

# Survey on Computerized Registration

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THE SCHOOL OF ENGINEERING AND ARCHITECTURE

## TECH NEWS

CITY COLLEGE OF NEW YORK

VOL. XXV — NO. 1

TUESDAY, FEBRUARY 14 ♡, 1967

STUDENT FEES

### Computer Registration In Experiment Stage

An experiment on computerized registration will begin during March on all upper seniors in the School of Engineering and Architecture.

The seniors will receive by mail a program sectioned by a computer based on the student's election card. Also, a questionnaire which will determine the differences between the computer sectioned program and the student's actual program will be sent.

#### Evaluation

Upper seniors in the questionnaire will be asked to evaluate the feasibility of computerized registration for the College. They will be asked if there were special requirements such as teachers or hours that made the computer program unacceptable. In determining the success of the experiment, the student will be asked objective questions on this form of registration, with space for their own personal comments.

The experiment was designed by a student faculty administration committee that was established last term by the Technology Council. This committee includes Deans Eitzer (Asst. Dean Engineering), and White (Curricular Guidance), Messrs Papoulas (Registrar), Elder (Computational Center) and Jonas (Asst. Registrar), and students from all branches of engineering.

#### Problems

In committee meetings, Registrar Papoulas has referred to the present method of registration as "organized chaos." In reply to the question that computerized registration would remove the possibility of teacher selection, Mr. Papoulas has said that this need not necessarily happen.

Student opinions on the committee vary. Ken Flaxman, president of Technology Council, has said, "This experiment appears, at best, to be poorly designed, and, as such, has many limita-

tions, which have not been adequately discussed or considered by the committee." Flaxman objects to the committee being formed after the experiment was designed and that the entire work of the experiment is to evaluate the experiment and not to plan it.

Ray Pass, a student on the committee, said, "I think the committee is making progress in accomplishing the task set before it." He felt that "it is more important that this is a Student Faculty Administration Commit-

### Who's Who

Jack Koplowitz, former President of the Technology Council, and Lenny Solomon, associate editor of TECH NEWS and student Chairman of E & A Day, have been accepted for "Who's Who Among College Students in American Universities and Colleges." Selection to the register is based on outstanding service in student activities.

### Snow Join Tech News



An engineer who didn't quite make it home Monday night, found on Tuesday . . .

tee where students are taking an equal part in the project."

### Job Statistics

The Placement Office has released the current salary offers for January graduates. The figures indicate that average salaries are significantly higher, with the range of salaries varying less than in previous years. The base salary given to ME's has gone from \$500 to \$633 in the past year with similar gains in other engineering fields. The top salaries offered to the graduates, however, have not increased.

Students who are presently candidates for degrees are requested to see the Placement Office F431, for job orientation meetings. These seminars are designed to help students with interviews and resumes.

#### AT BS LEVEL

Major	No. of Offers Reported	Average	Range
EE	152	\$699	\$607-796
ME	92	710	633-810
CE	21	695	600-785
ChemE	17	723	672-780
Math	11	674	630-725
Physics	5	672	650-728
Chem	3	681	673-695

#### AT MS LEVEL

Major	No. of Offers Reported	Average	Range
EE	5	862	835-900
ME	5	893	850-975
ChemE	3	810	790-820

Monthly salary offers to January 1967 degree candidates as reported by students and companies to the Placement Office as of January 18, 1967. Statistics are for private industry only, no Government agencies are included.

### Honors Program For Engineering

By J. MICHLIN

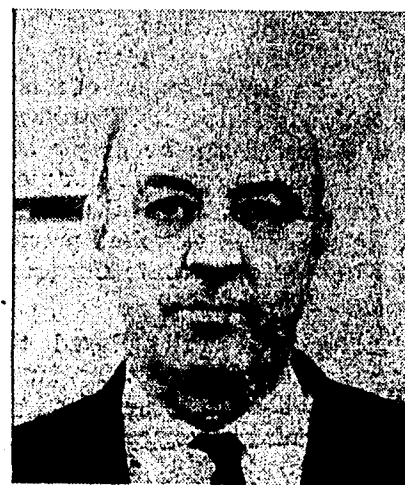
The School of Engineering and Architecture is considering the implementation of an honors program for Freshman and Sophomore students. The program will be similar to the present liberal arts Selected Students program.

The purpose of the program is to let the lower-classman try out some "real engineering courses" as soon as possible after he has entered the college. This will be accomplished with an inter-disciplinary engineering design course to be taken by the selected Freshmen. This course would treat the subject of engineering from a high school science and math background.

Dean Allen (E&A) stressed that this program should not be mistaken for a carbon copy of the liberal arts honors program. Rather, it will be aimed at orienting the exceptional incoming Freshman to his subject of engineering and bring him closer to it during the period in which he must take required math and science courses.

#### BROADER CONCEPT

Dean White (E&A) had a somewhat broader conception of the proposed program. He envisioned modification of the lower-classmen's liberal arts requirements as well as addition of the engineering design course.



Dean White outlines honors program.

He outlined a plan in which participants in the selected students' program could omit such courses as Social Studies, Humanities, Health Ed., etc. and take in their stead the regular honors requirements now given in the college. These would include the various English, History, Political Science, etc. courses now taken by Liberal Arts selected students.

He also agreed that the freshmen should get a rigorous background in digital computers as soon as the program allowed. The Dean stated, however, that all plans are tentative and that a committee has been set up from all branches of the school of E&A to discuss the new program. It will begin meeting in March.

#### In The Past

The school of E&A has participated in a kind of honor students program for approximately ten years now. This refers to the sanctioning of exemption exams in all required courses. Thus a student can be exempted from a course with or without credit by passing an exam in it. Unfortunately, this program has not been too successful due to a lack of publicity. The proposed new program would be brought to the attention of all incoming freshmen whose high school average is 90% or better, in the form of a letter inviting them to participate. No student will be forced to sign up.

The committee hopes to implement the E&A selected students program as early as the Fall, 1967 academic term.

### 50th Anniversary of E&A Being Planned

by Kenneth N. Flaxman

Plans for commemoration of the 50th Anniversary of the founding of the School of Engineering and Architecture are being formulated by the Engineering and Architecture Alumni.

The anniversary year will run from September 1968 to June 1969.

The idea was developed within the E&A Alumni Association. Those planning for the year include Technology Council, the Faculty of the School of the E&A, the Administration, and

the general Alumni Association.

Exact details for the year have not as yet been formulated. General ideas include holding various contests: One to choose a 50th anniversary symbol; holding a fund raising concert; granting honorary degrees; increasing the scope of E&A day to attract alumni and industry; holding symposia; publicizing the anniversary in professional publications; TV programs; a N.Y. Times Sunday Supplement

(Continued on Page 5)

# Dan Watts On Powell and on Black Rights and The White Man

By PAUL SIMMS

(This is the first in a series of interviews with prominent men, whose ideas add new insight to various situations affecting this campus both directly as well as indirectly.)



Daniel Watts editor of the Liberator discusses Adam Powell.

On the second floor of a rather pleasant, peaceful little building on 46th Street I approached a room, set in one of the darker corners, with the sign LIBERATOR on it. My first thought was "This won't take long." How wrong could I be?, for in this room, one of the most "aware" black men in this country sat and published, as its editor-in-chief, the voice of the Afro-American protest movement in the United States — "The Liberator."

Behind a small mountain of papers and envelopes, discussing the next issue of his magazine with a reporter, sat Daniel Watts. Coming directly to the point, I asked him what he thought about the entire "Powell" situation; he replied, "I don't believe Powell lost his seat or the chairmanship because of mismanagement of funds. Mr. Udhall stated that Powell racially stirred up the people and this led to his removal. But more important than this, is that Adam Clayton Powell exercised prerogatives that only white Congressmen did."

"Clayton Powell 'played the game' according to their rules. Adam, however, decided to flounce in the faces of America all the privileges and abuses the Congressmen commit. And Adam was a black man. This was the basic reason."

"Adam was a victim of the white liberals in New York City, who provided this Mrs. James with all sorts of legal advice to convict him. He was counting on his Congressional immunity in this matter and therefore offered no defense, but the liberals wouldn't let him have his Congressional immunity. This is White Liberal Railroad. One very evident example of this is that this Mrs. James will give the money to a white orphanage if she gets it."

"This entire matter illustrates that White Backlash. Congressmen got letters from the white people who wanted Adam out and followed their recommendations. And then the black leaders went to Johnson to intervene in behalf of the black community. Johnson replied 'Go back to New York; there is a telegram awaiting you there.' Johnson doesn't owe black people a thing and they better get it through their heads, they didn't put Johnson in office. Johnson would have won without the black vote. Statistics have proven this."

Then I asked him about the third party that Adam Clayton Powell is trying to form in this country. He was quite definite and quite pessimistic;

"It doesn't sound serious enough," was his first sentence. "The time to start a third party was when he was in Congress, not after he was thrown out. Adam, however, could serve as the catalyst that would get a third political party of black men; but we should not be disillusioned. We would not be able to take over the House and we shouldn't even

people prove to the whites that they aren't foolin' about this thing, it will stay just the way it is."

I stated that he was right and that the only way out for the Negro in this country was education. He did not agree. He believes:

"It's too late. At one time, education would have done the trick, but no longer. Industrialization has begun to take its toll, especially in the south, where a half skilled, half educated black man can't find a job for the machinery and knowledge have outmoded him. America has moved too far ahead for education to achieve for the black man his place in this white society. Power must be applied. Violence must be demonstrated. Those black men and women have gotta' get out of that bag 'Uhuru' and the belief that 'I can't get anywhere without 'Chuck' 'My friend 'Chuck' — shit."

As I was going out the door, Mr. Watts reiterated:

"We are obsolete. Education is not the great rescuer of black people. 'No, baby, we in trouble.' Black people have an affinity for looking at things unrealistically. First there are those who believe white people are their friends or rather see white people as wanting to help and proving their beliefs by having very close white friends. When it hits them, they won't quite know what has happened. Then there is the other kind — with their bullshit of walking around with their hair cut short and wrapped in robes and crying 'get Whitey. Kill him. Uhuru. Is that O.K. Chuck?' shit." When Malcolm X was killed and the Negroes didn't do shit, They relieved the fear in Whitey."

"This is mass frustration; by your own ignorant people and by the white people. Yea, baby, we are in bad, bad trouble."

think along those lines because it is too unrealistic, but if black men could form a voting block to direct votes, it would be a major step forward.

I asked him of the possibility of violence; he replied:

"Throughout the U.S. there is some talk about Adam Clayton Powell. At every communication level of black people, they are talking. It will be like in Watts. Same as in the repeal of Proposition 13, which led to the Watts Riots, I definitely see it happening in one city or another because it is just the issue to excite the people."

I inquired then, into the possibility of Adam giving up his seat and conceding defeat. His opinion on this matter was sharp and definite:

"There is very little chance for Adam Clayton Powell to give up his seat. His pride won't let him. The people in Harlem want him to remain also. I would support Adam in all this because the issue has become bigger than Adam. The white press says that there are ready, willing and able men to replace him. Who are they?"

Then, Watts and I talked of the entire black situation in America. Watts was very pessimistic.

"Black men in this country are in serious trouble. We have an infinite capacity for deceiving ourselves until it is too late. There are people in this country of the black color who still think that they have some good white friends and could go to them for anything. And this ability that we have to create illusions around us plus the anchorage to this country will be our undoing. Remember, for the most part, despite what a few white people say, we are in this fight alone."

About Negro leaders, Watts said:

"I would trust McKissick long before Chalmichael. Stokeley doesn't take the time to look back and see what he has said. He is quite irresponsible. The era of the excitors is over. Marcus Garvey and Malcolm X are gone. They were instrumental in their time but that has all passed. He is in the wrong time period."

"White people are no longer afraid of black people. They were at one time, but no longer. After the Watts riots when many more blacks suffered than whites, 'Whitey' knew that the black violence threat was a hoax. As it stands right now, black women cut their hair, get in them robes, and along with black men, cry 'Get Whitey, Uhuru, Baby.' Don't mean a thing. Until black

# Tech News Editors Chosen For Spring Term

With this issue, the newly elected Managing Board of TECH NEWS assumes office for the Spring term. Along with a change in personnel and staff, the offices comprising the board have undergone a slight modification.

The positions of Co-Editors-in-Chief, created as a dual role for the first time last term, have been filled by Otto Hammer and Tom Krauss. Hammer, a junior, is a Mechanical Engineering major. Last term, in addition to being Make-Up Editor, he also served as Corresponding Secretary of Technology Council. Krauss, a senior majoring in English, was the Managing Editor last term.

Elected to the number two positions of Managing Editor and Business Manager are Jeff Grossman and Bob Winokur, respectively. Grossman is a junior majoring in Economics who formerly held the post of Features Editor. Aside from writing a regular column for TECH NEWS, he is vigorously involved in the multitude of projects and operations of House Plan Association.

Winokur, a Political Science major and a junior, took over the position of Business Manager last October and is one of the 3 board members to be re-elected to the same office. He has been Assistant Station Manager of WCCR and is associated with various other organizations.

## New Posts

Paul Simms joins the Managing Board for the first time in the newly created position of News Editor. A sophomore and a pre-Med student, he has contributed considerably in the past as a staff writer for the paper. The other changes in offices are the creation of the joint positions of Copy Editor. Elected to these posts are Maureen Fre-

mont, who held the position last term, and Joseph Kramer, former Business Manager and Circulation Manager.

Phil Burton, a senior majoring in Civil Engineering, has been re-elected Photo Editor. This term he will again be writing as well as photographing for his Inquiring Technographer column. Stu Personick also joins the board for the first time in the position of Features Editor. A senior majoring in Electrical Engineering, Stu will also take over the task of writing the TECH LIFE column.

This past term's Co-Editors-in-Chief, Mark Kramer and Leonard Solomon have joined former editor Jon Spinner as Associate Editors.

## CLUB NOTES

### TECHNOLOGY COUNCIL

Technology Council will hold its first meeting of the Spring term, on Thursday, February 16, in Room 121 Finley at 5:30 PM.

### VECTOR

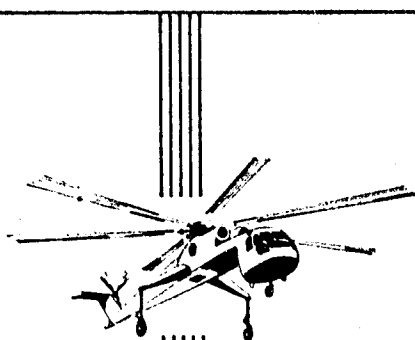
Vector will hold elections on Feb. 16 (12-2 PM). Sales and other schedules will be given out. ALL MEMBERS MUST ATTEND. Only a short time will be required.

### AMATEUR RADIO SOCIETY

All member and prospective members must attend this meeting for the purpose of organizing a key list. Thursday, 12:30 in S13.

### IEEE

IEEE meets Thursday, Feb. 16 at 12:15 in T-123. A representative of Con Ed will lecture and a film will be shown on the Cornell wall Project.



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Tech News Survey:

# Computer Registration

By MARK KRAMER

Editor's Note: The following is the first of a series of surveys by Mark Kramer, Associate Editor of TECH NEWS, sampling the students' opinions on various issues facing the City College.

In light of action begun by the City College administration and student committee concerning computer registration and its possibilities, we polled the students to find out how they feel about the present registration process and what they want to be improved.

Last week the TECH NEWS staff quizzed a significant percentage of students from all parts of the campus (approximately 4% of the students in the School of Engineering and Architecture, and Arts and Sciences). Among the questions posed were, "Are you satisfied with the registration process at City College?" Further questions determined, in the event of a change-over to use of computers, "What is most important to you in securing a program?" Of all the students polled, the following shows the response to the question, "Are you satisfied with the registration process?"

Very satisfied	34%
Moderately satisfied	16%
Dissatisfied	50%

Although one half of all students show displeasure with the present system, they are very hesitant to hand over the task of registering to a machine. When asked, "Would you prefer computer registration?" they responded:

Yes	18%
No	46%
Depends	36%

The large negative and undecided vote reflects the lack of knowledge the students have of possibilities computer registration offers. 50% of them dislike the present system but only 18% will completely endorse the new system.

In order to determine what the students value most in scheduling, we asked them to give first, second, and third choice. They were asked to choose from "getting desired courses," "getting desired hours," "choice of teachers," "ease of registration process," and anything else they wanted to insert.

Desired Courses	
1st Choice	59%
2nd Choice	23%
3rd Choice	12%
Hours	
1st Choice	21%
2nd Choice	42%
3rd Choice	35%

## Tutoring

Last term, members of the Engineering Honor Societies volunteered their services in order to assist those students who were having some difficulty in some of their courses.

There was a total of 463 tutoring sessions conducted during the semester with the following courses requiring the most assistance:

- Chemistry 1
- Graphics 7
- Mathematics 1, 2, 3, 7 and 61
- Physics 3, 7 and 8

Students who are interested should sign the schedule at Room 35, Steinman Hall. The program is organized in conjunction with Tech Council and the honor societies: Tau Beta Pi, Eta Kappa Nu and Pi Tau Sigma.

is significant here is that choice of hours appeared on 98% of all questionnaires.

One statistic that is not visible from the tables we present here is that 24% of all freshmen rank "ease of registration" as most important, as opposed to less than 4% of the upper three classes. This, we concluded, is a result of the ordeal freshmen go through in registering last, and is a probable indicator of the quality of programs they are coming up with.

One other statistic stood out. 68% of all Engineering and Architecture students said that choice of courses was most important, while only 51% of Liberal Arts majors felt this was most important. This has particular bearing because last term's limited experiment dealt with upperclass Engineering students.

This survey doesn't answer all the questions about computer registration. In fact, we hope it unearthed some new ones.

Teachers	
1st Choice	13%
2nd Choice	28%
3rd Choice	32%
Ease of Process	
1st Choice	6%
2nd Choice	7%
3rd Choice	21%

The majority of students were primarily concerned with getting their required courses and their electives. This does not shed much light on their preference with reference to computer registration, because both our present and proposed systems work towards getting students into some section in their field. What

# Reactor at Columbia

Columbia University will soon have a 250 kilowatt critical mass reactor on its campus. According to Dr. Robert Harper of the Publicity Office, the reactor is "practically installed," and may be in operation at the end of this summer.

The reactor, designated Triga II (Training Reactor — General Atomic) is the thirty-ninth of its kind to be built over a period of more than ten years. Unlike power supply reactors which depend on electrical circuitry to shut down in case of an emergency, the training reactors have zirconium hydride moderators to interrupt operation if the temperature exceeds a certain limit.

So far, only a license for construction has been granted for the reactor. The operating license is generally given by the A.E.C. after construction is completed and inspected.

The new reactor, under the direction of Dr. Edward Melkonian, will be used for teaching and research. Only persons li-

censed by the A.E.C. will be permitted to operate the reactor. Three members of the Columbia faculty are presently licensed.

Identical reactors have been built in other population centers, including Omaha, Tucson, Ithaca, Bethesda, and Washington, D.C. The reactor at Berkeley is similar, but produces 1000 kw.

## NOTIFY US

Have you any meeting or events that you would want announced, or happenings that you would like to have publicized? If so, leave a note in the TECH NEWS mail box in F152 stating your name, phone number, organization and event.

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## Company Description

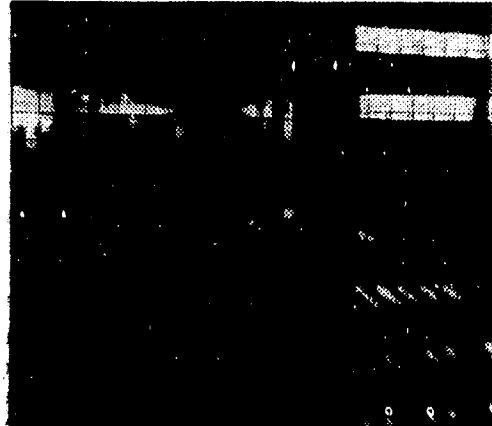
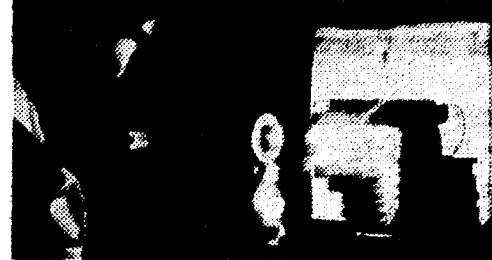
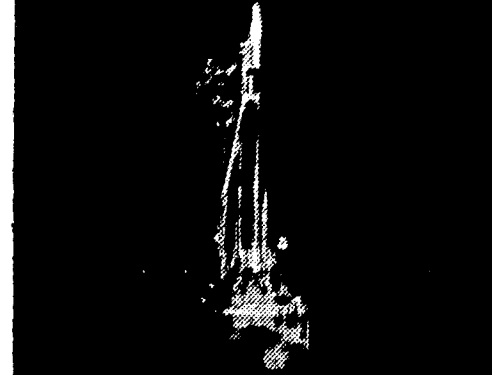
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## M.E. Department

It is of considerable annoyance, when checking teachers' lists before registration, to find that the listings of an entire department are conspicuous in their absence. This is quite understandable in the case of lack of time. However, we see no reasonable excuse for this occurrence when one department simply refuses to provide the students concerned with this helpful information.

Regretfully, this is very much the case with the Mechanical Engineering Department. While it has been the regular practice of the other Engineering Departments to post these lists every semester, it has been the explicit "policy" of the M.E. department to not do so. When questioned on this matter, Professor Eugene Avallone, Chairman of the department, refused any comment, save that this was and is the policy of the Mechanical Engineering Department, merely reiterating what is already well known to the students.

Students in advanced Mechanical Engineering courses know the professors, and the professors know the students. Because the courses are difficult, it is of utmost importance for students to find teachers with whom they are compatible.

## S.G.'s Budget

Student Government, in passing its budget for Spring, 1967, allocated the largest sum to itself. It voted itself four hundred dollars more than the next highest allocation on campus.

Student Government's record sum included \$2000 for Course and Teacher Evaluation surveys. At the end of each semester, the results of student evaluations of some professors and subjects are tabulated. The students, however, never see the results of these surveys, even though the \$2000 comes from their Consolidated Fee reserved for "student activities."

Student Government maintains that Course and Teacher Evaluation is used to benefit the students by improving the quality of their education and therefore should be paid for by student funds. The Administration is at present allocating an equal amount for these surveys.

In other fee allocations, Student Government refused to finance a series of original experiments by student members of the Institute of Electronic and Electrical Engineers (IEEE). These experiments also would have been subsidized by the national IEEE once the experiments were in progress. In a similar action, Student Government refused money to the Association for Computing Machinery for a library. In this decision, Student Government decided that the research experiments and library should be financed by the Administration.

How is it possible that a library and a research experiment receive no funds, whereas a poll of student opinions is granted \$2000? Teacher evaluation may be potentially useful, but no one on campus can say that he has benefited significantly from the previous unpublished results. Yet research experiments and a library would certainly benefit students. Fees should be allocated in proportion to the benefits produced.

The only organization that received all it requested was WCCR, the College's radio station, on whose credit list we find the names of Student Government's President and Treasurer.

## Inquiring Technographer

QUESTION: Do you think City College is ready for a return of big-time basketball?

WHERE ASKED: Finley Student Center.

Steve Dobkin, Major Domo, Upper Junior. Well, Pill, on the other hand, is City College ready for a return of big time basketball. In one of the more constructive of the rambling dialectics, Lord Pembroke laughingly pointed out that the playing fields of Oxford. And the same must certainly hold for City College. The students of this College have demonstrated beyond question that the shady gambling scandals of the early '50's were completely isolated and can never happen again. And I'm willing to lay you 12 to 1 and eight points that I'm right.



Sacknoff

Dobkin

Steven Sacknoff, Upper Senior, Political Science. City is obviously ready to go big time. The team has progressed in the last four years with better won-lost records each year. Almost all the games are sellouts. If Fairleigh Dickinson can go big time, there is no reason why we shouldn't. Surely sports scholarships should not be a criterion for going big time. Entering into this type of competition would further help to bind the student population into something other than a "subway school." It might even help to dispel our reputation as "The Little Red Schoolhouse."

Marjorie Russack, Lower Soph. Physical Ed. Is C.C.N.Y. ready for big time basketball? There's no doubt about it! Major sports are the backbone of any university and this one was never more ready for big time action. Not only is the men's team ready but the women's team is also on top. The Beaverettes, under the coaching leadership of Mrs. Roberta Cassese, are well on their way to reaching the top in the field of women's basketball. But remember, only student support in major sports can help these teams where they are — way on top!



Russack

Van Riper

Frank Van Riper, Upper Senior, Journalism. The return of big time basketball would be the best thing to happen to City College since Cesar Romero starred with Vera Ellen in "Fiesta in Havana." Rarely does the student body rise in such joyful exultation as it does when our Beavers in blue march triumphantly upon the field of sport to do battle with the enemy. Verily, sports fills a large gap in the pitifully barren lives of our students. Rarely do I traverse Convent Avenue without seeing some poor wastral mean: "Ed Warner, I need you!" It is only through the return of big time basketball that this poor girl and others find happiness.



## GROSS SAYINGS

A hearty welcome, especially to our 35 new engineers. Now that finals are safely over and I've been accepted back, I can at last tell the true story of what happened to me on Christmas Eve.

Sitting around one night this past December with two of my friends, we realized that, as usually happens in that month, Christmas was approaching.

"Hey," said one, "it's Christmastime."

"That's a groove," I said from the corner.

"How about a party on Christmas Eve?" said the other.

"Groovy," I said, crawling deeper into the corner.

"How about a combination Christmas-Beethoven's birthday-anniversary of the NLF party?" he continued. "We could turn it into a kind of Roman bacchanal, with wine and all."

"Groovy."

"No, wait," said the other, a lightbulb appearing over his head. "Let's have a regular Christmas party, just for kicks, with a tree, and mistletoe, and holly, and eggnog and all, just like the old days. We'll have bacchanal on New Year's Eve."

"What a groove," I yelled, and leaped from my corner to the couch. "What a groove."

So we decided to have a traditional Christmas party. Preparations began immediately. Being short of funds, we appropriated a tree from South Campus Lawn. We put it in the middle of the room since I occupied the corner.

And it came to pass that on Christmas Eve fifty people came to the party. There was mistletoe on all the ceilings, even in the bathroom. Eggnog flowed freely and everyone had a piece of cake baked from a "High on the Range" recipe in the East Village Other, so holiday spirit ran rampant. The tree was trimmed with tinsel and ornaments, and on top was an angel holding a sugar cube.

By two in the morning, most of the crowd was gone. A few sat around me listening to my rendition of "Jingle Bells" on the harmonica. We were startled by a loud noise from the fireplace.

"\*x&?!\*" exclaimed a red-garbed figure sprawled at the bottom of the chimney.

A girl screamed, "You're not . . . you're not . . ."

"Of course I am," the visitor said as he rose. He was tall and portly, wearing red corduroy bell bottoms, a black belt around his hips, black boots and a red corduroy cap. Over his shoulder was an oversized green bookbag.

"Hey, I thought Santa Claus was a story made up for kids," one of my friends challenged.

"Right, I visit children's homes. Aren't there two boys and a girl here?"

"They're in the downstairs apartment."

"Oh well, looks like I goofed again."

"Look man, you don't really expect us to believe you're Santa Claus, do you?" said my other friend. "Are you sure you're not a cop?"

Santa shrugged. "Don't believe me. But you can probably see my sleigh from the kitchen window."

Friend number one returned from the kitchen. "O.K., so you're Santa Claus. But why the weird clothes? Where's your long, red underwear with the fur?"

"Times change. Why should I be an anachronism? You know, only Little Orphan Annie can wear the same clothes year after year. As long as I'm here, does anyone want presents?"

"Groovy," I said from the corner.

He gave me a four-foot picture of W. C. Fields; he gave one friend a life-time subscription to Ramparts magazine; to the other, a leather-bound set of the Lord of the Rings trilogy, complete with a "Frodo Lives" button.

Santa sighed when he finished. "I gotta get down to those \*&x? kids." Another sigh. "Christmas can get to be a real drag sometimes."

"Before you go," Friend number one said, "I've always wondered how you get reindeer to fly."

"You just have to feed them the right kind of stuff," Santa Claus said as he headed for the fireplace.

"And how high do they fly?" Number two asked.

Santa replied, as he stepped into the fireplace. "It depends on how much you feed them." Then he turned, the proverbial twinkle in his eye, took the sugar cube from the angel atop the tree, said, "Why shouldn't my Christmas be as groovy as everyone else's?", and was gone. Finis.

(Continued on Page 5)



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## TECH LIFE

By STU PERSONICK

As we enter the Spring term, each engineering class will undergo important changes in outlook and attitude.

The Freshmen class will probably be much smaller this term as a large number of its members retire to fields more suited to their expectations and abilities. Many of those who remain will have to revise their conception of engineering and its related disciplines. They have tasted math 1 and physics 7. They have groped their way through elementary calculus and simple harmonic motion. Some are moving on with excitement and interest; many are hopelessly confused and disillusioned.

The Sophomore class is approaching the half-way point. They have begun their engineering courses. Many are first beginning to understand what engineering really means today, and what it will mean in the seventies.

The Juniors can begin to breathe a little easier. If you have come this far, chances are you will make it all the way. The courses will not get easier, but they will tie together the loose ends which twenty credits of math and twenty credits of physics left hanging.

Next to the Freshmen, the Seniors are probably in the greatest state of bewilderment. What is the advantage of graduate school? Should I study for an advanced degree full time, or should I go for it at night? What are my military obligations and how can I avoid them?

### "Strange and Unfortunate Creatures"

The engineering student is a strange and unfortunate creature. He studies for five years a subject so vast and diversified that only token mention of the social sciences and the humanities can be made in his curriculum. Upon graduation, he finds that he knows nothing. Five years is sufficient only to lay the groundwork for the many stones that make up the art of linking theory to reality and using science to ease man's burden and serve his purposes.

Most undergraduates are unaware of the invasion of the technician into the engineering world. Today's graduate is expected to know more than how to use Ohm's law and how to measure the efficiency of a diesel engine. Engineers no longer work in little basement laboratories building horseless carriages. The modern counterpart of the dirty man with an oil can and a wrench sits in an office with a blackboard and a sliderule. He decides how to build the Verrazanno bridge, how to put a man in orbit, how to generate a million kilowatts for a city, and how to provide fuel for a nation.

### Passing Not Enough

Many undergraduates have the attitude that merely passing is enough. This is true for the man who wishes to spend the rest of his life testing capacitors. He will start out on units in the range of one to five picofarads, and as the years go by, he will slowly enlarge his scope. This is not much better than the boring work that engineering is supposed to help you avoid.

Everyone wants to find a job that is exciting, one that gets you to work in the morning without an alarm clock. These jobs exist in engineering. They exist in research, development, and in field work. But it takes more than a simple degree to get these jobs. It takes a man who is devoted, who works a little harder to produce a product which is truly outstanding.

Now is the time to work a little harder, to plan a little further. The engineer of the future will study far beyond his bachelor's degree, he will know far more than the fundamentals. Technology grows more exciting each day and with each new development, but only for those who will be able to understand and improve that which others have done before.

## GROSS SAYINGS . . .

(Continued from Page 4)

As you well know by now, I'm not an engineer. So I had to take French and two weeks before the final — "Monsieur Grossman, what do you know about French syntax?" "Gee, I didn't know they had to pay for it."

The more I read the University of Buffalo *Spectrum*, the more I long to continue my education up there. Recently I saw the following headline: "Once Upon a Mattress Auditions to be held."

Also from the *Spectrum*, the following ad: "Wanted — One virgin, if there be one left, for Black Mass." Anyone interested, please let me know.

## Revised M.E. Courses Proposed For E.E.s

By JAY MICHLIN

In response to a recommendation made by the electrical engineering student-faculty committee, the department of electrical engineering has moved to revise the mechanical engineering requirement for its students. The requirement now consists of the ME 101, 111 sequence which involves thermodynamics.

The students' main objections to the ME courses were that they were trivial and a total waste to EE majors. The students' criticisms were submitted to the EE department accompanied by a letter from the faculty part of the committee completely endorsing the recommendations made. Professor Clemens (chrm., EE) stated recently that he has forwarded the comments of the student group to Professor Avallone of the department of Mechanical Engineering for appropriate action. Clemens added that he agreed generally with the suggestions made and expected that there would be some changes.

The student-faculty committee

involved is part of a Tech Council program designed to increase the involvement of engineers in their school. At present such a committee is operating only in the EE department in cooperation with the EE honor society, Eta Kappa Nu, but it is expected that they will be established in other tech branches shortly.

On the subject of these committees, Professor Clemens said that the EE group is not an official organization. The faculty members at present include Professors Eitzer, Hunt, Meth, and Carmel, but there are no faculty permanently assigned.

Clemens said that he was in favor of such groups as long as they remain useful and don't overstep their positions. He agreed that they have made many valuable suggestions although he stressed that the faculty alone has made important additions to the curriculum such as the recent change of textbook in Physics 111. He also said that he had not been personally dissatisfied with the ME 101-111 sequence before the S-F committee's report was submitted to him.

## Computer Course

A short course on Computer Design and Analysis, for civil engineers and architects, will be offered during the spring 1967 semester by City College's School of Engineering and Architecture.

The course, which will extend over two Saturdays and one weekday afternoon, is directed to meet the needs of an audience with little prior experience in modern computer methods. It will include an introduction to digital computing and computer applications; new information about the use of computers in problems of analysis and design; and present and future impact of computer technology on the engineering and architectural professions.

It is expected that the course will appeal particularly to engineers and architects in the New York metropolitan region who are self-employed or who work in consulting firms with no access to computers.

Tuition will be \$25. Classes will meet on Saturday, February 18, from 9:30 A.M. to 4:30 P.M.; from 1:15 P.M. to 5:15 P.M. one afternoon during the week of February 20; and on Saturday, February 25 from 9:30 A.M. to 4:30 P.M. The class size will be kept small to permit individuals to work directly on both a large central computer and the remote terminal of a time-sharing computer. In use will be the I.B.M. 7040 computer.

The course is being coordinated by City College under a grant from the New York Technical Services of the New York State Department of Commerce.

## Anniversary

(Continued from Page 1)

and other ideas still in the process of being formulated.

Work for the year has been divided into four major divisions: Academic Affairs, concerned with the symbol contest, and special projects; Social Affairs; Publicity Affairs, concerned with the possibilities of producing a film, having a street named after the college, and publicizing through publications; and Financial Affairs, concerned with funding and budgeting the operation.



### CARL FRETZ

(B.S.Ch.E.) of the Bethlehem Steel Loop Course knows where the action is. He faces new challenges daily as an experimental engineer in the Metallurgical Department of our Bethlehem, Pa., Plant.

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Interviews will be conducted at the Placement Office on Wednesday, Feb. 15th.

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# Education Experiment *Engineer Manpower Commission* Reports on Selective Service

By KEN FLAXMAN

Fifty people in the grand ballroom. Mickey Friedman, bearded student leader, seated in front. A desire to do something. Something meaningful. Creative. Educational. Courses — American Power: Control and Change. Marxist Leninist Theory. Vietnam Area Study. Contemporary American Poetry. Contemporary American Films. Europe in the 1960's. And on and on. Larry Yermack, boy wonder, demanding order out of chaos. Suggesting formation of groups. End the talk. Send the boys to groups. And girls. Form groups. Some with two people, some with six. Cary Krumholtz, student government vestige, saying this has to work. Has to work. Must work. End unresponsiveness of curriculum to student's needs. Provide meaningful experience.

November, 1965. Thirty people in Finley 121. Form a Student Congress. 3000 students in grand

ballroom. Student Government unresponsive to students. Thirty students gathered to form a representative body. And gathered and gathered and gathered. Division into committees. To study various problems. To meet and study and meet. And meet. And talk of 3000 students. Thirty people in Finley 121.

February, 1967. Fifty students gather. For experimental education. Talk of San Francisco State. Fifty students multiplying to 2000. Talk. And Talk. Ideas with no leader. Leaders with no ideas. Nothing with nothing.

November, 1965. Student Congress. Gee, daddy, what's a Student Congress? Something that almost was. Almost.

February, 1967. Experimental Education. Gee, daddy, what's Experimental Education? Something that almost was. Nothing, nothing, nothing.

Engineers would be allowed to fulfill their military obligation through work in "essential activity" under a proposal made by the Engineering Manpower and Scientific Manpower Commissions.

Engineers choosing this alternative to military service would serve a total of six years, and would be subject to call in a war or national emergency, but only as so declared by Congress. Under current Selective law, an engineer may be deferred from the draft.

The Engineering Manpower Commission submitted this proposal to the National Advisory Commission on the Selective Service, established by President Johnson. The present draft laws will expire in June, 1967.

The group does not believe that the Selective Service System in its present form is without

fault. The organization recommends changes in legislation as well as in administration of the draft. Stressing its objective of optimum manpower utilization, the Engineering Manpower Commission's statement strongly opposes any lottery or similar proposal which would substitute chance for informed selection on the basis of the national interest.

Both Commissions point out that the country's limited supply of engineers and scientists is a vital national asset. Further, this supply can be assured in the future only by allowing adequate numbers of students to complete their education and enter employment in these fields. Since the Armed Forces draw 90% of their officers from college sources, student deferments enable thousands of these men to serve in military leadership positions instead of starting as buck privates. For

these reasons, the Commissions feel any policy which would drastically curtail educational or occupational deferments would be detrimental to the national interest.

The Engineering Manpower Commission of Engineers Joint Council and the Scientific Manpower Commission represent major scientific and engineering societies with combined memberships of 800,000. Organized in the early 1950's to aid in improving manpower utilization in critical occupations, the two non-profit Commissions look on the draft as the problem of allocating technologically educated manpower to meet essential needs of both the Armed Forces and the national economy.

## Paradise of Fraternities & Sororities

By DENNIS COHEN

Remember, if they mock you  
Don't fear them —  
The proud goddesses  
The sorority queens,  
Or the frightening gods  
The fraternity kings,  
The insane rulers  
Of a soulless hell,  
The mighty monsters  
Who make their crowd  
Seem so powerful  
Because the noise of their herd  
Comes out so loud.

"Make new friends"  
You hear them yell  
"But first give us your soul  
And don't you dare rebel,  
You may speak of truth  
But you better live our lie  
Or kid we'll make you cry.  
We'll make you weep  
And we'll make you shed a tear  
If to us you don't cringe with fear.

"Oh we are the rulers  
Who made this world  
Of bunk and hate  
If you're good  
You'll get a date.  
And our version of love  
We'll give you  
With a pin  
If you're with us  
You're sure to win.  
Maybe if you're ready  
We'll let you go steady.  
But don't talk of truth  
And don't speak about love.  
Forget about your soul.

"We want you to be part of the mob.  
We want you to be happy,  
We want to get you ready  
For that bigger insane world  
Where again you'll lose your identity  
Where again you'll live a lie."

So never fear them —  
The disgusting goddesses  
The sorority queens,  
Or the sickening monsters  
The fraternity kings.  
Rather pity them  
And pray one day  
We'll wake up  
And of their lie  
We'll sicken.  
Then maybe their soulless  
paradise  
Will die  
And we'll be ready  
To conquer, the bigger world's  
Dirtier lie.

## THE SPREAD-EAGLE OF TECHNOLOGY AT GRUMMAN

*Ranges from inner to outer space*

Grumman has special interest for the graduating engineer and scientist seeking the widest spread of technology for his skills. At Grumman, engineers are involved in deep ocean technology...engineers see their advanced aircraft designs proven daily in the air over Vietnam, and soon...in outer space, the Grumman LM (Lunar Module) will land the astronauts on the lunar surface. Grumman, situated in Bethpage, L.I. (30 miles from N.Y.C.), is in the cultural center of activity. Universities are close at hand for those who wish to continue their studies. C.C.N.Y., Manhattan College, New York University, Pratt Institute, Columbia University, State University at Stony Brook, Polytechnic Institute of Brooklyn, Hofstra University and Adelphi College are all within easy distance. The surroundings are not hard to take. Five beautiful public golf courses are in Bethpage—two minutes from the plant. White sand beaches stretch for miles along the Atlantic (12 minutes drive). The famed sailing reaches of Long Island Sound are only eleven miles away. The informal atmosphere is a Grumman tradition, matched by an equally hard-nosed one of turning out some of the free world's highest performance aircraft systems and space vehicles.

Taking their place in a long line of Grumman aircraft that have contributed to the national defense, the aircraft shown below are performing yeoman service in Vietnam.



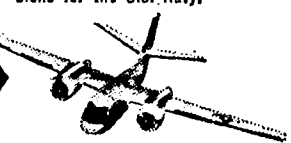
E-2A Hawkeye...A highly complex electronic system that contributes significantly to the science of early warning, and airborne warning and control.

HU-16 Albatross...famous as the main tool of the U.S. Air Force Air Rescue Services.

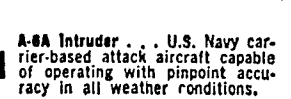


S-2E Tracker...Anti-submarine warfare aircraft which performs both "hunter" and "killer" missions for the U.S. Navy.

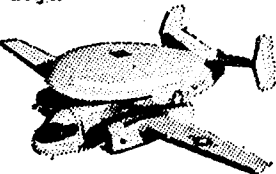
C-1A Trader...land and carrier-based aircraft ferries cargo and personnel between carrier and shore.



A-6A Intruder...U.S. Navy carrier-based attack aircraft capable of operating with pinpoint accuracy in all weather conditions.



OV-1 Mohawk...U.S. Army STOL electronic surveillance aircraft operating in close support of ground troops.



E-1B Tracer...U.S. Navy carrier-based high resolution radar aircraft detects impending enemy attacks hundreds of miles from the fleet.

Currently, Grumman engineers, pulling the state of the art relentless forward, are engrossed in still more advanced aircraft and aerospace vehicles. These include:

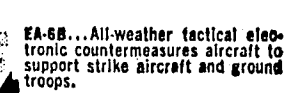


Gulfstream II...World's fastest corporate transport...non-stop coast-to-coast range at 585 m.p.h.

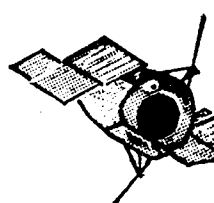
C-2A...Carrier-on-board delivery (COD) aircraft carries high priority weapons systems and personnel and performs logistical missions for attack aircraft carriers.



EA-6B...All-weather tactical electronic countermeasures aircraft to support strike aircraft and ground troops.



F-111B...Navy version of the USAF/NAVY bi-service fighter with variable wing sweep from 16 to 72.5 degrees. (Flies at speeds up to two and one half times the speed of sound.)



DAO (Orbiting Astronomical Observatory)...Scientific satellite for the investigation of scientific phenomena.

LM (Lunar Module)...to land the astronauts on the lunar surface in the late sixties.



Here then is the opportunity for graduating engineers...CEs, EEs, MEs, IEs, Physic majors and Chemical Engineering majors...to take their place in the continuum of technology that is Grumman. Grumman representatives will be

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FEBRUARY 23

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# Book Review

**Handbook of Mechanical Specifications for Buildings and Plants: A Checklist for Engineers and Architects** by Robert Henderson Emerick, P. E. 465 pages plus index; 17 illustrations: 5 3/8 x 8; McGraw-Hill Handbook Series; \$12.50. Publication date: October, 1966.

The **Handbook of Mechanical Specifications for Buildings and Plants**, a practical guide to the selection of items that should be included in a specification, provides detailed checklists for such individual units of equipment as steam generators and boilers, nuclear reactors, hydro-electric units, heating and air conditioning systems, air and refrigeration compressors, diesel engines, pumps and turbines, ice making, etc. A specification writer with the task of preparing a specification for unfamiliar equipment can write an effective specification by following the information and guidance presented in this Handbook. The material is arranged to help the specification writer to think about what is wanted and to make sure that no important details of the specification are omitted.

The author presents each major class of equipment as a Division, with the individual units in the class checklisted as Sections. For example: Division 4—Power Plants, Steam—is broken down into 22 sections including Steam Generators, Water Tube; Steam Generators, Fire Tube; Coal Handling and Storage for Steam Plants; Fuel Oil Storage and Handling for Steam Plants. The first of 22 Divisions describing specification forms and definitions includes listing of the 16 major construction divisions as formulated by the Constructive Specifications Institute and names the contract documents. Divisions 2 and 3 cover general and special conditions, respectively. Power plants (all forms) are specified in Division 4 through 8. Steam Distribution Systems, both overhead and underground, are detailed in Division 9, and High Temp-High Pressure, Hot Water Distribution in Division 10. Division 11 through 14 cover Premises Heating. The remaining 8 Divisions are: Air Conditioning, Comfort; Absorption Systems, Refrigeration; Heat Pumps; Air Distribution, Central System; Commercial Refrigeration (including skating rinks); Ventilating Equipment; Hot Water for other than Space Heating; and Miscellaneous Equipment.

Within the 22 divisions, there are 186 sections, and more than 600 letter-identified sub-sections. The **Handbook of Mechanical Specifications for Buildings and Plants** is an invaluable reference for persons actually writing specifications for bidding and for inclusion in the construction contract.

Robert Henderson Emerick has 40 years of engineering experience, including active naval service as a mechanical and general engineer in naval shipyards in the United States and overseas. Emerick devoted 15 years to public utility engineering in the design and specifying of power plants in various parts of the United States, and in Colombia, Chile, and Shanghai. Since World War II, he has been a practicing consulting engineer and had designed steam plants, heating and air conditioning systems, and other mechanical systems for a wide variety of structures. Emerick is author of

**Heating Design and Practice** (1951), **Power Plant Management** (1955), and **Heating Handbook: A Manual of Standards, Codes and Methods** (1964), all published by McGraw-Hill.

Further information on Emerick's **Handbook of Mechanical Specifications for Buildings and Plants: A Checklist for Engineers and Architects** may be obtained from the McGraw-Hill Book Information Service, 327 West 41st Street, New York, N.Y. 10036.

JOIN  
TECH  
NEWS

# Talks of Transit Strike

By PHIL BURTON

A high Transit Authority official, who does not wish to be identified, believes that the Transport Workers Union, which paralyzed New York with a

## THE ARTLESS DRAFTSMAN

By SAMUEL SEIFFER

Artless draftsman, drone you have not a building built a tower turned toward a humane being.

You designed of glass and steel, an over-effective measure but have forgotten us who must live.

I who must live in your world filled with the crazy functions of never increasing variables.

Design for me draftsman that I might yet live upon a reflection of unhurried pylons.

twelve day strike in 1966, will call another strike at the end of this year. "The contract ends at the end of December and the leadership which replaced Mike Quill has to make a big name for itself with the rank and file. Obviously, demanding a fantastic sum of money for the new contract is the only way."

The T.A. is on record for saying that even without an increase in its wage costs, the present 20c fare cannot be assured after June 30, 1967. Thus, it will be very reluctant to increase its financial

woes by raising the wages of its 38,000 motormen, conductors, dispatchers, bus drivers and mechanics.

In all recent contract negotiations, a settlement has not been possible without the intervention of the Mayor. Since the Mayor is directly involved in negotiations, the Union's mistrust of him would make a settlement more difficult.

The last strike in January of 1966, was the first ever called by the TWU, and the first major strike since 1935 against the then private BMT. Co. Since 1935, the TWU has gone through the ritual of preparing for a strike but has never called one until 1966.

Classes were held during the strike although cuts were excused. In addition, to help students attend classes, the Administration made Lewishohn Stadium available for student parking. Alternate side of the street parking regulations were suspended on the Terrace.

Fortunately, the strike was over just before final exams.

## TECH NEWS WANTS POETRY

Yes, you are reading correctly. TECH NEWS would like all ambitious poets to submit their work in our mail box in F152. Some of you might think it is strange that TECH NEWS is printing poetry. All we can say is, don't knock it 'till you've tried it. The final decision on which poems are to be printed will be made by the editors.



# On Campus Interviews for Professional Career Programs February 21

RCA is now undergoing the greatest expansion of its history, based on a wide diversification of products and services. This has opened up opportunities for BS, AB and Advanced Degree candidates in the following programs:

**COMPUTER MARKETING** requires individuals with good academic standing and a degree in engineering, science, mathematics, liberal arts, or business administration, with an interest in computer systems and sales.

**ENGINEERING** for the engineer or scientist interested in research, development, design, manufacturing engineering, purchasing or materials management. There are two possible avenues for the individual chosen: *Engineering*

*Rotational Program* will help you decide in which directions your career aptitudes lie. *Direct Assignment* for the person who knows his chosen field of interest.

**FINANCIAL** for the graduate with an interest in financial management and the applications of the computer in the field of finance.

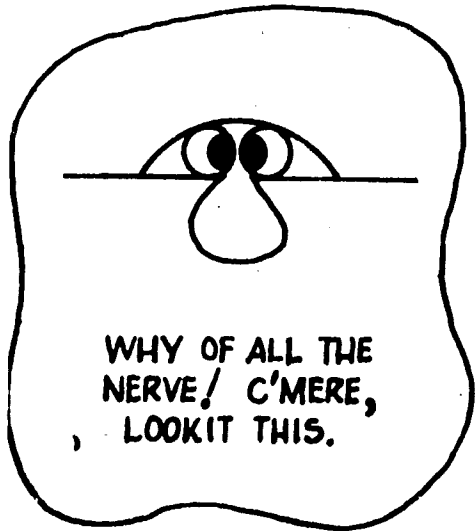
**MANAGEMENT INFORMATION SYSTEMS** requires individuals in engineering, science, mathematics with an interest in systems design and programming applications in the broad financial areas of RCA's businesses.

See your placement officer now to arrange an interview with an RCA representative.

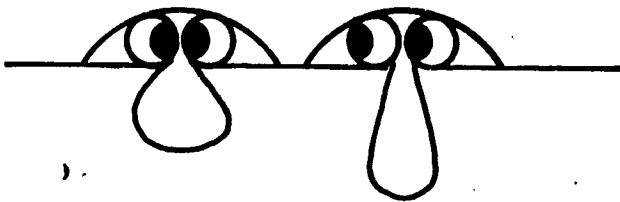
An Equal Opportunity Employer



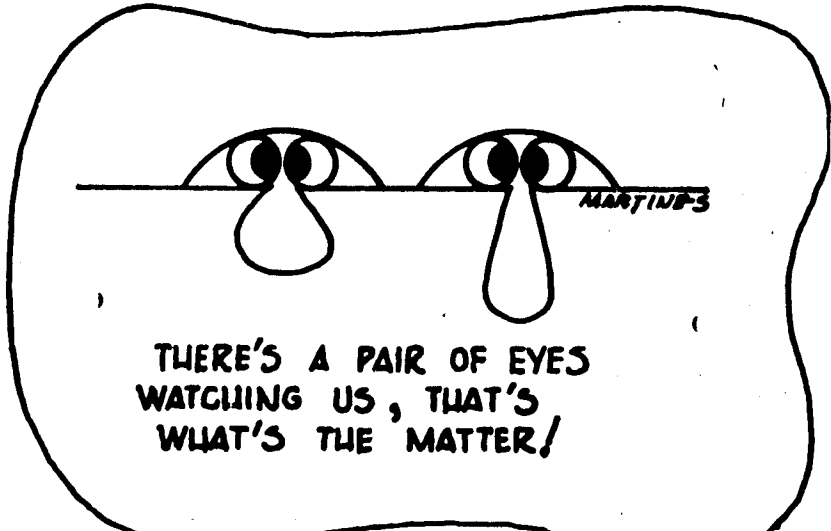
THE MOST TRUSTED NAME IN ELECTRONICS



WHY OF ALL THE NERVE/ C'MERE, LOOKIT THIS.



WHAT'S THE MATTER?



THERE'S A PAIR OF EYES WATCHING US, THAT'S WHAT'S THE MATTER!

## Engineering in The Peace Corps

The request for information on making bricks of soil and small amounts of cement came from a young American Peace Corpsman in Kedougou, Senegal. Bricks made primarily of cement could not be used because of the scarcity of cement. The problem was turned over to civil engineering

professor Leslie Y. C. Yao, who sent instructions for some simple soil tests to determine the quality of the earth and the smallest amount of cement required. Since the climatic conditions in Senegal vary from very hot and dry to extreme rain and dampness, Professor Yao suggested that the

Peace Corpsman test the bricks for durability by first placing them in the hot sun for four or five days and then soaking them in water for another three or four days. In addition, brushing the bricks with stiff brushes to determine their ability to withstand disintegration was also urged.

Professor David Muss, another civil engineer, provided the information on road-building for the Peace Corps Volunteer in Phillan-elbun, Chile. The problem in Chile was complicated by a lack of funds, making the use of steel drainage pipes impossible. Wood

planks couldn't be used because wood was very scarce and any wood the Indians could find was usually needed as fuel for cooking. Professor Muss suggested the use of large rocks as a base for the road, covered by vines, bushes and dwarf bamboo, all of which were indigenous in the area and readily accessible, as was gravel which was recommended as the final surfacing material.

Another request came from a Peace Corpsman in Daule, Ecuador, who was working with a rural electrification cooperative and wanted to know the best way

of using the cooperative's three generators. Professor Henry Hansen of the college's electrical engineering department worked out a simple way of combining the cooperative's generators for greatest efficiency — so that output could be increased as power demands grew each evening.

In the village of Pagadian, in the Philippines, a member of the Peace Corps needed detailed information on structural strength of gas tanks. Professor Donald Brandt, of the civil engineering department checked his reference manuals and solved the problem easily by sending complete tables of formulas with instructions on how to use them.

# CAREER NEWS FROM HUGHES

Aerospace Divisions in Southern California

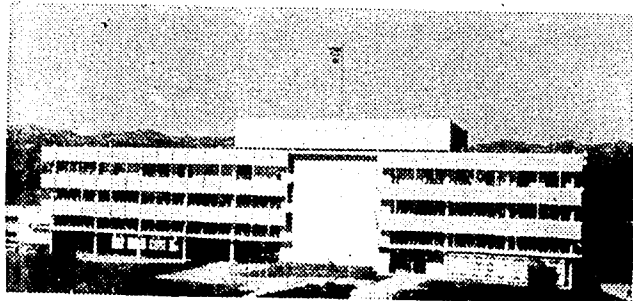
### NEW AND CONTINUING PROGRAMS AND PROJECTS

PHOENIX Missile & Fire Control System  
SURVEYOR Lunar Landing Spacecraft  
Synchronous Communications Satellites  
TOW Anti-Tank Missile System  
ATS (Applications Technology Satellites)  
AIM-47A/AIM-4E Missiles  
VATE Automatic Checkout Equipment  
CORDS

These examples of Hughes Aerospace activities are representative of more than 230 major product and service capabilities ranging from aerospace vehicles to ASW systems. Diversification such as this promises long-range stability both for the company and its employees.

### NEW MISSILE SYSTEMS DIVISION

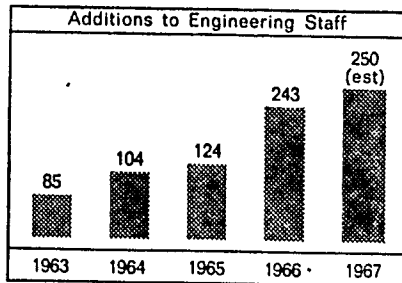
More than 1,600 engineers, scientists and technicians are now at work on expanding R&D programs at Hughes new 85-acre Canoga Park complex in the San Fernando Valley. Unexcelled facilities and the professional atmosphere at Hughes encourage creativity and achievement.



**IMPORTANT OPPORTUNITIES**, steady growth, diversification, long-range stability, professional atmosphere, advanced facilities, fine living conditions — these are the advantages which Hughes Aerospace Divisions can offer you at Culver City and Canoga Park.

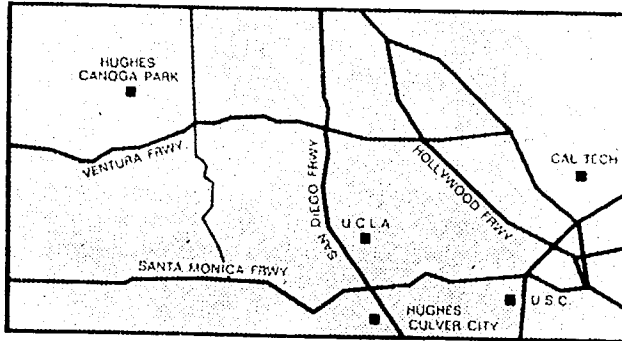
For additional information and to arrange an appointment with our Technical Staff Representatives, please contact your College Placement Office or write: Mr. Robert A. Martin, Head of Employment, 11940 W. Jefferson Blvd., Culver City, California 90230.

### HIRES OF ENGINEERING GRADUATES



Of the over 12,000 employees of the Aerospace Divisions, over 5,000 are Members of the Technical Staff. Average experience is 11.7 years. Average age is 37.9 years.

### HUGHES-CULVER CITY/CANOGA PARK



Hughes Aerospace Divisions at Culver City, and Canoga Park, offers Engineers and Scientists a unique combination of urban and suburban advantages. Located adjacent to major freeways. Los Angeles Civic Center is about a half-hour distant — beaches, just a short drive. Attractive residential neighborhoods are nearby. U.C.L.A., U.S.C. and Cal Tech offer outstanding educational facilities.

### CAMPUS INTERVIEWS

February 23 & 24

**HUGHES**

HUGHES AIRCRAFT COMPANY  
AEROSPACE DIVISIONS

An equal opportunity employer / U.S. citizenship required

## MATHEMATICIANS PHYSICISTS ELECTRICAL ENGINEERS

LINCOLN LABORATORY has openings for a limited number of engineers, physicists and mathematicians.

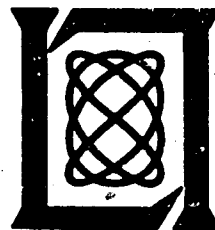
LINCOLN LABORATORY, a research center of the Massachusetts Institute of Technology, is engaged in research and development in advanced electronics, with emphasis on applications to national defense and space exploration.

A LABORATORY REPRESENTATIVE WILL INTERVIEW APPLICANTS

**February 17**

CONSULT THE CAMPUS PLACEMENT OFFICE IN ADVANCE

**LINCOLN LABORATORY**  
Massachusetts Institute of Technology



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