



"National purpose has been swiftly infused into the educational system."

—Wide World.

## Castro's "Crash" Program in Education

*Roy Popkin, author of this article, is a former newspaperman who has been associated with the American Red Cross for more than twenty years. In his capacity as public information consultant to the Disaster Services, he was sent to Cuba early last year during the Bay of Pigs prisoner exchange. Mr. Popkin and his associates were guests of the Cuban Red Cross. Because he has a daughter in college and a son in high school, he was interested in how the new generation of Cubans is being educated under the Castro regime. He visited the University of Havana, talked to professors and students, and gathered a store of written material about Cuban education. On the return trip he was in charge of a group of Cuban refugees, and had as his interpreter a former professor at the University of Havana. He talked to the professor at some length, comparing his own impressions with the professor's experience and knowledge. It was out of this combination of associations that Mr. Popkin's article took form.*

By ROY POPKIN

**I**N THE thatched-roof mountain schoolrooms, in bright airy university laboratories, in rural sewing classes, and in one-time mansions outside of Havana, Cuba's new "heroes of the Revolution" are building an educational crash program to create an "instant" socialist-oriented and technologically competent society.

Probably in no Western Hemisphere country, including the post-Sputnik United States, has national purpose been so swiftly infused into the educational system as in Cuba during the past four and a half years. The government of Dr. Fidel Castro is using the classroom to raise the level of adult education to the sixth grade, to create and supply technical and scientific skills for new or expropriated industries, and to develop responsible, craftsman-like workers in what was formerly a basic-

ly agricultural nation. From elementary school to university, from *actos*—the frequently called meetings of workers in a plant or field—to anti-illiteracy classes in the mountains, political indoctrination forms the foundation for all educational activities.

It is not education for education's sake or education because education is a good thing, *per se*. Rather, it is education for Cuba's sake, and the educators and students are hailed as heroes of the new Cuba. Cuban magazines and newspapers report educational programs with all the intensity and fervor that characterizes American news media coverage of a space launch at Cape Kennedy. Only teachers with an avowed affinity for the socialist revolution—whether they be *twelve* years old or sixty-five—can teach in Cuba's schools and universities.

Mobilizing teachers like an army, Cuba is educating its people with an

intensive and all-inclusive effort that could well become a model for other Latin American countries—for better or for worse.

In September, 1960, Fidel Castro appeared before the U.N. General Assembly in New York. His long, perorative recitation listed many goals, among them the eradication of illiteracy in Cuba.

Soon afterwards, more than 100,000 "teachers" were mobilized to do this. Teen-aged students were organized into Conrado-Benitez brigades, workers into "fatherland or death" brigades—*patria o muerto* is just about the biggest national slogan in Cuba today—and 35,000 professional teachers joined them in the "People's Education Army," which, according to the official government organ, *La Revolucion*, launched the "assault on valley and mountain to eradicate illiteracy."

Subsequently published statistics say

the army of *alfabetizadores* located almost one million adult illiterates and taught more than 700,000 of them to read and write during the year-long effort. The government claims Cuban illiteracy dropped in that year from more than 23 per cent to an "index of 3.9, one of the lowest in the world."

**B**OOTH official sources and exile educators living in the United States agree the anti-illiteracy campaign was not without incident. Anti-Castro guerrilla forces and unsympathetic peasants harassed the educators, killing some; many of the adolescents among the "teachers" treated their assignment with enough carefree abandon to create, in the words of one ex-university professor who came to Florida, "a high enough pregnancy rate to show they learned a lot more than how to teach the alphabet."

After returning to Havana, the *alfabetizadores* were hailed by Castro at a giant rally in the vast Plaza de la Revolucion before the new monument to Cuban patriot Jose Marti. The magazine *Bohemia* described the occasion as follows:

A brilliant victory for culture. The young educators brought light to the darkness of the ignorance that imperialism, like the dark heritage, had left to the recently liberated people. . . . They sang their song, "Fidel, Fidel, tell us what other task we have to perform," so powerfully as to put all the Christmas carols in the shade when they returned from their educating work.

Castro responded to the song with, "the Revolution, after asking you for the efforts made in eradicating illiteracy and after asking you to bring instruction throughout the valleys and mountains, now asks you to become technicians, to become engineers, to become economists, to become teachers, art instructors, professors."

Cuban television today carries on the literacy battle, urging children to learn their alphabets with cartoon films in which singing letters appear as fruit on trees and woo the attention of a passing cartoon-child. Interestingly, the letters "O.E.A.," Spanish initials for the Organization of American States, are the most prominent performers.

To enhance the theme of heroic educators, magazine layouts on the work of the *alfabetizadores* feature photos of five who died in the effort. Such emphasis on student martyrs and their place in Cuban history is even more marked at the University.

How political indoctrination is woven into even the most basic education is reflected in the way the *alfabetizadores* taught reading and writing. A typical blackboard lesson would be the legend:

#### MARTI

Marti was all love.  
Marti loved the island.  
The revolution is a Martian one.

This is a far cry from the traditional "run Jane run" reading lessons with which we are familiar in this country. Marti was the famed Cuban patriot of the 1890s who is, for the Cuban people, a combination of what Abraham Lincoln and George Washington are to the American people. Such native Cuban patriotism is skilfully tied into the new revolutionary education at all levels. In an article entitled, "The School Comes to the Mountain," another Cuban magazine uses photos of a small group of peasant children smiling up at the Cuban flag.

"Many poor country children had never seen the flag with its solitary star nor ever heard the meaning of its beautiful colors," the text says. "They couldn't even recognize a letter or a number. Now the humanistic revolution has brought the school to the mountain. Since the Revolution has put its patriotic plans into operation, the lonely rural and mountain areas are frequently surprised by visits of city and state officials. Now the children don't have to ask what the flag is like or what a blackboard is because of the burning desire of the Revolution to instruct both adults and children."

The transition from a "Martian" revolution to a "Marxian" one is not hard to follow. Pictures of Marx, Lenin, and Khrushchev abound in school, college, and public places. The University of Havana describes the old days when "the study of philosophy had been reduced to elemental and backward notions and to simple, dead formulas. Marxism was referred to only as a spiteful rejection."

Marxist "dialectical materialism and history" is a required course for all students at the universities no matter what their field of study. They study it for four semesters.

In elementary school classrooms, the following dialogue between teacher and students may be heard:

"Whose sons are you?"  
"Fidel's!"  
"Whose grandsons?"  
"Nikita's!"  
"What are you?"  
"Socialists!"  
"What will you be?"  
"Communists!"  
"Cuba Si!"  
"Yankee No!"

An official summary of Cuban education progress was published early last year in *Revolucion*. According to the report, 412,257 students had matriculated in adult education courses on a continuing basis, about a fourth of them graduating in September, 1962. Another 200,000 were enrolled in Workers Excelling Courses, which are part of an intensive effort to use education to create a new class of supervisory and managerial personnel to replace those jailed, executed, or voluntarily exiled after the Castro revolution. Graduates of these courses will go on to secondary courses and, if qualified, to a university.

One Cuban official explained the emphasis on technical skills this way. He held a package of *Populares*, a strong Cuban cigarette whose package is labeled with the Picasso Dove of Peace, in one hand and a package of *Salems I* had given him in the other. He said, "Our package is flimsy. Our cigarette comes apart. We need engineers and supervisors and workers who will turn out good products, so Cuba can com-

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The University of Havana—"educators and students are hailed as heroes of Cuba."

—Wide World.

# Our Schools: Battleground of Conflicting Interests

By JOHN H. FISCHER, *President of Teachers College, Columbia University*. This article is based on an address delivered at the annual convention of the American Association of School Administrators in Atlantic City on February 18.

THE American school, especially the public school, is the repository of a great variety of hopes, plans, and expectations. In one sense, this is nothing new, for our schools have long served as both the symbol and the instrument of our aspirations. But in recent decades, especially since the end of World War II, we have turned to schools with a new seriousness. More of us than ever before, some for the first time, are discovering that what we have been saying about the fundamental importance of education is actually true. Personally and as a people, we are beginning to see that we do in fact depend on our schools. The natural consequence is that they are expected to do all the old jobs better and to undertake some new ones.

Any institution with as many duties and functions as the American public school must expect to be the target of different interests. As the agent of a free

society, it is subject ultimately to public control. But if the school is to remain usefully responsive to any group or any pressure, more attention than is now being given will have to be directed to strengthening the school as a total institution and to safeguarding the integrity of the school system as an enterprise serving the whole community.

Most of those concerned about education see the school as a vehicle of great potential power, as, of course, it is. But so many are fighting for the steering wheel, or for the right to choose the road, that almost nobody is left to think about the vehicle itself. We shall do well to remember that unless the car is kept in good repair, properly fueled and well lubricated, it won't be taking anybody anywhere, regardless of who handles the wheel or who reads the map.

The consequences of competitive specialism are evident in many places. The field of curriculum reform offers some impressive examples. One centers about a phrase that has recently gained wide currency among certain scientists deeply involved in producing teaching materials for elementary and secondary schools. The phrase is *teacher-proof*, and it is used to describe materials so ingeniously prepared that the influence of the text, film, or laboratory manual

will override the effect of an incompetent teacher.

Now, the people who are looking forward to a "teacher-proof" curriculum act from high motives. Their aim is to see that the information and ideas that reach students are authoritative, accurate, and up-to-date. They are deeply and rightly concerned about the problem of inadequately prepared teachers. But the fallacy of their phrase, and of the approach it exemplifies, lies in the assumption that the curriculum can be permanently improved by bypassing the teacher. The cynicism of the scheme is exceeded only by its futility. Sooner or later, the truth will be discovered: in building a better curriculum, what seems to the newcomer the long way around is often the shortest way home. The quality of the curriculum is always influenced most strongly by the competence of the teacher. It is not likely that any device, however clever, will long obscure that fact or satisfactorily dispose of it.

The unfortunate effect of highly concentrated pressure for particular purposes can also be seen in school board elections and referendum votes on financial questions. In community after community across the country, school board elections are marked by bitter and ugly



"When the promoters of school boycotts defy the law and discredit moderation, they join the segregationists in a form of absolutism that cannot be condoned."

—Wide World.

# Fischer

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work legally and most efficiently in concert, not through the personal activities of individual members. It acts as a whole for the community as a whole, rather than serving merely as a gathering point for the delegates of contending factions.

The model for the school board is not the Federal Communications Commission, or the Atomic Energy Commission, or any other government board whose members are expected to devote full time to technical or administrative duties. A more appropriate model is the board of trustees of a well run major university. The proper contribution of the school board member is not expertise, but wisdom; not detailed knowledge, but high values and sound judgment.

**I**T IS equally important that the function of the superintendent be clearly seen and consistently honored. He has three main duties. One is to be the board's executive, seeing that the policies it sets are fully and faithfully executed. A second is to serve the board as its chief professional advisor, making recommendations not only about the program of the schools, but also about the procedures by which the board carries on its own work. His third duty is to be the first colleague among the teaching staff. Unless he is qualified to be respected as a first among equals by his fellow teachers, it is extremely doubtful that he will have the competence to serve as he should, either as the board's adviser or as its executive.

Most troubles between boards and superintendents arise from misunderstanding or disregard of their respective functions, or from a lack of confidence of the one in the other. To choose a board worthy of public support is the inescapable responsibility of any community that takes education seriously. To secure a superintendent in whom it can safely place full confidence is the board's first duty and its highest responsibility.

The superintendent's performance is a matter of enormous consequence to the schools. Beyond question he is the most important individual in any local school system. It is not enough, therefore, that he view himself merely as the man in the middle, or for others so to see him. To be useful in any of his three roles, he must be the man in front. This is not to say that we need dictators or martinets. It is to say that if the superintendent sees his part as no more than holding things together—playing, so to speak, the pin in the hinge, he will necessarily fail his board, his schools, and

his community. The hinge pin is useful, to be sure, but it has little to do with opening or closing the door, or with the traffic that flows through it.

The superintendent's view of himself is as important as the community's and the board's view of him and in the end will largely determine what their view is. One need not support a cult of personality to recognize that institutions are in fact to a considerable degree the lengthened shadows of men. Lacking strong, responsible, effective leadership, no institution is likely fully to realize its potentiality.

To catalogue the qualities not only desired but desperately needed in the school superintendent today is to compile a list of all the human virtues. The specifications dictated by the demands of the job reveal its true importance and the degree of our dependence upon the men who occupy such a position. No single model helps us very much. Neither the industrial manager, the military commander, the social engineer, nor the master in group dynamics fills the bill. The qualities associated with each of these may overlap some part of the superintendent's circle of competencies, but none comes near to filling it.

Centrally, of course, the superintendent is a teacher. The best leader in a democratic enterprise and especially one focused on education is invariably an excellent teacher. Effective leadership produces more than action. It promotes effective learning, and it leads to decisions wiser than any that would have been made without the learning—or the leadership. Its most important power is the power of honest, open persuasion. It exercises its influence not by force, but by the sharpening of insight, the broadening of outlook. The best leader always brings out the best in those he leads. The result of his work is only incidentally an improved institution or a better community. His principal accomplishment is what has been achieved by those he has influenced, and even more in what they have become than in what they have produced.

Leaders who can work in this way are not easily found. Men and women with the desirable combination of under-

standing, wisdom and vision, dedication, patience, and courage are always rare. There are never enough of them anywhere.

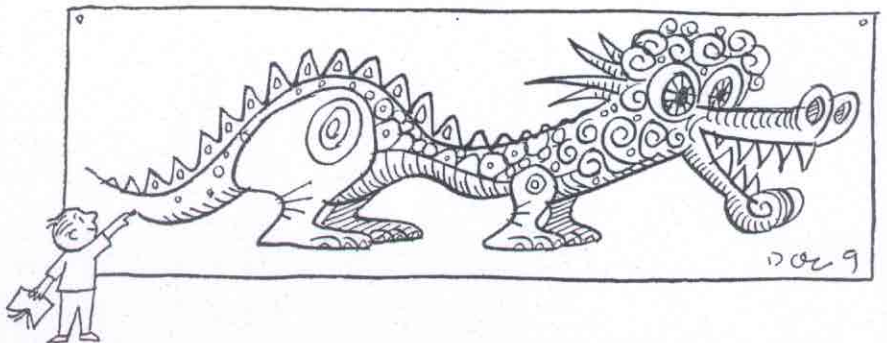
But, I suspect, the shortage may be less severe than we ordinarily believe. Indeed, there is encouraging evidence that when the need is great enough, leaders equal to the times are usually found. When Charles Beard was asked what he had learned in the lifelong study of history, he replied, "When the night is darkest, the stars appear." A variety of explanations are offered to account for this phenomenon, including supernatural intervention. It is possible, however, that more mundane causes may be at work. With some truth we say that the times produce the man. It may be nearer to the point to say that our own expectations have enormous power to elicit from those around us the qualities we need.

It was by no accident that in the 15th century B.C. Aeschylus and Aristophanes were in Athens to dramatize her achievements and her tragedy, that Herodotus was on hand to record the history of her triumphs, or that Phidias and his collaborators were there to create the Parthenon. Athens wanted creative drama, insightful historical writing, noble architecture, and those who produced them were highly esteemed.

Something besides sheer good fortune in fifteenth-century Florence generated the genius that made it a center of artistry for the whole of Europe. Sculptors and painters were welcomed and supported not only by the Medici, but by many more who responded affirmatively and with pride to their work.

**I**N OUR own history, Washington, Jefferson, Madison, Adams were as much the men of their times as the times were the result of their talents. In every period everywhere, the contemporary currents of expectation and response exert crucial influence upon the qualities men exhibit and develop.

The American community most likely to have an excellent superintendent of schools is the one that most appreciates and welcomes the sort of man it knows it needs and truly wants.



# Cuban Education

Continued from page 65

pete in the world markets. We do not want to make junk."

In another direction, Cuban education strives to elevate the position of working women. Prior to the Castro regime, his official report says, "almost 40,000 women were being exploited as domestics." More than 19,000 of these women were attending special night schools in January of last year and over 25,000 are now working in offices and banks, as drivers, and in other higher-level occupations. There is a special school for night school instructors, many of whom work in the daytime in the childrens' nurseries or teach at the

Makarenko Pedagogy Institute where girls from fourteen to twenty-two take three-year courses qualifying them as high school teachers.

There are also centers of rehabilitation set up for "those women who through capitalist exploitation and corruption were made to become whores."

Special sewing schools in Havana have been attended by more than 15,000 "country girls" from all parts of Cuba, and forty more such schools operate in rural areas. Those who stay in Havana attend the sewing school for almost a year for "primary education, sewing, and assimilating new ways of life." The "new ways of life" also find their way into the mountain area sewing schools. One Cuban magazine reports:

New Cuba . . . Now We All Learn to Sew. . . Now among the chief tasks that the Revolution is accomplishing is educating and dignifying the life of the country family. . . For the men, work is established, bread for the family. For adults and children, the National School, which is well attended. For the country women, girls and mothers of families, the Revolution is now offering classes in sewing. . . Always a desire of the women, now the vital Revolutionary breath has made this a reality.

The National Schools mentioned above are, in effect, the new public school system created by law on July 26, 1961, in a promulgation that wiped out private and religious schools formerly supported in part, at least, by earlier governments.

"Education before the Revolution was very poor and limited," says *Revolution*. "The best schools were the religious ones and the bilingual ones in the hands of those who made the students instruments of capitalist imperialism. Only the rich were educated properly, to no good end."

AT the time Castro came into power, the government says, there were 8,232 primary schools with 16,300 teachers and 582,198 pupils. Three years later, there were 12,243 schools with 30,905 teachers and 1,166,277 students. The number of sixth-grade students who graduated was trebled. New schools are still being built in large numbers, and it was reported that almost seven million new textbooks would be printed this year. There are now 224 basic secondary schools giving special attention to technological education, and twenty-three special technical or vocational high schools creating "conditions for tens of thousands of youths to be of use to the country."

Perhaps the most dramatic pre-college program is that which brings more than 70,000 teen-agers annually to

Havana under a federal scholarship plan. (Another 30,000 scholarships provide college, art school, and other specialized education.) When you drive through the old Miramar section east of Havana, you can see these students, or *Becados*. They live in the luxurious mansions of the district and wear uniforms (there is something sadly Hitler Jugend-like in the sight of scores of pink-bloused, dark-skirted girls marching down the street or clustering along balconies at the day's end). Most of the *Becados* are ardent Fidelistas. They receive constant political indoctrination in their classes.

ONE Havana teacher, quoted by George Alford, who formerly headed the Associated Press Bureau in Havana, notes wryly, "Had previous governments not neglected their education, the Communists would not have found so much virgin brain soil to till."

This same teacher told Alford the scholastic levels of the *Becados* is low, but they are intensely loyal because "they live better than before and have a stake in Cuba's Communist future. The government has housed them in mansions. For them there is no food rationing and their menu includes more milk, beef, and eggs than any time before in their lives."

Reports from Cuban refugee teachers tell of some of the boys among the *Becados* who are being trained with firearms. Many of them go on to the universities or technical schools, but most return to the provinces as apostles of the new Cuba or, in some cases, are given special additional preparation and go to other Latin American countries where they live off the economy and spread the gospel of socialist revolt.

For other young people not covered by the scholarship program, there are special Schools of Revolutionary Instruction where doctrine is the only subject taught. It has been officially announced that 90,000 students would complete such courses in 1963 alone.

It is at the University of Havana that the new look in Cuban education is most evident, and here that student "heroism" is most exploited. The University catalogue itself is a political document, with a twenty-two-page introduction giving the history of the "reform" in higher education.

Closed down by the Batista government because the university was a source of student revolutionary activity, the Universities of Havana, Oriente, and Los Villas were reopened in January 1962, on the thirty-third anniversary of the assassination of Julio Antonio Mella. He was a pioneer in university reform and, according to the catalogue, "a symbol of the great ideal of establishing a

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relationship between the University and the laborers and the people."

The only student banner visible during this writer's visit to the University early last year was a *Federacion Estudiante Universitarios* pennant with a picture of Mella on it. The student newspaper had a special section devoted to Mella that included photos of him on his deathbed and of the bullet-pocked wall against which he was shot. The University of Havana is a beautiful campus on which new buildings are just beginning to add a modern touch to an educational grandeur combining Spanish architecture and tropical surroundings. Old, bullet-scarred walls wear plaques to student martyrs of past uprisings. In the center of the main quadrangle is a battered armored car captured by student revolutionaries in the struggle against Batista. Students in militia uniforms and wearing revolvers or carrying Czech submachine guns guard such places as supply rooms and the baseball field.

In its introduction, the catalogue says the "fall of tyranny exposed the preposterous crisis into which Cuban higher education had fallen." The 200-year-old University, it says, "produced lawyers who were trained with no juridical vigor, supposed graduates of philosophy and literature who did not contemplate their studies, educators with no cultural base and oriented to the educational system of the Yankee pragmatists, and doctors who . . . did not have adequate work in the basic sciences or hospital practice.

"If, in spite of these deficiencies, Cuba could produce qualified technicians and groups of professionals . . . during the republican decades, the perseverance of student minorities deserves the credit."

Under the "reform," the University has cast aside former patterns based on European university tradition and now, in spite of professed contempt for "Yankee pragmatism," offers programs based on the American college system of semesters, course points, marks, and general subject groupings into separate colleges. Instructors are paid not on an annual scale but on the basis of how many hours a month they teach. Courses of study lead to degrees in letters, history, law, political science, economics, science, mathematics, physics, chemistry, biology, geology, geography, psychology, four engineering fields, mining and metallurgy, architecture, medicine, dentistry, agriculture, and veterinary medicine.

Students must buckle down to their studies. "Verbalism and memorization and passivism are barred," says the catalogue. "Under no circumstances will they be tolerated. The suppression of traditional examinations and the estab-

lishment of a rational system to evaluate the work done by the students will contribute no doubt to the elimination of deadly conformism that characterized the learning in most old European-style universities."

National need, the catalogue says, is a key point in student enrollment. "The principal of cardinal importance in the selection of students depends on the scientific, technical, and professional needs of the nation." (No plethora of liberal arts majors at the University of Havana!)

A former student, now working near Washington, says there is another criterion. He was a pre-medical student after the Revolution. One day, student leaders visited his room, pointed a gun at him and asked if he was a Communist. When he said no, his matriculation ceased.

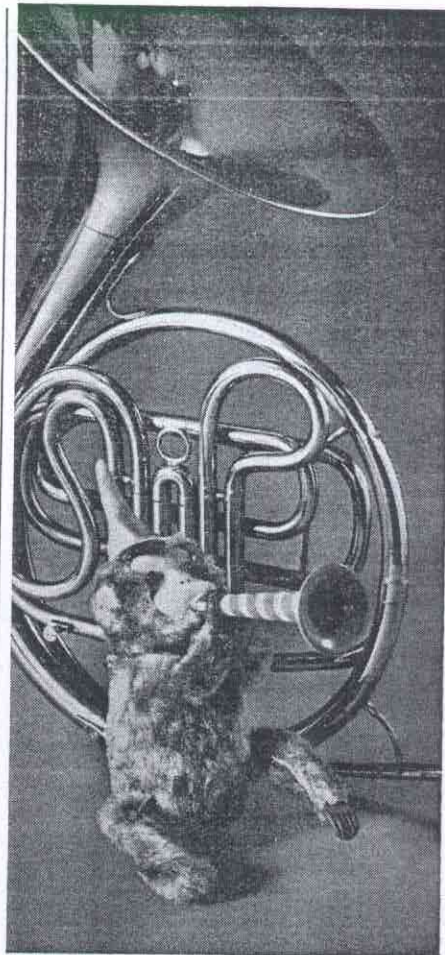
The University of Havana resembles an American university only superficially. Students do not wear college sweatshirts and there is little visible horseplay. There is a baseball field, a student theater, and the usual quadrangle grouping of lab and classroom buildings.

**L**IKE the *Becados*, the University students eat well. The thirty-nine-cent luncheon at the student cafeteria includes hot meat and is far superior to anything available in expensive restaurants or to the general population.

Classrooms are high-ceilinged and pleasant. They seat up to 150 students. The labs seem sparsely equipped, compared to the elaborate gear found on U.S. campuses. Bookshelves in classrooms and laboratories seem equally skimpy, with many of the volumes old and out of date. (As part of the Bay of Pigs prisoner exchange, the Cuban government asked for a complete set of modern U.S.-published medical textbooks.)

The various professors to whom we were introduced seemed to be either quite old or quite young, but were equally enthusiastic about their subjects and took great pains to show us through amazingly complete exhibit collections in their specialties. The geology collection included a group of stones donated by a club in Georgia, U.S.A. Our guide, a university official, told us cheerfully of the disappointment shown by some touring Russians who thought they came from Georgia, U.S.S.R.

On the student bulletin boards are copies of *Pravda*, pictures of Castro and Lenin, and anti-American propaganda mixed in with the routine announcements and an occasional cartoon. The F.E.U. student government offices are reached by passing through "the room of the student martyrs," one wall of



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## The New Math

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which is covered with photographs of students killed in uprisings against Machado or Batista. The offices themselves are decorated with proclamations of friendship from North Korea, Russia, Yugoslavia, East Germany, and other socialist countries. The vice-chairman of the F.E.U. sat behind his desk wearing a .45 caliber revolver on his belt.

During a two-hour discussion with a group of students in the office, the only political comment related to the then still-pending invitation to a group of American college students to visit Cuba. After a brief review of the role of student government in our respective countries, we were quizzed on the use of TV in American education. Havana University uses closed circuit TV in its medical school.

They told us 2,000 Cuban students are studying in Russia but no Russian students were then at the University of Havana. Russian, Polish, Czech, and Bulgarian are taught in addition to French, English, Italian, and German.

Apparently, they had been thoroughly briefed as to how they were to act towards us, for when it was mentioned that one of our group had once taught at the University of Mississippi, there was not so much as a knowing smile or an exchanged glance. Yet we knew the Cuban newspapers had been filled with the story of James Meredith.

Their greatest eloquence was reserved for the rebirth of the University and its role in plans for Cuban development, indicating that at every level of education, national purpose is obvious and important. And, regardless of the quality of the teaching that may be available at these various levels, it is being well served.

This, then, is purposeful education with a vengeance, administered with massive doses of carefully tailored political doctrine at all levels of schooling. Although the quality of the teaching is undoubtedly mediocre at this point, the goals are obvious and kept constantly in view. The slogans of the classroom are echoed and re-echoed in the government-controlled mass media and from posters that cover every available inch of wall space in cities and villages.

It is the kind of education that is building total support for the Cuban government among its young people and building also a cadre of socialist-oriented, if not dedicated, young people who will carry the message into other Latin American countries. To the observer from a free country whose own emissaries in these same countries are either businessmen or a handful of Peace Corps members, the contrast between the preparation given the Cuban young people and ours is somewhat chilling.

the earliest, is now being introduced in high school. And calculus, of all things, which the colleges previously guarded jealously, is being taught very successfully in some high schools that can supply the happy combination of able students and well-prepared calculus teachers. While these trends appear off-hand to hold nothing but advantages for student and teacher alike, I should hasten to add that some mathematicians have real fears about the dangers inherent in giving superficial treatment to profound and intricate mathematical concepts. They feel that an inevitable effect will be to train some youngsters to be simply pseudo-sophisticates in mathematics. The tenth-grader and his paper fell short of a real understanding of topology. Perhaps it is this development over the last five years, the introduction of concepts to students much sooner, that has led to the widespread and mistaken notion that sets, binary numbers, and group theory are *new*, in spite of the fact that all of them are at least a century old.

Finally, I would like to comment about the history of the *new* mathematics. There is no doubt that the *new* mathematics as it is perceived by the layman was swept into the public mind shortly after the successful launching of Sputnik I. A certain evolution in the pedagogy of mathematics was in progress slowly but unremittingly at that time, both on the secondary school and college levels, receiving its greatest impetus from the Commission on Mathematics that was established by the College Entrance Examination Board in 1955. But it was that historic satellite which blew the whole problem wide open. All of a sudden it made the competitive position of America clear, forced the country to re-examine its scientific resources, and focused attention on the fierce shortage of personnel, especially in mathematics, the discipline on which so many other sciences depend. I do not mean for a moment to underestimate the contribution which the vast interplay of political, social, and technological events has forever made to the growth of mathematics. I am simply commenting on the explosive appearance of the *new* mathematics on the secondary school scene in 1958.

I recall attending a meeting of mathematicians in Washington, D.C., several months after the launching of Sputnik I, and the atmosphere of the conference was vibrant with the new importance that people everywhere were attaching to mathematics. A distinguished professor exclaimed to some of us in the hotel

lobby one day, "Sputnik I has done more for the cause of mathematics and mathematicians in this country than we have been able to do for ourselves in the past two hundred years." It was as though we were poor cousins whose great aunt had just died and left us a fortune; or as though we had just been given membership cards to some elite club and did not yet have the proper formal clothes to wear.

ONE unfortunate consequence of that surprise attack, and the one which is still causing confusion as to what the *new* mathematics is, or what it should be, was the fact that it caught the forces of mathematicians in almost complete disarray, with the result that we didn't know which way to run and hence have found ourselves running in every direction at once. The *new* mathematics has become a controversy that has pitted old friends, and even old office mates, against each other; and I think that no one is really certain as to what the final outcome of this stimulating debate will be. Certainly to indicate that the matter is resolved, as some authors have chosen to do, is an incorrect statement of fact.

What final form the *new* mathematics takes—and it is bound to take a more stable form, since the whole evolution is inevitable—is only a matter for time to decide. Or perhaps I should say for the mathematicians to decide—as they regroup their forces. At the moment, the *new* mathematics is essentially a renewed mathematics—renewed in the attention it has attracted from many interested participants and observers; in the searching re-examination that has been forced upon its pedagogical intricacies; and in its increased importance in an age and society deeply involved in technology.

