after the Korean War 'the US as the strongest member of the free (sic) alliance undertook to support the preservation of peace for a protracted period by the maintenance of military power sufficient to deter aggression.'⁹ The arms race had begun to develop, new types of warfare needed to be dealt with and the Department of Defense realized that universities would provide the essential scientific and technical expertise. The original member universities were joined by Michigan, Chicago, Princeton, Columbia, Penn State and the University of California.

In 1967 the Board of Trustees of IDA adopted certain clarifying 'principles of operation' and stated 'its (IDA's) primary orientation is towards the needs of the Office of the Secretary of Defense and the Joint Chiefs of Staff.'¹⁰ IDA's initial function was to provide the scientific and technical support to the Weapons Systems Evaluation Group (WSEG), but it now holds contracts with the Advanced Research Projects Agency, the National Security Agency and—most recently—the Department of Justice. The research for WSEG and ARPA consists principally of studies of the effectiveness of proposed weapons systems, particularly missile systems. IDA's total receipts for DOD contracts in fiscal 1967 amounted to \$15.8 million.

It became apparent that IDA would not be able to rely solely on those scientists who had consulted for the military during WWII and Korea. New blood would have to be recruited, and so the JASON division of IDA was formed in 1958. JASON recruited some of the elite scientists in the United States, offering them the unique and very desirable opportunity to work on IDA projects while remaining on their home campuses, coming together for several weekends a year and for several weeks every summer.

Also around this time IDA changed its character slightly and began to do different kinds of studies, not in the realm of the physical sciences, but most relevant to the 'national security'—i.e. to the maintenance of US imperialism. IDA began to emphasize research on counterinsurgency and unconventional warfare. This work has included studies of the utilization of chemical and biological warfare and tactical nuclear weapons in counterinsurgency. According to IDA's annual report 'JASON's work in 1966 related primarily to two of the larger issues of national security: the ABM and the war in Viet Nam.'¹¹

Most recently IDA has turned its attention to the domestic scene. Under a \$498,000 contract with the President's Commission on Law Enforcement and the Administration of Justice, IDA made a report which recommended the application of military counterinsurgency systems to antiriot operations. Another recent study was 'an analysis of the effects of the draft on the supply of both first-term enlistees and officers.'¹²

About a year ago IDA's structure was reorganized. Sit-ins and other agitation, led primarily by the SDS, against university sponsorship of an organization involved in secret defense contracts led to a cut of all legal ties

of the new corporation into the hands of a maximum of 24 trustees, at least one-third of whom must be active members of the academic community. However, articles in both the May 30, 1969 issue of Science and the August 18, 1969 issue of Scientific Research explain that taking classified research off campus does not hamper the cooperation between the DOD and universities.

The new IDA structure is designed to satisfy critics and the clients alike; it makes no substantive change. 'I don't think you will see any radical changes (in IDA's work)' says Alexander H. Flax, a trustee and its new vice-president for research. 'We don't expect to divert the forces of IDA into civilian projects. That would be inappropriate'. Our own Academic Senate has decided that no classified research will take place on campus. It doesn't. Instead Scripps does it at the Marine Physical Lab and the Visibility Lab on Point Loma.

1. Who Rules America, G. William Domhoff, Prentice-Hall, Inc., 1967, p. 142.
2. ibid.
3. The Power Elite, C. Wright Mills, Oxford University Press, 1966.
4. 'The American Ruling Class', Paul M. Sweezy.
5. RAND—the first fifteen years, 1963.
6. ibid., p. 2. 7. ibid., p. 4 8. ibid. p. 22
9. Annual Report of the Institute for Defense Analyses, 1959, p. 12 10. ibid. 1968, p. 12
11. ibid. 1967 p. 16 12. ibid. 1968, p. 16

Health Center Stalemate

Women's Liberation Front

Over the past year, the Women's Liberation Front has been discussing the need for a health service which would satisfy the routine medical requirements of women students. We have talked with dorm residents and other students who have expressed extreme dissatisfaction with the lack of available gynecological care and the unwillingness of the staff to distribute birth control information and devices. Many humiliated and angered women students report that instead of receiving the medical treatment they request and need, they are given lectures warning them about the downhill life of loose women. Most women seek private doctors at great expense of their short funds and valuable time.

A substantial portion of the incidental fee—from \$22 to \$36 each quarter—goes to cover each student's medical care. Since women are encouraged by medical authorities to have a pap smear every 6-8 months, and since women students must go to private doctors for this and other gynecological care, and birth control medication, their mandatory health-center fee brings them little return service.

We met last spring with Dean Murphy to discuss this gross neglect of the health needs of women students. We felt that steps should be rapidly taken to institute a policy in the health center of routine gynecological care, the distribution upon request of birth control information, and of birth control devices or medication following the required vaginal examination. We also felt that the medication should be offered to students at cost, and should be free to those who cannot afford to pay for it. Dean Murphy expressed sympathy with our position and declared he had begun to work on establishing a gynecological clinic. At that time he promised that by the fall term this care would be available.

On September 23 we again met with Vice Chancellor Murphy to discover whether there would be a clinic for women students this fall. Murphy again expressed great concern over the problem, but, you know, these things take time. In short, there is no gynecological clinic yet for women students.

Murphy told us, however, that there has been definite progress, that we are in a transition stage from an antiquated to a progressive health service. The University is

Easy Rider - Review

"A man went looking for America.....and couldn't find it anywhere."

These are evocative words that conjure up the splendid futility of a Don Quixote jousting his windmills. Audiences seem always to be deeply involved by a quest, whether it is for sweet Dulcinea, the World Series pennant, or the moon. 'Easy Rider' is a 'quest for America'; Wyatt and Billy, long-hair and motorcycle riding, journey to the Mardi Gras in New Orleans and run into a segment of America that is supposedly murderously hostile to their style of life.

'Easy Rider' is a magnificent exploration of personal relationships and agonies. The dialogue, the road photography, the New Orleans drug scene, the Odysseus-atmosphere of the film combine to beautifully express the way Billy and Wyatt see themselves. Hippy versus redneck, radical versus reactionary—these conflicts shape the action for the characters. (Radical in this movie, as is often the case, has nothing to do with a political consciousness). The way these conflicts are set up, however, perpetuates an ideology that says long hairs or students are inherently at odds with the working people. It seems to be saying that the main thing wrong with America is that poor Southern whites are racist, reactionary and violent, that they won't understand why it is important for people to

be able to live like Billy and Wyatt. And the very rich are at least somewhat cool because they're into the drug scene—a character with a chauffer and limousine buys some drugs from Billy and Wyatt and makes their journey possible.

The easy riders invite a man they meet in a small Southern town to come to New Orleans with them. Around the campfire that night he explains that the local bigots harass the trio because they feel threatened by Billy and Wyatt. That is, such people talk alot about constitutionality and rights, but when they are confronted with a man who is really free, says the new friend, they are afraid. This sort of analysis stops short after exploring the lack of existential awareness or anguish in the reactionary townspeople. It ignores the fact that objective conditions determine that these townspeople are in a situation easily leading to reactionary attitudes. That is, a certain class, the ruling class, profits not only from their lack of freedom, but from their fear of freedom. A worker has a low-paying and ailing job, but it is his only security. If all of a sudden the government says to this worker that there must be certain quotas of black people employed here, and we're cutting back on federal spending to curb inflation, there's no longer enough jobs to go around, so you must be laid off—the tradition of racism in this country becomes a useful tool in diverting anger from the government to the black workers. Hippies may not threaten jobs, but they threaten life styles. If working people took off on a cross-country journey anytime, or wanted to "drop out", or thumbed their noses at all authority, they'd lose their jobs. They cannot be "carefree" like Billy and Wyatt, but their antagonism is toward the easy riders, not their bosses, for whom they continue to work hard.

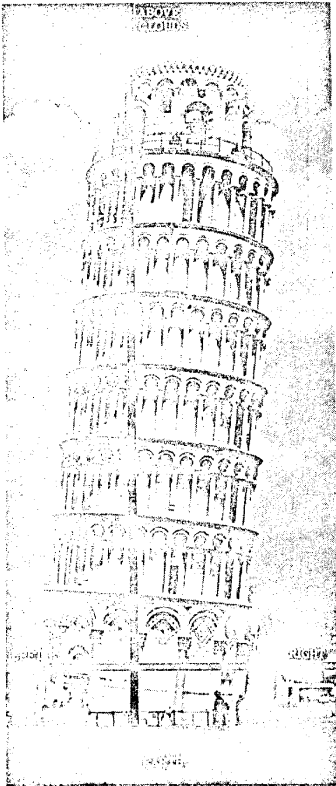
More and more this change in life styles is being adopted into the 'establishment', is being made a way people can escape from the reality of their relationships, the implications of the things they defend, or at least do not attack—their country for doing. Billy and Wyatt's freedom that is supposedly threatening the small town Southerners is illusory, a pacifier. For if the opportunity to grow long hair and ride motorcycles across the country defines freedom for us, the easy riders are not representatives of a new way of living being slaughtered by remnants of the old way, but are instead prophets of doom.

Perhaps this is what Wyatt was realizing the last night around the campfire when he said, "Billy, we blew it." The sparseness of the dialogue gives an air of profundity to this and other observations, which might have been difficult to match by detailed analysis within the context of the movie. Maybe the writers and director just knew that that had to be said, but not really sure why.

And so Wyatt and Billy are massacred in a Bonnie and Clyde type ending that leaves the audience in something of a state of shock. The easy riders become martyrs, but not for any particular cause, not for any movement. They are not "outside" society in any significant way. Their life style, because it is disconnected to any political analysis, seems a new way of adapting to basic contradictions which are no longer bearable, instead of a way to change them. They were not consciously intending to challenge the existing order in those Southern towns—Billy says he never thought of himself as the freak the townspeople see him as. Having them die the way they did seems unnecessary and meaningless. The only social comment that is made by their deaths is, I think, that people in this country—on all sides—are becoming increasingly and perhaps permanently paranoid.

Easy Rider stops short of indicating that hippy vs. redneck is only a symptom of more basic contradictions. Peter Fonda, who produced, wrote, and starred in the movie, has said on the Tonight show that he thinks it is more important to find and ask the right questions than to find and create answers. His movie is this kind of questioning—an absorption in a "quest" that is so all inclusive that it matters little if it is a quest for something.

The University at War : Who Pays



IVORY TOWER*: The higher you go the more you lean right.

* Made from authentic Asian and African tusks.

INTRODUCTION

Last week we began an exploration of "university complicity" with the imperialist policies and practices of the US in Viet Nam and the rest of the Third World. In that article we defined the two main classes in a capitalist society--the ruling class and the working class*. Ruling class control of institutions, the planning of the war in Viet Nam, "think tanks" and various funding agencies were analyzed. In that article the emphasis was on the institutions controlled by the ruling class and how they were used in the planning and carrying out of the war in Viet Nam. In this article we will explain further the nature of imperialism and the role of the University in this society.

Why are we in Viet Nam? Henry Cabot Lodge, former U.S. Ambassador to South Viet Nam and a member of the ruling class, tells us: "He who holds or has influence in Viet Nam can affect the future of the Philippines and Formosa to the east, Thailand and Burma with their huge rice surpluses to the west, and Malaysia and Indonesia with their rubber, ore and tin to the south. Viet Nam thus does not exist in a geographical vacuum--from it large storehouses of wealth and population can be influenced and undermined." (Boston Globe, Feb. 28, 1965) This statement is contrary to what we normally hear in the media, from the government and in the classroom. How the University fits into this society, and how the University has attempted to cover up both the nature of imperialism and how it has aided imperialism is important in understanding the nature of class society.

*Those who own and have control over the means of production constitute the ruling class. Those who by their labor actually produce the wealth of society constitute the working class.

COVER UP

One idea of the University that is propagated by the ruling class is the "academic cloister", the "house of the mind", or the "ivory tower". Cardinal Newman summarized the nature of this illusion when he said that a university is "..... the protecting power of all knowledge and science, of fact and principle, of inquiry and discovery, of experiment and speculation; it maps out the territory of the intellect, and sees that there is neither encroachment nor surrender on any side."

(1) This was spoken more than one hundred years ago when universities trained only members of the ruling class and a few of their underlings. Even then Newman's statement was completely inaccurate--the schools were not impartial value-free institutions then, nor are they now.

It is this concept of the University, the ivory tower, that leads people to believe in such things as academic freedom. According to the apologists of this position any and all ideas are equal. Every position is to be given equal consideration etc. The champions of this belief are, of course, the faculty encouraged by the administration. Whenever a crisis occurs in the University the banners of academic freedom are held high, banners behind which the faculty seeks to hide. Academic freedom and its accompanying inaction are a shroud that can easily hide the real nature of any crisis and the real nature of the University.

Ideas are not all equal and they are not all the same. Ideas that cover up racism, imperialism and the class nature of society, ideas that apologize for the status-quo and hence capitalism cannot be equated to ideas that demand an end to racism and imperialism and seek to change the economic and political basis of society. These ideologies which are in total conflict with each other are not neutral concepts for academicians to argue over; these ideologies require commitment and action. Even though the academic freedom concept allows ideologies other than the ruling class* to be taught, it does not allow one to take action on those principles. Ultimately, it is through action on ideas contrary to the interest of the ruling class that any significant changes can occur. What real significant difference does it make if Marcuse teaches a course in Marxism? A few people, perhaps, will adopt these ideas; but the majority of students will continue their education. Upon graduation Marxism was just another course taken along with Economics 1A, Sociology 130, and Math 2A. So what?

By claiming academic freedom and by pointing to some individuals who oppose the ruling class in the classroom, administrators and faculty declare that the University is indeed what Cardinal Newman thought it was. However these ideas build illusions about the nature of the University in a class society. In the first article in this series a brief description of the ruling class and what they control was given. The industries and corporations they control constantly need to expand; highly trained people are needed to run them; and the military and the government need to be advised on how best to protect the investments of these corporations overseas. By what process are people trained to be obedient officers in the military, willing consultants to RAND and DA, and skilled managers for General Dynamics? The University and colleges are the only institutions in society capable of doing this on a mass scale. But as we shall see, the teaching aspect of the University is secondary to organized research.

THE RESEARCH INSTITUTE

An extension of the ivory tower concept

and academic freedom is the notion of the "pure research" institute. In this myopic view of social reality, science and technology are treated as completely neutral and value-free. The research practitioners are people whose only stated conscious pursuit is that of knowledge for knowledge's sake. Very noble, but it completely covers up the nature of class society and the role of technology within that society. As science and technology advance, the ruling class is able to operate their industries and their war machines more efficiently. Within the past twelve years the growth of technical knowledge has more than doubled. As soon as Sputnik I went into orbit, the United States poured massive amounts of money into basic research and development. In table 3 the total amount of money to the University of California in 1967/68 from the federal government was \$420,779,000--more than half of UC's operating budget for that year. This exceeds state support by more than \$170,000,000. Table 4 gives the breakdown of this federal money for this campus for the 1968/69 fiscal year. By examining tables 1 and 2 we find some more interesting facts. At UCSD 48.7% of all income is devoted to research--all paid for by the US Government, mainly the AEC, NSF, and the military. When all the money is rearranged and allotted we see that 47.2% of all expenditures are for organized research. These figures lead us to believe that research is important to the University and the ruling class.

TABLE 1

| CURRENT FUNDS INCOME -- UCSD(1967/68) | |
|---------------------------------------|------|
| State of California | 29.6 |
| U.S. Government | 48.7 |
| Student Fees | 2.0 |
| Teaching Hospitals | 14.9 |
| Auxiliary Enterprises | 3.5 |
| Endowments and Donations | .9 |
| Others | .4 |

TABLE 2

| CURRENT FUNDS EXPENDITURES -- UCSD (1967/68) | |
|--|------|
| Organized Research | 47.2 |
| Instruction and Department Research | 15.6 |
| Hospital | 18.5 |
| Student Aid | 2.3 |
| Libraries | 4.0 |
| Administration | 2.6 |
| Maintenance and Operation | 3.8 |
| Institutional services | 1.0 |
| Auxiliary Enterprises | 2.8 |
| Others | 2.2 |

TABLE 3

SOURCES OF SUPPORT FOR THE UNIVERSITY OF CALIFORNIA (1967/1968)

| | |
|--|---------------|
| Total from all sources | \$830,163,000 |
| Major AEC Laboratories | 250,342,000 |
| State of California | 247,419,000 |
| US Government Contracts and Grants | 170,437,000 |
| Organized Activities (Hospitals, clinics, educational departments) | 36,526,000 |
| Auxiliary Enterprises | 33,207,000 |
| Gifts and Private Grants | 15,059,000 |
| Student Fees | 48,204,000 |
| Lesser amounts from other sources such as endowments, sales, investments, etc. | |

There are reasons why this is so. Imperialism is based on the need to make profit. An expanding technological base and exploitation of underdeveloped countries are two methods by which the capitalist

VALUE

In order to discuss the profit we must first explain the Marxist use of the word "value", which begins by noting that human labor is contained in all commodities. We use the word "value" to mean nothing more nor less than a measure of the total human labor time that went into producing a commodity. An instrument of production such as a machine, being itself a product of human labor, has a value then; this value is the total socially necessary human labor time that went into its production. It imparts its total value bit by bit to those commodities that are produced with its aid, until it is completely worn down and must be replaced. The value of each product is, then, the value imparted by all other machinery used directly in producing it, the value of the raw materials that went into it, and finally the total living labor time involved directly in its production. The machinery and raw materials are referred to as dead labor.

The bourgeois economist would have us believe that the profit that the capitalist makes is actually created in the market place; that is, that the capitalist creates his profit by adding on an amount to his cost of production. But as we shall see, the capitalist does not create his profit in the market, he only realizes it there in the form of money. This profit is already congealed in the commodity as it rolls off the assembly line.

The capitalist buys labor power. The value of this labor power does not equal the value of the products produced during it. The value of labor is determined by the value of those goods necessary to keep up the worker's ability to do labor, such as food, clothing, shelter, and psychological needs. In other words, in order to continue to be able to work day after day, the worker must completely be renovating himself, or compensating for the wear and tear on his body and mind. And since the working class must reproduce itself, the value of his labor power also includes the upkeep of the family.

The value that a worker produces above the value of his labor power is called surplus value. And this would be produced in a socialist economy as well as in a capitalist economy. The essential difference between socialism and capitalism, however, now stands out in high relief: under socialism the surplus value is socially owned by the working class itself, whereas under capitalism the surplus value is owned by the bourgeoisie. Thus the essence of capitalist exploitation is that though the workers produce the surplus value, the bourgeoisie owns it.

Because of the competition between capitalists in the same branch of industry, each capitalist finds that in order to continue to realize the surplus value, he has to do three things continually, all three of which are the only major ways of producing greater amounts of surplus value, given a constant length of the working day: 1) expand his scale of production, 2) increase the intensity of labor through speed-up, i.e. producing more goods per unit time, and 3) increase worker productivity. The last two result in a decrease in the total labor time that goes into each unit of the commodity. The net result is that the value of the commodity has been lowered, since value is only a measure of the socially necessary labor time.

As competition among the capitalists becomes more intense, those corporations that can produce goods more efficiently than others are the ones that accumulate the most profit and hence can expand production more easily. Eventually, through periodic crises (depressions, wars), a few large corporations emerge in various branches of industry. These corporations eventually assume monopolistic control over

the Piper?

their respective branches of industry. During this process productivity is increased by introducing new machinery, hence reducing the total amount of human labor in the commodities produced. A quantity that begins to assume a very important role in capitalist economy is the rate of profit. The rate of profit is essentially the ratio of the surplus value to the total amount of capital invested in the productive process. This invested capital goes partly to human labor and partly to raw materials and machinery. Now as more and more machinery is introduced into production, the total amount of human labor in the commodity is reduced. Hence the value of the commodity is reduced. This means that as capital investments increase (machinery etc.) the amount of surplus value does not increase as fast and begins to fall behind. Therefore the ratio of the two, the rate of profit, begins to decrease.

The decreasing profit rate makes it increasingly difficult to keep up the introduction of new machinery. The resulting pressures on the workers due to speedups and wage depression have their limits as do the various methods of expansion and of market manipulation. Hence capital must seek outlets with a higher profit rate. These outlets are in areas with low labor costs, namely abroad.

IMPERIALISM

Direct foreign investments after WWII went from about \$7 billion in 1946 to about \$44 billion in 1964. The corresponding volume of profits from foreign investments nearly quadruples from 1950 to 1965, while that from domestic investments did not come close to doubling for the same period. (Harry Magdoff, "Economic Aspects of US Imperialism", Monthly Review, vol. 18, no. 6, Nov. 1966, p. 20)

Prior to 1962 the United States faced a variety of problems. Having rebuilt Europe after WWII through the Marshall Plan the

US was in the position of owning 60% of modern industry (there are more than 1,100 US subsidiaries in England); the US controls 80% of Europe's computer business, 90% of its microcircuit industry, 40% of its auto industry. (Progressive Labor, "US Imperialism and Vietnam", vol. 6, no. 5, Oct. 1968, p. 13) However, in 1962 the rate of profit on US investments in Europe began to fall sharply. Also, the US share of markets in the poor countries fell between 9% and 24% in the years 1955 to 1961. Finally, competition with other advanced countries began to increase. These factors have caused a big push of US investments in the poor countries since the early 60's. In 1961, of its total profits, Anaconda made 70% abroad on only 40% of its assets. Colgate made 78% abroad on only 37% of its assets. But most startling of all is Chrysler which made 81% of its profits abroad on only 9% of its assets. Chrysler's profit was 14.5% abroad and only 0.3% at home. (Business International Report on Profit Performance of US Corporations Overseas, 1962) A President's Commission back in 1952 reported the following percentages of materials imported from abroad for domestic uses: 43% of tungsten, 78% of the tin, 85% of the aluminum bauxite, 86% of the nickel, 94% of the manganese, 98% of the cobalt and 100% of the chromite. They further reported that in order to meet the demand from now to the year 2000, the US will require between 50% and 100% of the known reserves of the "free world". (US President's Materials Policy Commission Report 1952) This absolutely requires a coercive relationship with the producer countries, because on a free market those countries would sell to those capitalist nations from which they could buy back finished products most cheaply, and US prices are very high. Thus the US has to get in first with a combination of coups, bribery of regimes, control of the capital equipment such as the electric power, etc. Remembering what Henry Cabot Lodge

The Beginning of UCSD

UCSD was first mentioned in San Diego when in 1955 Assemblymen Hegland and Schrade introduced a resolution to the Regents asking that the possibility of opening a campus of the University in San Diego be studied. Such a resolution found much support in the San Diego community:

1) from the president of General Dynamics, who reemphasized the need for a San Diego campus to aid the "industrial growth of San Diego"--Convair was handicapped by its inability to offer graduate work to its engineers and by the need to import engineers,

2) from a vice-president of Convair, Robert H. Brown, who was chairman of a Special Chamber of Commerce committee to work on bringing a UC branch to San Diego,

3) from Fleet Admiral Chester W. Nimitz, a regent, who saw the need for a science-oriented university, citing his extensive experience in training Navy recruits as proof of the need,

4) from the San Diego Union--because the US was behind Russia in the training of engineers. "Trained manpower is essential for the nation's defense and the expanding state economy." (Union, Dec. 16, 1955)

In May 1956, the establishment of a graduate technical and scientific institution with Scripps as a base was recommended to the regents and in September hearings on the plans for this institution were set by the Chairman of the Regents' Ways and Means committee. In

a pamphlet titled "University Community Study" done by the City Planning Department of San Diego we see some of the factors considered in selecting the La Jolla site for the campus.

"General Atomic, recognizing the worth of a University close at hand, has offered the State a sum of \$1 million to facilitate the University's growth on Torrey Pines Mesa. The interrelation of these two great institutions should flourish in years to come....The developers of this valley area (Sorrento Valley MIC) which is now under a single control have been working closely with the university's master plan developments.

The Regents issued a policy statement saying that the primary function of the La Jolla campus would be to provide instruction in science and technology and conduct research. Only that undergraduate instruction which was "essential to support the graduate program" was to be provided.

In an editorial endorsed by Governor Knight, the Union supported the idea of a campus that consisted of a nucleus of "distinguished professors working largely with graduate students." They felt that a campus which was largely an undergraduate school with a subordinate graduate division "would severely limit the contribution that the University of California at La Jolla would make to the unique quality of this community and thereby diminish the institution's contribution to national security" (Union, Aug. 12, 1957).

told us about Viet Nam we can see several reasons for US involvement there. Primarily, the US is there to steal the labor and wealth of the people of Viet Nam. The US is there also to show the world that a struggle against US imperialism cannot win. Third, the US wants Viet Nam as

the stepping stone to all of Southeast Asia. Finally, the US is there to try and save the capitalist system from the twin enemies of international competition and the saturation of profitable investment in the US and the areas of the world it already controls.

continued on p. 8

TABLE 4: DISTRIBUTION AND SOURCES OF SUPPORT FOR CAMPUS DEPARTMENTS AND RESEARCH INSTITUTES (1968/69)

| DEPARTMENT OR RESEARCH INSTITUTE | NSF | AEC | Air Force | Navy | Army | NASA | DHEW | PHS | OTHER US |
|----------------------------------|-------------------|------------------|------------------|-------------------|----------------|------------------|---------------|------------------|----------------|
| Anthropology | 7,651 | | | | | | 353 | 2,491 | |
| AMES | 94,889 | | 330,926 | | 34,795 | 34,347 | 2,460 | | 39,948 |
| AEP | 279,355 | 39,823 | 22,572 | | 44,486 | 213,293 | 722 | | |
| Biology | 696,564 | 132,619 | | | | | 18,091 | 1,098,061 | 24,804 |
| Chemistry | 491,700 | 128,354 | 9,082 | 10,269 | 8,196 | 380,327 | 7,399 | 703,756 | |
| Drama | | | | | | | | | |
| Economics | 11,830 | | | | | | 240 | | |
| History | | | | | | | | 2,261 | |
| Linguistics | 2,276 | | | | | | | | |
| Literature | | | | | | | 713 | 3,883 | |
| Mathematics | 124,550 | | | 33,818 | | 17,208 | | | |
| Music | | | | | | | 3,055 | 430 | |
| Philosophy | 5,054 | | | | | | 72 | 2,057 | |
| Phys. Ed. | | | | | | | 2,729 | | |
| Physics | 319,699 | 1,007,503 | 108,350 | 124,783 | | 1,778,906 | 5,285 | 113,030 | 50,568 |
| Psychology | 127,810 | | | | | | 10,047 | 135,000 | |
| Sociology | 8,750 | | | | | | 569 | | |
| Visual Arts | | | | | | | 2,834 | | |
| SIO Department | 57,818 | | | 41,258 | | | 562 | 37,457 | 4,536 |
| TOTAL DEPT. | 2,228,396 | 1,308,299 | 470,930 | 210,128 | 87,477 | 2,424,081 | 55,131 | 2,098,673 | 119,676 |
| Scripps Inst. | 10,401,575 | 255,108 | 473,784 | 10,665,455 | 33,893 | 231,772 | 27,550 | 666,964 | 751,313 |
| IGPP | 265,966 | | 188,978 | 206,040 | | | 115 | 87,002 | |
| IPAPS | | 143,458 | 319,584 | | 832,301 | | | | |
| TOTAL RESEARCH INST. | 10,666,541 | 398,566 | 982,346 | 10,871,495 | 866,194 | 231,772 | 27,665 | 753,966 | 751,313 |
| TOTAL CAMPUS | 12,995,937 | 1,706,865 | 1,453,276 | 11,081,623 | 953,671 | 2,655,853 | 82,796 | 2,765,637 | 957,991 |

TOTAL FROM US GOVERNMENT \$34,553,649 TOTAL FROM STATE OF CALIFORNIA \$20,190,000 TOTAL FROM OTHER SOURCES \$17,400,000 (Hospitals, Auxiliary Enterprises, etc.)

Sources: Tables 1,3,4 appear in the memo to Department Chairmen from Dr. S.S. Penner dated January 1969. Table 2 appears in the publication "Budget of UCSD 1967/68".

Research cont.

Within the capitalist framework science and technology are essential both for the expansion of corporations to maintain their profits and to provide the military means to protect their expanding interests abroad. The University provides industry with the trained technicians who can develop new and better means of production; and the type of research done by professors plays an integral part in this whole process.

The faculty and administration hardly ever brag about the nuclear bombs made at Livermore and Los Alamos, or the chemical warfare research they do at Oakland, or the classified research done by Scripps. The ruling class, through the administration and faculty, will not advertise all the war research that goes on in universities; but, rather, the concept of "pure research" is promulgated. This is another attempt to cover up the real nature of research.

"What has transformed the relationship between science and war has been the fact that in the twentieth century the development of technology has become increasingly dependent upon advances in basic knowledge about the physical world." (2) Research in any area of human knowledge advances man's understanding of his environment and himself. However, this does not take place in a vacuum. The ruling class, through the government, pays for the research. That which is not useful is slowly phased out, and that which serves their interests is encouraged. To say that pure research can be done in a class society is to ignore the fact that the ruling class is the only class capable of deciding what is to be implemented and what is to be researched. The scientists, engineers, and technicians have about as much control over what happens with their work as do workers in the

factories. An example of this is easily seen in an incident at Berkeley last September. Two math professors who had their contracts severed by the Army and the Navy for political activities were informed by the Army that "the results of your efforts have been utilized by the Army in various activities related to the current conflict in Viet Nam." (RSU publication on the Berkeley campus, Sept. 1968, p. 2) The fact to remember is that in this society, research can only be subject to business and government control.

This complicity, however, has its price. Despite all one hears from Reagan, UC does not owe its existence to the generosity of the state of California. In a memo to all UCSD department chairmen, Dr. S.S. Penner, former vice-chancellor, presented table 1 for consideration. We can see that state funds are "supported" by what are called extramural sources (especially government contracts and grants). Dr. Penner states that:

"It is no exaggeration to assert that, in the absence of all extramural resources, support for graduate students would practically disappear (of about 1000 UCSD graduate students, fewer than 100 are supported by state funds.) It is an often repeated fallacy to state that the removal of extramural grants and contracts would

be felt only in the physical science departments. Under presently used administrative procedures, highly biased resource allocation is normally made to the humanities, fine arts, and social sciences, thereby acknowledging the availability of extramural funds for the physical sciences.We could remain what we are without federal support (and assuming that state support would then not be cut) by raising student fees and charges at UCSD by a factor of 26, that is, by raising our out-of-state tuition to about \$30,000 per year, etc.

Not only the University but individual professors must be dependent on the federal government. In the list of contracts accompanying this article (representing a small fraction of the contracts researched here at UCSD in the past four years) every one was financed by some government agency. The Department of Defense is a major contributor to this campus along with the AEC, NSF, NASA, and the PHS. All these contracts in physics, oceanography, engineering, math and chemistry have increased man's knowledge in these fields. Of course some are more important than others to the military, but on the whole, the government is getting its money's worth and more from this research.

SUMMARY

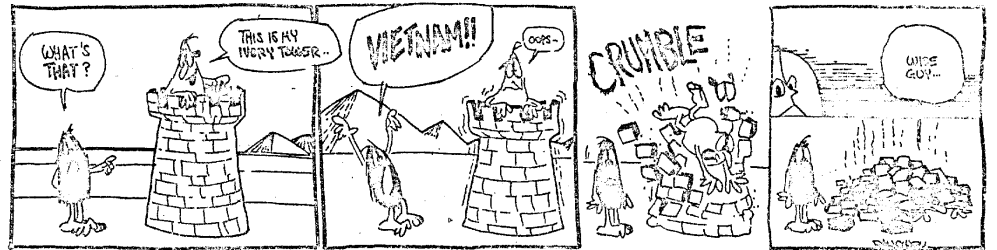
We see several ideas emerging from the foregoing analysis. 1) Universities have two main functions: propagating ruling class ideology or bourgeois ideology and

conducting organized research which advances technology and directly aids the war effort. 2) Pure research is really impossible in a class society since the research is controlled by and conducted for the ruling class--regardless of the intentions of the investigator. 3) Academic freedom and the ivory tower do not exist. It is perfectly natural for the ruling class to move against those whose actions and ideas challenge the political and economic basis of our society. 4) Universities cannot exist without federal support--and this support is there only if the universities continue their job of producing results for the military and big business. 5) imperialism, as a stage of capitalism, is inevitable and to survive it requires a massive scientific and technological base upon which it can operate and expand and defend itself. 6) The combination of the needs of imperialism and the massive funding to universities and the ideologies propagated by universities shows the real nature of the University in a class society.

These ideas will be expanded further in the remaining articles in this series. Next issue: The Scripps Institute of Oceanography.

1) John Henry Cardinal Newman, *The Idea of a University*, (New York: Longman Green and Co. 1947), p. 129.

2) Warner R. Schilling, "Scientists, Foreign Policy and Politics", *American Political Science Review* 56:233 (June, 1962).



UCSD Contracts

The contracts listed here are only a small fraction of the total number of contracts researched in the last four

The authorities say: Peace and war are of different substance. But their peace and their war are like wind and storm.

The war grows out of their peace Like the son from the mother. It bears The same hideous features.

Their war kills Whatever their peace Has left over.

Bertolt Brecht

years at UCSD, Scripps and Scripps controlled labs (Marine Physical Lab and Visibility Lab) at the Naval Electronics Laboratory on Point Loma. Some of the research is directly applicable to military use, such as contract 98--The Electronic Warfare Graphic Intercom System; or contract 139--Radar Return from Vehicle in the Ionosphere. These contracts involve new systems for communications and reconnaissance that the military especially the Navy, can benefit from. Many of the contracts in oceanography and geophysics provide theoretical and empirical knowledge about the nature of the ocean and land masses. At the same time the Navy and large oil companies and mining companies are interested in the results. The research in physics, especially solid state physics, has important applications for the electronics and computer industries. The research in the AMES department is directed towards making a better missile. What we are saying is that even though some research does not have immediate application for the military or for industry, the important fact to remember is that it is the sum total of basic research and development in every field enables the world wide expansion of US industry and the complete mechanization of the military

*Small fraction means here that these 196 contracts represent less than 20% of all contracts researched at UCSD in the past four years.

Sources: Technical Abstract Bulletin (Department of Defense) 1964-1967. U.S. Reports Index 1964-1969.

1. Transition Probability Operators
2. A Study of the Velocity Field in M22 and Its Dependence on Substrate Homogeneity in that Galaxy
3. H₂O₂ Ages of Chromolites and Carbonaceous Chondrites
4. Ionospheric Gas in the Nuclei of Elliptical, Spheroidal, and Irregular Galaxies
5. 71 Plasma from 30 Alaskan Earthquakes
6. Seismic Waves Recorded in the North Pacific from FIAP
7. Multistage Dissipation and the Effect of Pressure on the Equilibrium of Magnetospheric Sulfate
8. FIAP-An Oceanographic Study
9. Volcanic and Clay Minerals in the Southwest Pacific
10. Atmospheric Band Absorption and Total Kinematically Calculations
11. Diving Scauba Descends into Submarine Canyon
12. A New C15 and B-Type Phase
13. Superconductivity of Tellurium
14. Experimental Research on Techniques for Determination of Magnetic Properties of Low Temperature Materials
15. Hermetically-Sealing Swallower Samples
16. New Techniques in Undersea Technology
17. Isotopic Composition of Lead in the Sediments Near the Japan Trench
18. Earthquake and Lead 210 in Lead 210-dimension
19. Petrology and Sediments of a Portion of the Mid-Atlantic Ridge
20. Inorganic Nutrient Anions in Deep Ocean Sediments
21. Superconducting Tubes and Filaments
22. Exchange and Corrosion Effects in Inhomogeneous Electrode
23. Functions of Marker Compounds
24. Surface Continuum from III Regions
25. Characteristics of the Surface Layer in the Northern Pacific Ocean
26. The Upper Ionospheric Gamma-Ray Spectra to 10 Mev.
27. Effects of Earth's Earth Additions on the Pressure Dependence of the Superconducting Transition Temperature of Lead
28. Superconductivity and Phase Transformations in Transition Alloys and Titanium-Chromium Alloys
29. On the Kinetic Concepts in the Theory of Elastic Stability
30. Infrared Film Diffusion from Planar Films of Amorphous Polymers
31. Vapor Processes of Titanium Tetrafluoride and Chlorine Gas
32. Saline Corrosion for Geological and Geophysical Technical Services
33. Corrosion Study of Concrete Reinforcement, Baja Calif., Mexico
34. Hypersensitivity of Ocean Basin Fronts
35. Lithium Processes and the Development of Shortwaves
36. Robert Botkin: Currents Measured in 4 Kilometers Depth off the Baja Calif. Coast
37. Neocapillary Stabilization on Ferro-magnetic Chlorides
38. Anomalous Collecting of Conduction Electrons in Helium Atoms with a Non-Decorated Concentration of Paramagnetic Impurities
39. Edgewise Elastic Workhardening
40. Many More Superconducting Blumhous
41. Ferroresonance in a Narrow Almost Half-filled Band
42. A Quantum Many-Body Theory of Lattice Dynamics, 1. Time Dependence of the Dielectric Function
43. Passive Signal Processing
44. Role on the Calculation of Forward Scatter
45. Radiator Cooling in Transporter Shock Landing and Ocean
46. Transverse Ultraacoustic Attenuation in Gapped Superconductors
47. Vortex-Induced Radiation from Galaxies
48. Ultra-Violet Radiation from Galaxies
49. Redistribution of Trapped Photons During a Magnetic Storm
50. Trapped Velocity of Trapped Particles
51. Chemical Evidence Relating to the Origin of Solar System
52. Manipulators and Special Devices
53. Ballistically Induced Nonlinear Trapped States
54. Determination of Nitrogen in Seawater
55. Navy Supply Unclassified Publication of SDI
56. Importance of Submarine Valleys in Pumping Sediment to the Deep Sea
57. Kinematical Properties of the Sea
58. Molokai Fracture Zone
59. Trench Patterns of Sedimentation Formations in the Eastern Pacific
60. Effects of Nuclear Explosions on Marine Biology
61. The Equations of Continuity for Seawater and River Water in Suburbs
62. A New Aspect of Atmospheric Pollution Revealed by Echo-Scattering in a Layer of the Atmosphere
63. Amplitude of Positive in Metals
64. Continuity Between Bound and Unbound States in a Fermi Gas
65. New Formulation of the Inhomogeneous Electron Gas Problem
66. Transverse Conductivity of a Degenerate System of Lattice Electrons and Optical Phonons
67. Dispersion Theory of the Kondo Effect
68. Electronic Structure of Indium-Cadmium Alloys
69. Thermal Mass of a Moving Phase
70. A. Synthesis on Confined GeM
71. Ignose Locks of the Indian Ocean
72. Intermediate Waters of the Pacific
73. Some New Superconducting Compounds
74. Search for Superconductivity in Alloys
75. Paramagnetic Impurities in Metals of Finite Temperatures
76. Energy Gap in a Cubical Metal for Nickel
77. On the Induction of Second Sound in Helium
78. Algebraic Derivatives of the Partition Function for a 2-Dimensional Ising Model
79. On a Second Order Thomas-Fermi Theory of Condensation
80. Earth Noise 5 to 500 Mtcycles/sec
81. Acoustic Transducer Evaluation Using a New Method
82. Pacific Subduction by the Manila Trench and its Effect on Microwave Propagation
83. Marine Biological Sound West of San Clemente Island--July 1963
84. Oceanic System Effect on High Frequency Airborne Propagation
85. Theoretical Properties Across the Middle America Trench
86. Onset of Convection in a Layer of Fluid
87. Magneto-Absorption in MgO-SiO₂ Solid Solution
88. Continuum of Pressure and Dielectric Constant
89. Simple Switching Circuit That Keeps On
90. Transient Focusing in the Ocean
91. Carbon Dioxide in Surface Waters of the Pacific
92. Magnetic Sound Sources Interaction with the Sea Floor
93. The Resonance Medium in Dilute Ni-Al Alloys
94. Superconducting in Tin-Aluminum
95. Weak Time Dependence in Pure Semiconductors
96. Weight Factors for the 2-Dimensional Ising Model
97. Low Energy Electron Scattering by Molecular Beams
98. Shipboard Interference Structure
99. Shipboard Interference Structure
100. Ouzg in the Atlantic Ocean
101. Underwater Optics
102. Nitrite Plateauing in Pure Current Water
103. Galvanic X-ray Sources
104. Desorption Rates of Two Component Gas Mixtures from an Adsorbent Bed
105. The Kinetics of Solid-State Reactions
106. Microcircuit Reliability Prediction
107. World-Wide Ocean Depth
108. WFL Participation in STRATA II
109. A Review of Evidence for Biological Material in Meteorites
110. Continuous Electrodeposition in the Statistical Theory of Electrode Processes
111. A Magnetic Mineral from the Ocean
112. On Salt Transfer Through the Ocean
113. The Concept of Probability Applied to Future Oceanography: Ship Operations
114. An Aspect of Atmospheric Pollution Revealed by Echo-Scattering in a Layer of the Atmosphere
115. Fatty Acids Derived from Lipids of Marine Origin
116. Concentration of Lead in Greenhouse Soils
117. Radiological Leads of the Canadian and Pacific Shells
118. Structure of the Continental Margin
119. Precipitation Characteristics of Oceanic Aerosols
120. The Effect of Pressure on the Dissolution of Magnesium Sulfate in Seawater
121. The Scattering of Phase Waves from Particle Surfaces
122. Chemical Equilibrium of Ferric Ion in Seawater
123. Ion Particle Properties of an Inhomogeneous Interacting Electron Gas
124. A New Feature of the One-Particle Model of Exchange Scattering in Solids
125. Theoretical Idea Concerning X-Ray Sources
126. Topology with Applications to Statistical Mechanics
127. Energy Transport Between Two Superconductors
128. Algebraic Derivatives of the Partition Function for a 2-Dimensional Ising Model
129. Pacific Subduction Cores Found in the Ocean
130. An Example of Unusually Strong Mixing in Lower Lake Levels
131. The Alpha-Ti-Fe Solid Solution and its Superconducting Properties
132. Theoretical Idea Concerning X-Ray Sources
133. Processes Acting Upon Outer Zone
134. Carbonates and Superconductivity
135. Linear Instability Theory of Layered Plasmas
136. Aerial Measurements of the Atmosphere Clearly and Sky Luminance Near
137. Distribution of the Magnetoacoustic Parameter in the Ocean
138. Crystallographic Formulas for Crystals
139. Interference of Laser Radiation with an Inhomogeneous Medium
140. FIAP Applications for Crystals and Gels
141. Carbonates and Superconductivity
142. Return from Vehicles in the Ionosphere
143. Surface Conditions of the Original Meteorite Parent Body as Indicated by Mineral Assemblages
144. Laboratory and Superconducting Study of Wave Enhancement and Dump in Uniformly Scattering Inhomogeneous Media
145. Carbonates and Superconductivity
146. Interference of Laser Radiation with an Inhomogeneous Medium
147. FIAP Applications for Crystals and Gels
148. Temperature Structure in the Transient State of the North Pacific
149. The Temperature of Interstellar Matter
150. Nonradiative Discrete Electron Capture by Molecular Ions
151. Heavy-Ion Perturbation Theory Applied to Open Shell Atoms
152. Shipboard Interference Structure
153. Many Particle Derivation of the Effective Mass Equation for the Wannier Equation
154. Importance of Pathologic Effects in the Scattering of Low-Energy Neutrons
155. Molecular Collision Cross-Sections: the Effect of Retention on Vibrational Excitation in Water Vapor
156. Methods of Plastic Behavior
157. Laminar Boundary Layer on a Cone in Supersonic Flow with Uniform Mass Transfer
158. Model Studies for an "Overseer" Ship
159. Model Studies for an "Overseer" Ship
160. Estimation of Mean Monthly Anomalous of Sea Surface Temperature
161. Heat Flow and Characteristic Profiles on the 70-India Ocean Ridge
162. Sources of an Area of Very Long Magnetic Anomaly in the North Pacific
163. Analysis of the Organic and Inorganic Constituents of Carbonaceous and Other Selected Short Meteorites--annual Status Report
164. Effects of Different Field Extensions on the Interference of Free-Commutator
165. Optimum Plastic Design of a Toroidal Frame for Alternative Loads
166. Strong-Coupling Limit in Fibre Optics
167. Precursor Characteristics of Oceanic Fracturing: Temperature of Viscosity and Sublimation
168. Multidirectional in Shock Layers of Wedge and Cylindrical Bodies
169. The Influence of Temperature on the Source of X-ray Emission
170. The Influence of Temperature on the Source of X-ray Emission
171. Anomalous Polarization in the Scattering of X-rays by Crystals
172. Superconductivity and Particle Size in Inhomogeneous Superconductors
173. A New "Opening-Closing" Dipole-Quadrupole Interaction
174. Linear and Spiral Daily Variation in the Magnetospheric Field Below the Ionosphere
175. Advanced Prediction Techniques
176. Cosmic Dust in the Stratosphere
177. The Influence of Surface Area on the Vertical Migration of an Animal Community in the Ocean
178. An Image Resonance Experiment on Turbulence-Induced Fluctuations
179. Transducer Calibration Facility at San Vincente Lake
180. Resonance Measurements in Electron Scattering by Hydrogen Atoms
181. Theory of Atomic Collisions with Negative Ions
182. A Modified Version of Teller's Theorem
183. The Influence of Temperature on the Vertical Migration of an Animal Community in the Ocean
184. Transport Properties of the "Fractional" Inhomogeneous Conductivity
185. Transport Properties of the "Fractional" Inhomogeneous Conductivity
186. Direct Numerical Determination of the Stress Field in a Dipole Sheet
187. Ion Temperature in the Upper Atmosphere
188. Precursor Characteristics of Oceanic Fracturing: Temperature of Viscosity and Sublimation
189. Transport Properties of the "Fractional" Inhomogeneous Conductivity
190. Transport Properties of the "Fractional" Inhomogeneous Conductivity
191. Transport Properties of the "Fractional" Inhomogeneous Conductivity
192. Transport Properties of the "Fractional" Inhomogeneous Conductivity
193. Transport Properties of the "Fractional" Inhomogeneous Conductivity
194. Transport Properties of the "Fractional" Inhomogeneous Conductivity
195. Transport Properties of the "Fractional" Inhomogeneous Conductivity
196. Transport Properties of the "Fractional" Inhomogeneous Conductivity
197. Transport Properties of the "Fractional" Inhomogeneous Conductivity
198. Transport Properties of the "Fractional" Inhomogeneous Conductivity
199. Transport Properties of the "Fractional" Inhomogeneous Conductivity
200. Transport Properties of the "Fractional" Inhomogeneous Conductivity

EVENTS

All interested persons are invited to attend the SDS Study Group. This week's topic for discussion will be, "Analysis of Classes in the U.S." Suggested readings: Mao Te Sung "Analysis of Classes in Chinese Society;" and Ernest Mandel: "Where is America going?" (New Left Review, No. 54, 1969) The Study Group will meet in Upper Blake Lounge on Thursday at 7:30.

The Women's Liberation Front will have a meeting on SUNDAY at 7:30 in Upper Blake Hall

The University at War

Victory at Sea

SDS

INTRODUCTION

In the last two articles in this series we have attempted to present information and analysis concerning "university complicity" with the policies and goals of the United States government. We have briefly considered the nature of "think tanks", the Department of Defense, the class nature of society, the inevitability of imperialism, the myth of pure research and the lie of the ivory tower. We have listed the budget of the University, contracts and the funding agencies of the government. We have seen that the only institutions in this society capable of performing basic research for the military and the ruling class are the universities. In this article we shall look at the Scripps Institution of Oceanography and its connections with the policies and goals of the U.S. government.

SCRIPPS AND WWII

Prior to WWII Scripps was an oceanographic research institute that received very little money from the federal government. Sponsored mainly by the State of California and private sources, Scripps' research, though of high quality, was somewhat limited in scope. However, the World War was to change all this. The military realized that they needed oceanographers, so they went looking for them. "The need for trained oceanographers became apparent early in the Second World War.... The armed forces would have found it impossible to meet the overwhelming need for knowledge of oceanic conditions created by the war had it not been for the existing oceanographic institutions and their willingness to cooperate." (1) And so Scripps went to war.

In 1941 the National Defense Research Council set up a research project under the direction of the University of California. This research in "subsurface warfare" soon developed into the University of California Division of War Research (UCDWR) and was headquartered at the Radio and Sound Laboratory of the Navy at Point Loma. The research at the Navy facilities drew upon many fields of oceanographic research, marine biology, and geophysics. Even today the research in marine biology and other so-called "neutral" fields of endeavor are of great consequence to the military. Scripps "helped ascertain that another puzzling phenomenon, the 'deep scattering layer' which reflected the sonar 'ping' and led to 'false bottoms' or inaccurate echo surroundings, had a biological cause. Physicists who had thought they could depend on sound traveling a given distance in a given length of time were surprised to find themselves contending with the whims of microorganism and fishes." (2)

The myth of pure research was never promulgated by the staff at Scripps during WWII. On the contrary, the staff members realized the nature of research, especially during the war. "The basic research which had been carried out at Scripps Institution since its inception proved valuable in many ways to the work of UCDWR and the entire war effort. It was impossible to predict which finds might someday have applications, and a limited amount of research not directly related to national defense was carried on at the Scripps Institution during the war." (3)

In 1946 the Point Loma facilities became the Naval Electronics Laboratory (NEL), and after the war the bulk of the staff of UCDWR continued their research under the auspices of NEL. However, the Navy, realizing the necessity of maintaining its ties with Scripps, proposed research of a more fundamental nature to be carried on under conditions which prevail only in universities. These conditions were to be created at NEL.

Vice Admiral E.L. Cochran, Chief of the Bureau of Ships, proposed this pro-

gram to the President of UC, Robert G. Sproul. "The wider intellectual interests involved in academic positions would attract more capable personnel to this work and would also militate against the possible stagnation of the program..... It appears that such a program should be of intrinsic interest to the University." (4)

On May 15, 1946 the Marine Physical Laboratory (MPL) was set up as a research division of the University. At the same time as MPL's founding, Scripps was cementing ties with the Navy that would last through the wars in Korea and Viet Nam. The bulk of Navy money, but not all of it, comes through the Office of Naval Research. (See chart #1 for the relationships between SIO, MPL and ONR). Finally in 1948, in order to simplify administrative and financial procedures, MPL was made a division of Scripps. Two other divisions of Scripps have their facilities at Point Loma, they being the Visibility Laboratory (VL) and the applied oceanography group. Also, the Scripps oceanographic fleet makes its harbor at Point Loma.

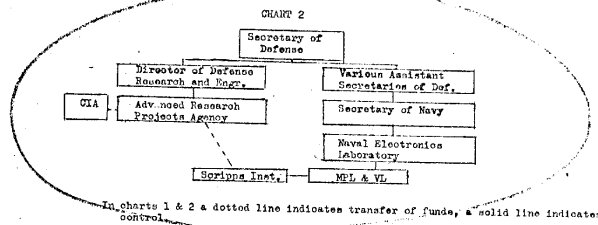
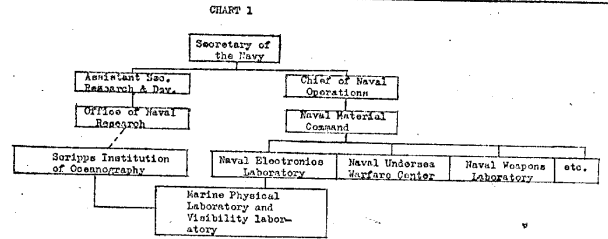
In table 4 some of the classified contracts and their principal investigators who find their employment at MPL or VL are listed. It is evident that much of the research at MPL and VL is of direct consequence for the military, especially the Navy and the CIA. Overall the research at MPL is mainly in the areas of geophysics, magnetic nonlinear measurements and sonar. According to Dr. Nierenberg, director of Scripps, the research is done for the Navy and is war-oriented. Sonar research is done for the Navy and is aided by the Floating Instrument Platform (FLIP). At the Visibility Lab the main thrust of the military research is image restoration--both oceanographic and atmospheric. This has direct application in aerial reconnaissance for the military and the CIA - especially in Viet Nam where it is used daily.

In Table 1 the money received by Scripps is broken down. More than ten million dollars comes from the Navy. The total amount of money expended at MPL and VL in 1967-68 was almost four million dollars. Most, but not all, of this comes from the Navy. In Table 1 there

| Agency | SIO Department | SIO |
|-----------|----------------|------------|
| NSF | 57,818 | 10,666,541 |
| AEC | -- | 255,108 |
| AIR FORCE | -- | 473,784 |
| NAVY | 41,258 | 10,665,455 |
| ARMY | -- | 33,893 |
| NASA | -- | 231,772 |
| DHEW | 562 | 27,550 |
| PHS | 37,457 | 666,964 |
| OTHER US | 4,356 | 751,313 |
| TOTAL | 141,451 | 23,772,380 |

Source: Memo to Department Chairman from Dr. S.S. Penner, January, 1969

is a source of money called "other US". This source is a hard one to track down, but not altogether impossible. Several confidential sources at Scripps who have worked at MPL and VL have indicated that some of the \$751,000 comes from the Central Intelligence Agency. This money, we are told, is channelled through the Advanced Research Projects Agency (ARPA) and the work performed is done under the auspices of the CIA. Periodic checks and reports are made by the personnel of the CIA when they visit MPL/VL every month. Data and results are then related to the war effort and to the intelligence work of the CIA. Considering the nature of this research at MPL/VL and considering the nature of the CIA, This relationship is not too hard to understand. (See chart #2)



WHO ARE THE PIPERS?

Commander-in-Chief of the Scripps complex is Dr. William A. Nierenberg, a Vice-Chancellor of UCSD. Dr. Nierenberg has had a long career with the government beginning with World War II. From 1940 until 1945 he was a section leader at Los Alamos in the famous Manhattan Project that produced the first atomic bombs. After the war he returned briefly to the academic world, and in 1950 he joined the physics department staff at UC Berkeley. Using Berkeley as a base of operations, Dr. Nierenberg began his climb into high places. In 1953-54 he was director of Columbia University's Hudson Labs (at which a great deal of military research goes on). From 1960 until 1962 he was Assistant Secretary General of NATO for scientific affairs, a rather important post. Since 1957 Nierenberg has been a special consultant to the Executive Office of the President. Since 1964 he has served with UNESCO; since 1966 he has been on the Government Science Advisory Committee's Naval Warfare Panel, and he is a member of the President's Task Force on Oceanography. And, of course, since 1965 he has been director of Scripps Institution of Oceanography.

Dr. Nierenberg is well suited for the job of director of SIO. With such a huge budget and the demands it must meet for the Navy and the CIA, the director must be able to handle everything. Dr. Nierenberg once made the claim that if there was a Department of Defense panel or advisory group, he's been on it. With all these connections in Washington, in the Institute for Defense Analysis, of which he is a member, and in other defense groups, Nierenberg is able to channel money and talent to Scripps. According to University records the budget of Scripps has doubled since the arrival of Dr. Nierenberg. An-

other reason is, of course, the war in Viet Nam which demands a lot of research.

Only when pressed will Dr. Nierenberg give the real reason behind his involvement with the military. "I'll do anything to make my country strong."** When he's not pressed, Dr. Nierenberg slips into sentimentality. When asked about Scripps research and the ocean, he responded: "To oceanographers the sea is an enormous and restless antagonist. The work is nowhere near as glamorous as it's supposed to be--it's tough, rough, and very difficult. But, for the average man, there is the ocean--empty, beautiful, available and infinitely appealing." (5)

THE REST OF THE TRIBE

Dr. Nierenberg is not the only man at Scripps who sees the necessity of doing research for the military and the ruling class. A hierarchy of mandarins has been established at Scripps. Tables 2 and 3 list those people who in 1966 were on the staff of MPL and VL. Several of these people are worthy of note. The director of VL since 1952 is Dr. Seibert Q. Duntley. He is one of the world's experts in image restoration--something the CIA has use for. Since 1940 he has been an active consultant to industry and government, including the Board of Directors of the San Diego Industry--Education Council (1961-63). His special research topics are optics, spectrophotometry, environmental optics and visibility.

Dr. Fred Noel Spiess, director of MPL since 1958, is another expert in the Scripps hierarchy. Originally a nuclear engineer at General Electric Company, Spiess came to Scripps in 1952 and moved quickly through the ranks. His research specialties include ways in which acoustic energy travels

*At a talk last fall in Revelle Cafeteria.

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These men and the others on the staff of Scripps are considered to be distinguished scientists. Money usually follows talent, and the only people who have the money are the people who need the research--the military and the ruling class.

TABLE 2
STAFF OF MARINE PHYSICAL
LABORATORY (1966)

| | |
|---|-----------------------------|
| Victor C. Anderson (Associate Director) | |
| Frederick H. Fisher | |
| Leonard N. Liebermann | |
| Carl D. Lowenstein | |
| John Mudie | Robert A. Rasmussen |
| John Northrop | Philip Rudnick |
| Benton B. Owen | George Shor, Jr. |
| Arthur Raff | Fred Noel Spiess (Director) |
| Russell W. Raitt | Victor Vacquier |

TABLE 3
STAFF OF VISIBILITY LABORATORY
(1966)

| | |
|----------------------------|----------------------|
| Roswell Austin | Rudolf Preisendorfer |
| Aimerian Boulen | Raymond Smith |
| Seibert Duntley (Director) | John H. Taylor |
| James Harris | John E. Tyler |

KICKBACK

Scripps performs services for the business community as well as for the admirals. Scripps has long-standing ties with the fishing industries dating back to World War II. "The California sardine industry, which for a number of years had been a \$65,000,000 enterprise, had suffered a severe loss in 1946. The yearly catch of sardines off the California coast, which had been as high as 800,000, soon fell as low as 150,000 tons, and the little research which had been conducted in this field was wholly inadequate to explain the sudden disappearance of the fish. . . . In 1947 the State legislature passed a measure to provide \$300,000 for the support of a greatly expanded research program, and increased the appropriation to \$400,000 in 1948. In addition a tax. . . . was levied on the sardine catch, and the revenue thus derived. . . was to help finance this intensive program of research into the causes of the diminishing supply of sardines and other studies of value to the fisheries industry."

This project developed into the Marine Life Research Program at Scripps, which has a fairly large budget--about \$1.5 million. Scripps also has ties with the Inter-American Tropical Tuna Commission, which has offices in the Bureau of Commercial Fisheries which adjoins Scripps. In the Bureau of Commercial Fisheries, Scripps operates the Scripps Tuna Oceanography Research Group (STOL). STOL and the Tuna Commission work closely together on problems of direct import for the tuna industry.

Further connections with industry are revealed in a recent issue of San Diego Magazine. Foodmaker Corporation Executives, Mr. Peterson and Mr. Silberman, have, along with other corporations, tried to "bring culture" to San Diego. Hopefully this will attract "brighter" people to San Diego, and also to Foodmaker. These people believe in making strong ties with the local academic community

MEETING ON CLINIC

General meeting on gynecology clinic--all members of campus community, men and women workers and students, wives and husbands--
Wednesday, October 29
7:30 H-L Aud.

through the sea; development of techniques for underwater detection, exploration and communication. Dr. Spiess was also co-developer of the manned oceanographic research buoy. The associate director of MPL is Dr. Victor C. Anderson. He is considered to be the world's expert in sonar and, by looking at Table 4, one can see that he produces a great deal for the Navy and the CIA.

More eager to accept such a form of supplementary assistance are UCSD and its marine arm, Scripps Institution of Oceanography. Peterson and Silberman have established personal foundations which quietly solve problems beyond the scope of University tax funds. The Scripps' multimillion-dollar research vessel, Alpha Helix, had no lounge, library, music room, nor "any civilized place to have meals and meetings." Peterson and Silberman provided the funds to redecorate a space which previously had all the warmth of a dentist's office. When Scripps needed the services of one of the world's foremost solid-state physicists, a German scientist, for a two-month period, it was learned that he would come only if his wife accompanied him. The University would not pay for her trip, but a Peterson-Silberman foundation did. When special extra equipment is needed to keep a particularly brilliant student in the University, it can rely on Peterson or Silberman to provide it. They also will guarantee the \$2,500 sought for travel and six months' rest for the chief of the Weather Bureau's Extended Weather Forecasting Center during a special research project at Scripps."

Another aspect of Scripps' research that leads to ties with big business is the Deep Sea Drilling Project which is a multi-institutional research project. Business interest concern themselves with the oil aspects of the research. This project has led to the "discovery of oil and gas in association with the Sigsbee Knolls in the Gulf of Mexico. This is the first demonstration of formation and accumulation of hydrocarbons in deep-sea condition; it will have a profound impact on geological thinking and technical development for exploration and exploitation of deep-sea petroleum resources." (8)

CONCLUSION

The claim is often made that research at universities is good in itself and pure. However, as we have seen in this article and in the previous two articles, the ruling class determines what research is to be done. They pay for it and they benefit from it. At Scripps this is brought out very clearly. The Marine Physical

Munsinger continued

racism' that says black people must be treated differently than whites. In the case described above the students reacted as Munsinger did. They shouted down the white student, but sat quietly while the black student spoke. They responded to neither and listened to the black student not because of what he was saying but because he was black. A lack of consciousness of what racism is and that it must always be fought was evident in the other responses of the students. Many felt that the question was unimportant and wanted to go on to the next lecture. Some said that what Jensen wrote was irrelevant because nobody believes in IQ tests anyway. Others said people were just reacting 'emotionally' and without reason, for it was clearly an unsolved scientific question.

But black inferiority is not an 'open' question in a society where articles such as Jensen's will be used as historically they have been--to justify the oppression of black people. Although the question of different types of intelligence and different ways of teaching based on them may be good in the abstract, a study on this subject concerning black people is not since we live in a society where black people are superexploited and where an ideology that says blacks are stupid and lazy is pushed to justify this oppression.

What is important in understanding the implication of Jensen's theory is that racism is just not a psychological attitude but has a material base and that it benefits certain people in American society.

Laboratory grew out of the needs of the Life Research group grew out of the needs of the fishing industry. The budgets of the MPL and VL and MLR group total more than \$5,000,000 in 1967-68. This was approximately 25% of the Scripps budget for that year.

The Scripps Institution of Oceanography since its inception has provided valuable information to the military and the ruling class. Whether these services are provided to the Naval Electronic Laboratory (which recruits here at UCSD on Nov. 4) or the Central Intelligence Agency (which recruits here on Nov. 7) or to the Foodmaker Corporation (which recruited here on Oct. 22) or to the Navy (which recruits here on Nov. 17, 18) or to the Atomic Energy Commission (which recruits here on Nov. 14) or to the rest of the military (which recruits here on Nov. 17-20) Scripps serves the interests of the ruling class of the United States. The University through the research it does, the recruiting it allows, and the ideology it teaches is not and cannot be an impar-

TABLE 4

The following research reports were listed in the Technical Abstract Bulletin (1965-69) as being classified by the Department of Defense. The various classifications are confidential, secret and top secret. The majority of these contracts were performed by Scripps personnel at the Marine Physical Lab and the Visibility Lab. These research contracts were performed under the auspices of the Department of the Navy and the Central Intelligence Agency. The majority of these contracts had as their principal investigators Dr. V.C. Anderson, Dr. S.Q. Duntley and Dr. F.N. Spiess. The research here is in sonar techniques, reconnaissance and their applications, and in nuclear blast effects.

- 1. Indirect Water Waves from Large-Yield Bursts
- 2. Background Radioactivity and Oceanographic Conditions
- 3. Convergent Aone Bearing Accuracy Measurements
- 4. Measurement of Secondary Effects, Water Waves

tial institution in society. The universities, in particular UCSD, exist for the benefit of the ruling class of the United States.

FOOTNOTES

- 1. Raitt, Helen and Beatrice Moulton, The Scripps Institution of Oceanography, (Anderson, Ritchie and Simon, New York, 1967) p. 137
- 2. ibid. p. 139
- 3. ibid.
- 4. ibid. p. 145
- 5. Fisher, Allan C. Jr. and James L. Amos, "San Diego, Where California Was Born Just 200 Years Ago", National Geographic, July, 1969, p. 147
- 6. Raitt, Helen, p. 147
- 7. Keene, Harold, "The Young Turks", San Diego Magazine, Jan. 1963, p. 89
- 8. Scripps Institution of Oceanography, Media Fact Sheet, (distributed on Oct. 23, 1969 to the press for the visit of V.P. Agnew) p.5

NEXT ISSUE: THE SORRENTO VALLEY ROAD COMPLEX

- 5. Multiple Channel Magnetic Drum Time Delay
- 6. Transient Signal Processing
- 7. Surface Sound Channel Bearing Accuracy
- 8. Visual Factors Relating to Optically-Controlled Indirect Fire Point Target Weapons
- 9. Location and Enumeration of Underwater Explosions in the Pacific
- 10. An Apparatus for the Measurement of an Effect of Atmospheric Boil (The Shimner Meter)
- 11. Observations of Transients in Background Noise from FLIP
- 12. Command and Control of Deep Submergence Vehicles
- 13. Passive Sonar Signal Processing
- 14. Atmospheric Optical Measurements in Central Colorado in Connection with Long Range Oblique Photography
- 15. The Limiting Capabilities of Unaided Human Vision in Aerial Reconnaissance
- 16. Resolving Power, Correlations and Uncertainty
- 17. Stereoscopic Representation of Bathymetric and Magnetic Profiles
- 19. Report of Triple EOS Operation of July 9, 1966

Nutrients to Pathogenic Invaders—see page 10

SCIENCE

the newspaper of science

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April 4, 1969

SOURCE OF GALACTIC WATER MAY BE STELLAR ACTIVITY

Water molecules have been discovered in eight regions of the galaxy. Microwave emissions from these regions—by which the presence of the H₂O was demonstrated—show not only that the water exists under highly unusual conditions, but that it possesses characteristics suggesting the emissions themselves are probably associated with formation of stars or other stellar processes.

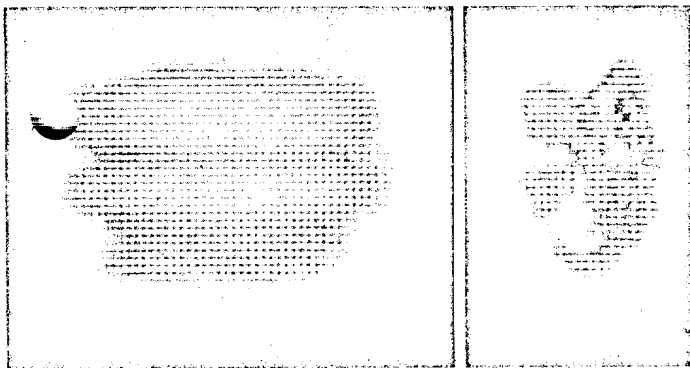
The discovery was made by a group of five physicists and radio astronomers from the Berkeley campus of the University of California, using that institution's new 20-foot-diameter radio telescope at Hat Creek. They detected H₂O's characteristic spectral emission line at a wavelength of 1.35 centimeters in four regions of the sky, and later work by members of the group—joined by observers affiliated with the Naval Research Laboratory in Washington—turned up an additional four sources. All eight are radiat-

ing immense quantities of energy, some portions of which fluctuate considerably within brief periods of time.

One region, near a known radio source called W49, was among the four identified by California physicists A. C. Cheung, D. M. Rank, and Nobel laureate Charles H. Townes, and electrical engineers D. D. Thornton and W. J. Welch. Its energy output was intense, they reported in *Nature* (221:626), but apparently didn't come from a source broader than three minutes of arc; at the earth-to-W49 distance of about 46,000 light years, this means a diameter of about 20 light days.

Subsequent studies by Drs. Cheung, Rank, and Townes, in which they were joined by astronomers S. H. Knowles and Cornell H. Mayer of the Naval Lab's E. O. Hulburt Center for Space Re-

see GALACTIC WATER, page 2

Blurred Photos Sharpened with Computer Scanner-Readout Technique

SCRIPPS INSTITUTION OF OCEANOGRAPHY

Blurred photo (left) resulted when subject moved his head while film was exposed at slow shutter speed. After computer processed the blur and directed its readout to a cathode-ray tube, improved image of subject's face (right) appeared.

Photographs too dark or out of focus to be recognized by the human eye have been reconstituted by computer so that the images became visible. This achievement, by investigators at the Visibility Laboratory of the Scripps Institution of Oceanography, is being used to correct the distortion introduced in celestial photographs by the earth's atmosphere, and to clarify subtle qualities often undiscernable on microscope and x-ray films.

"Even under a perfect microscope," James L. Harris, who is directing the research, explained, "a point of light is diffracted and creates a circular pattern. We can program the computer to eliminate much of the diffraction and reduce that pattern of light to a pinpoint."

Photo restoration begins, he reported in *Reproduction Methods* (9[2]:18), by scanning the picture and converting it to dots—more than 4,000 per image. The scanner assigns each dot a value, from one to 10,000, which corresponds to its shade of gray. If the photograph is out of focus, the computer is instructed to treat the blurred points as if they were diffracted circles—that is, change

see PHOTOS, page 3

ENGINEERS FOLLOWING A VARIETY OF ROUTES INTO MANAGEMENT

The statistically typical engineer in the United States is a 43-year-old man who works in one or more of 115 engineering specialties. In addition, he likes to think of himself as a manager-administrator as well as a highly specialized professional.

This self-image has been gleaned from a survey of 85,000 members of 45 engineers' organizations that boast a combined membership of 712,000. Some 53,000 replied, reports *Engineer* (10 [2]:24), but it should be noted that the survey included members of professional groups that require as much as five years' experience for eligibility—probably are older than the average in the full roster of those employed in the field.

As their careers progress, engineers find themselves inching into managerial positions, with fully 29 percent of the survey respondents stating that they were "primarily concerned with a managerial function." This does not mean that they no longer perform design or other traditional engineering tasks, according to the Engineers Joint Council, which made the survey; it rather reflects the fact that "Management is an activity that engineers engage in to a greater or lesser degree, whether who gingerly dips his toe in the water before plunging in for the swim."

In fact, many respondents describe themselves as managers as

see ENGINEERS, page 6

N, FROM DENSE MASSES EXPLAINS A NEBULA'S LONGEVITY

1,000 years since it ex-
 enough to be visible on
 the supernova now known
 la should have expended
 outburst and have ceased
 ical emissions. But the
 and its source, accord-
 theoretical astronomers,
 up of high-density radiat-
 re formed in the original
 ll reside in its general

3 good reasons for this
 by Burbidge of the Uni-
 na at San Diego and Fred
 itute of Theoretical As-
 ridge University in En-
 rab Nebula's radio emis-
 ey are rather minor com-
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 an area that would re-
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 7.
 high magnetic field isn't
 Drs. Burbidge and Hoyle
 (221:847); it "must be
 ge mass. Such confine-
 hieved by a self-gravitat-
 -e," for this would imply
 h the gas atoms would
 eplete the energy of the

ore plausible to suppose
 nsists of a dense object
 strong magnetic field,"
 radiations arise "in the

ream's Ecology in a Computer

ompu simulation of a
 ot and fish life is being
 for conservationists and
 The mathematical model
 taken systematically at
 Pennsylvania's Pocono
 has already produced
 ations of how many mil-
 l occupy a given stretch
 eek and an estimate of
 - and size of trout that
 pool.

obert Baer, a doctoral
 as engineering and op-
 the University of Penn-
 rying out the computer
 rvations at the four Po-
 ed that 30 to 40 per-
 stocked in them at the
 went uncaught. This
 stment of between \$450
 stream, he said, because
 ng trout lived through
 -r. If the streams' ecol-
 nderstood, it might be-
 -liminate the waste by
 ere fishermen are more

WITHOUT FEEDING

magnetosphere and particle belts surround-
 ing the object." Such an object would have
 about the same mass as the sun.

The second persuasive argument, Drs.
 Burbidge and Hoyle wrote, is derived from
 the fact that pulsar NP 0532—known to be
 within a few minutes of arc of the center
 of the Crab—not only matches in general
 the description of the mechanism whose
 radio emissions they just discussed, but
 also is undergoing a noticeable decrease in
 the rate of its pulsations. This declining
 rate, which had been accounted for in one
 popular pulsar theory (see *Dateline in Sci-*

PHOTOS continued from page 1

the small circles back to points. For pic-
 tures blurred by motion, similar instruc-
 tions are given.

When underexposure has produced a
 photograph that is apparently solid black,
 the scanner can detect slight differences in
 the density of the dots, Professor Harris
 pointed out. Because it is programmed to

ence, January 17), can lead to mathemat-
 ical extrapolations showing that the pulsar
 probably was born about 1054—when the
 supernova first flared into visible life—
 and will die in about 1,000 more years.

Similarly, an analysis of the Crab's x-ray
 emissions has led Drs. Burbidge and Hoyle
 to believe these radiations have a compa-
 rable origin. Although x-ray data from the
 supernova are far from complete, they cal-
 culate that x-rays are emitted from between
 10 and 100 "hot spots," all of which have
 high magnetic fields. It is "tempting to
 suppose" that these fields are magneto-

increase the contrast of the dots, the com-
 puter can produce a revised image on a
 cathode-ray tube, where it is then photo-
 graphed.

"Film recognizes many gradations of
 gray that the human eye simply can't see,"
 Professor Harris wrote. "We're allowing
 the computer to serve as the intermediary
 between this sensitive film and man's in-
 sensitive eyes." #

spheres spinning around massive
 objects, they said.

Possibly, all the emissions come
 same source: "A proton synchro-
 in which the protons emit radio
 the astronomers wrote, "could ge-
 x-rays through secondary geom-
 electrons in proton-proton colli-
 magnetosphere, and the rotation
 object could give rise to a pul-
 source."

Hence, they hypothesize, a sup-
 plodes when a rotating dense ob-
 too massive for a neutron-star
 tion. A number of the supernova
 vents are then ejected at very hi-
 "and thus there might be quite an
 population of such objects in an-
 our galaxy." One typical remnant
 type may be pulsar NP 0527, v
 about one degree away from
 Nebula.

But slower-moving materials—
 at speeds less than about 500 ki-
 second, "would still, after 1,000
 inside the Crab Nebula" releas-
 in the form of particles that mai-
 activity of the supernova. #

