

THE SCHOOLS OF TOMORROW

In line with SR's continuing interest in educational television, we publish below the first full progress report on a five-year experiment begun last September in Hagerstown, Md., that may revolutionize U.S. education. Carl Bakal, who went to Hagerstown for the story, is editor of the men's magazines Real and See.

By CARL BAKAL

IN A bright windowless room, about the size of the average classroom, Mrs. Mildred Vance, a pleasant, intense woman who has been teaching science for sixteen years, is ready to give a class to 554 sixth-graders.

A model steam engine on a table near her puffs and whistles as she begins, "Hello, boys and girls, are you ready to work, too? Good! Let's go! What do machines like this and factories have to do with our lesson today? And what do you think is the most important factory in the world?" She pauses for a reply.

Several miles away in seventeen classrooms scattered throughout the town of Hagerstown, in Washington County, Maryland, the 554 children, their eyes glued to television sets, raise their hands at the image of Mrs. Vance on the screen. At the same time in twelve other classrooms 512 second-graders, as engrossed as if they were at home watching Captain Kangaroo or Howdy Doody, sit all atten-

tion as tiny Mrs. Barbara Hull telecasts their daily arithmetic lesson.

What is happening in these classrooms—as well as in others in the six elementary schools and two high schools where some 6,000 Hagerstown children are also receiving televised instruction in courses like music, art, English, social studies, history, and geometry—may resound for all future generations in this country. For although this five-year experiment in teaching by television started only last September, it has already been called "the most significant thing going on in America today" by such prominent educators as Dr. Alexander J. Stoddard, who was for ten years chairman of the Educational Policies Commission of the National Educational Association.

If the project is successful it will eventually bring about the most widespread change in teaching methods since the public school was established. In the process it will provide one effective answer to the vital nationwide problem of teacher, classroom, and money shortages that

threaten to cause progressive deterioration of our schools, and consequently our national character, in the next decade.

Ever since the war, children have been entering school more rapidly than new teachers can be hired or new schools can be built. Elementary school enrollments are expected to increase 8,000,000 and secondary school enrollments will probably be up 4,000,000 by 1965. To take care of this increase we will need 460,000 more teachers on the job in 1965 than today. In addition, about 1,440,000 more will also be needed to replace those who leave the profession.

EVEN today the situation is critical. There is a current shortage of more than 140,000 qualified teachers, and the backlog of need for classrooms is estimated to be from 125,000 to 500,000. To catch up with the needs of the nation's 32,339,000 crowded school children, according to a recent study by the National Educational Association, we must build 328 classrooms and hire 493 new teachers *daily for the next year* at an increase of \$731,000,000 in current expenditures.

Closely related to these quantitative problems is an important *qualitative* problem that also greatly concerns the many educators, school administrators and civic officials all over the country



"This one's just heavenly!"

who are hopefully following the progress of the Hagerstown experiment with close interest. "The purpose of our new program is to learn how to make the most of the resources of television to improve learning as well as to find ways of dealing with the shortage of qualified teachers and adequate building facilities," says Washington County School Superintendent William M. Brish, who is supervising the experiment.

Can Hagerstown provide the answers to the nation's school problems? Can teaching by television bring better education to America's children without boosting the taxes of the long-suffering citizen? To find out, I went to Hagerstown to get a first-hand look at the learn-by-looking experiment in action. During the course of my on-the-spot investigation, I saw the lessons being telecast, observed the reactions to them in the classrooms, and spoke to hundreds of students, teachers, school officials, parents, and other citizens of Hagerstown, a city of 40,000.

"To understand what we are trying to do," explained Mr. Brish, an energetic man of fifty, "it is important to discard the popular notion of some people that television is just a gadget. It is no more a gadget than the textbook. In fact, it deserves a place alongside the textbook as the most important educational advance of the century.

"There are certain things television now enables us to do that we could never do before," he said. "For example, because of the camera's abil-

ity to 'blow up' objects to any size, we can now give every student in the classroom a front-row seat or better."

This was demonstrated to me as I watched a science lesson being telecast. The teacher was evaporating a solution of hydrochloric acid and sodium hydroxide with canned heat. On the studio monitor screen twenty feet away from me I had a better view of the white salt crystals being formed in the solution than from my position only six feet away from the laboratory table where the actual demonstration was taking place.

TELEVISION has also encouraged and made possible the use of films and certain other audio-visual aids, not usually available in regular classrooms, to bring school subjects to life and make learning more stimulating. In a history lesson you see little boatloads of cargo move back and forth on the television screen to illustrate such concepts as balance of trade. You see puppets pop up and down on a miniature stage to enact a scene from a Dickens novel being studied by an English class. To show graphically how any consecutive angles of a parallelogram are supplementary, geometry teacher James Davis quickly maneuvers a number of odd-shaped metal pieces on a magnetic board. To demonstrate other corollaries and axioms in a jiffy he also devised a method of creating geometric figures by fastening elastic cords to hooks on a pegboard.

"Now I don't have to waste a lot of time erasing and writing on the

board and take the chance of losing the attention of the students," he says. "To hold their interest on television and appeal to their senses more strongly, you also have to get away from the old way of doing things."

For psychological reasons, the television screen image itself has a certain intimacy and magnetic eye-compelling quality that helps rule out the distractions common in a classroom and fix the attention of its viewers. "I pay better attention now because the television teacher always seems to be looking me straight in the eye," is the way one student explained it.

So compelling is the electronic eye of the television teacher that the children ever react to it as they normally would to a classroom teacher. In a classroom thirty second-grade children are receiving their daily arithmetic lesson from television teacher Mrs. Hull. She says, "Let's stand up and pretend we have a rope and we'll count from one to ten as we jump." Automatically the thirty children stand up and as Mrs. Hull on the television screen pretends to skip rope, they do, too. When the television teacher asks a question it is also a novel but common experience to see a flurry of hands in the classroom directed at the television screen image, rather than at the classroom teacher.

There is still a regular teacher in each Hagerstown classroom. "Contrary to what many people believe," says Mr. Brish, "we are using television to supplement personal instruction, not to supplant the classroom teacher, nor to make teachers less necessary. In fact, television should even enhance the importance of teachers by exploiting the special talents of each to the fullest and making them available to many students, rather than to just a few."

The superior skills of a gifted science teacher like Mrs. Vance, for example, formerly available to the thirty students in her class, are now available to more than 500, and eventually, when the project gets into full swing, will be to thousands. In her hands a lesson becomes a fascinating demonstration of how the tool of television can be used to enrich learning. Let us continue watching her science class:

"There are many important factories in the world," she goes on. "I'll bet I know one you didn't guess—a green plant." One of the three TV cameras in the studio focuses on a miniature evergreen, another on a card lettered "Is a green plant a factory?"

In the classrooms the students, their interest aroused, perk up as they next see a typical breakfast on the screen

and hear Mrs. Vance asking, "If there were no green plants in the world what could you have to put on your breakfast table? How about cereal? Would you have cereal if there were no green plants? No, because cereal is made from grain and grain is a green plant. So let's take away the cereal." The cereal disappears from the screen.

"Would you have cream if there were no green plants? No, you wouldn't. Oh, I know cows give cream, but what do cows eat? Plants. Take away the cream, too," she says.

ONE by one, the cream, sugar, orange, toast, bacon, and pepper are also removed until all that remains on the screen is the salt and water. "Without green plants that is all you would have for a meal any time," says Mrs. Vance.

She then compares the structure of the green plant to that of an ice cream factory. "An ice cream factory has rooms. Does a green plant? Oh, yes! Oh, yes! Scientists call them cells." The machines of the ice cream factory are compared to the chloroplasts in the plant cells; the doors to the stomata and root hairs; the water pipes to the veins of the leaf and water tubes in the roots and stems; the electricity to the sunshine; and the raw materials of the ice cream—milk, cream, eggs, etc.—to the water, air, and soil, the raw materials needed by the plant.

To illustrate each point there is flashed on the screen an enlarged cross-section of a leaf, a microscopic view of a root hair, a diagram of an ice cream factory, the roots of a plant, a stalk of celery which had been

immersed in ink the night before to show the water tubes, and other visual aids. "Is a green plant a factory?" she sums up her demonstration. "Of course, it is. We proved it, didn't we? When I come back tomorrow we'll find out what kind of foods green plants make. Before then, see if you can't find time to read about these foods in your textbook."

"As you can see," explains T. Wilson Cahall, coordinator of the TV project, "television also does not eliminate the use of the textbook. It merely supplements the printed word to provide additional observational windows for the classroom to create more challenges for the student."

Television also need not do away with classroom discussion or the personal contact between pupil and teacher, as critics of the new educational aid fear it may, although it is likely to change the functions to be performed by different teachers. At present each Hagerstown child receives only one or two subjects daily by television, and only twenty to thirty minutes of the hour devoted to each subject are televised. In the teacher-team setup evolved the television teacher is largely responsible for the planning and presentation of the lessons, while the classroom teachers take over the introductory warm-up period and the classroom discussion afterwards, as well as the handling of homework, exams, and the usual other classroom chores.

This works out to the mutual advantage of each. The television teacher, free from her routine and repetitive tasks and responsibilities—taking attendance, keeping records, correcting homework, making up and grad-

ing tests, lunchroom duty, polio shots, etc.—can now devote all her time to planning the one lesson she telecasts every day. "To do a conscientious job on this even now," says Mrs. Jane Guyton, who gives a televised course in twelfth-grade English, "I often have to work far into the night on research, organizing my material, lettering cards, and either collecting or making the props and other aids needed for the lessons."

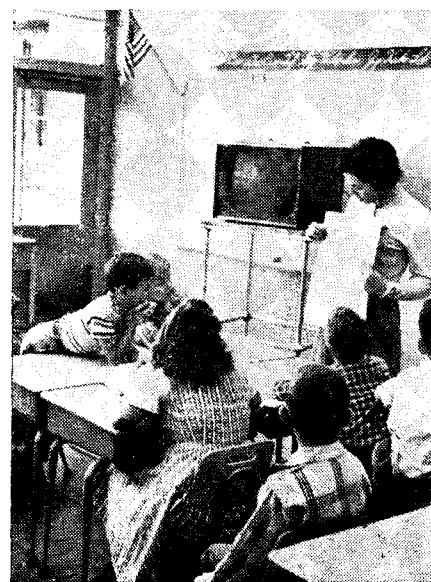
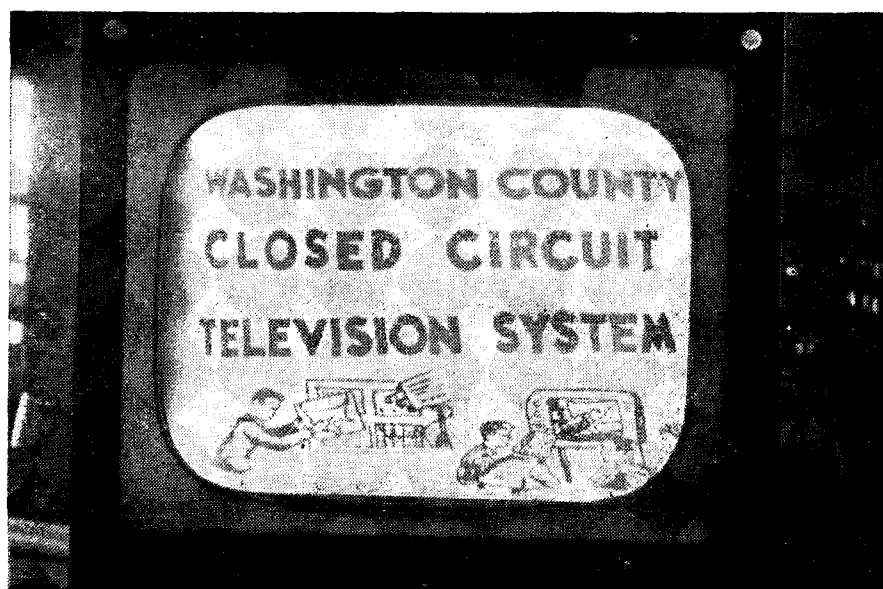
Mrs. Vance once spent three days and evenings, including her week end, to prepare a lesson on snow in which she used twenty-eight visual aids. A total of thirty-nine different items were used in her plant factory lesson.

"The important thing, too," says geometry teacher James Davis, "is that we can now give better lessons because of the greater time and thought we can devote to them. With the new challenge of TV we continually look for new ways, as in the case of the magnetic board and pegboard, to improve the quality of each lesson as we become more aware of the factors that make for effective teaching."

Better lessons result, too, when certain specialized subjects can be turned over entirely to teachers with the talents to present them most effectively. "Most of my teachers can handle a subject like arithmetic or reading and practically every other elementary subject," says Raymond Scott, principal of the Surrey School, "but they would just as soon leave classes in science, music, and art to those really qualified to teach them."

With her burdens eased, the classroom teacher has more time to concentrate on the subjects she still han-

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—Carl Bakal.

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WHAT ARE WE AFRAID OF?

By CHESTER BOWLES

A FEW years ago I did not like this picture," a Russian student said to me in the Hermitage Museum in Leningrad last February. We were looking at a painting of Christ and Pilate entitled, "What Is the Truth?"

"Then we all thought that we knew the truth," the student said. "Now I like this picture very much. You see, we now know that the truth is a question."

"Tourism is a good thing," another young Russian told me. "You begin to think of politics in terms of people and not in terms of systems and ideologies. Why, I have even some good friends now that are American capitalists—my 'class enemies'." His quick smile indicated that "class enemies" should be in quotation marks.

On a recent trip to the USSR I saw many such signs of ferment among Soviet youth. There was nothing that would indicate any possibility of an effective rebellion against the system, but much that suggested a softening of hard lines, a questioning of old dogma. Everywhere curious, friendly young people greeted us with warmth and with questions.

"One of Stalin's worst mistakes was to close us off from the world," said a young citizen of Tashkent, the capital of the Asian Soviet state of Uzbekistan. "Now the door is opening for us, and we have much to learn from America."

The most disturbing question I came home with was whether we are making good use of this tentative open-door policy of the post-Stalin regime, or more broadly, are we doing our part to encourage the process of change and ferment which is certainly underway throughout the Communist world?

During our stay in the Soviet Union I had heard much discussion of the forthcoming Sixth World Youth Festival. According to the advance announcement in the Soviet magazine *USSR*, "With the assistance of 4,500 guides and interpreters, the delegations will be introduced to each other. People of the same trades and professions will get together. There will be student seminars, excursions, exhibits, open-air concerts, movies, a continuing program of sports events and con-

tests for all types and classes of athletes, plus numerous parties and balls."

The cost was set at two dollars a day. For \$135 a visitor coming from the West would receive his fare to and from London and full expenses for his two weeks in Moscow. Everywhere we went Russians and non-Russians asked if our Government would allow young Americans to attend.

At the first World Youth Festival held in Prague in the summer of 1947 there were nearly 20,000 delegates, but only a small motley group from the United States. A delegation of articulate, able young democratic spokesmen from our major universities had been discouraged from attending by official fears of ideological contamination.

What was the result? Members of the American Youth for Democracy and other pro-Communist organizations took the leadership in the small American group that finally appeared. They set up a makeshift "United States Exhibit" next to the impressive Soviet pavilion. Its central feature was a grim picture of a Southern lynching.

Jan Masaryk, the strongly pro-American Czech foreign minister, expressed his keen disappointment to a young American reporter. "I had hoped this festival would be like a great baseball game, and I could act as umpire," he said. "Instead you only had a sorry little team of fellow-travelers who made America look silly."

IF I WERE young again, I wouldn't be afraid of competing with the Communists," Masaryk said in the room from which he later plunged to his death. "I would go in fighting, offering world youth greater ideals than Communism. America could have taken this festival by storm if it had just sent Rita Hayworth, a jazz band—and the spirit of Abraham Lincoln."

After my return to this country in March I heard that several groups of particularly dedicated and able young students, sensing the opportunity to present American democratic views at this year's Moscow Festival, were tentatively planning to attend. But ten years' experience and the new fluid situation arising after Stalin's death apparently have taught us very little. Our official position was stated in letters sent to all who inquired:

Your Government will not deny you a passport, but this affair has been arranged by the Soviet Government for its own political purposes. Americans who attend will be furthering Communist ends.

This was enough to reduce the American delegation to 150 or so: several of them articulate, able, democratic spokesmen more than capable of holding up their side in any argument, but most of them either politically naive or out-and-out fellow travelers. With a handful of exceptions the young men and women who could have represented the American democratic view most competently discreetly stayed away.

Early reports of the Festival indicate that an unusual opportunity has been missed for the kind of person-to-person contacts in which young Americans are at their best. The attendance was close to 220,000 young men and women from 102 countries. And the atmosphere appears to have been made to order for articulate young Americans.

In its August 12 issue *Life* Magazine reports: "The easy camaraderie permitted for the Festival left Russians breathless with a taste of forgotten freedom."

Life correspondent Flora Lewis is one of the most capable and sophisticated American reporters stationed within the Soviet orbit. Observing the easy social contacts and free-swinging political arguments, Miss Lewis was reminded that, "Smothered sparks of unrest began exploding in the Communist world" following the Warsaw festival of 1955. In Moscow a Pole remarked to her, "I wonder if Khrushchev realizes what he is risking?"

This is by no means the only situation in which we have drawn back from the very person-to-person contacts which may prove most effective in awakening young Russians to the dishonesty of their Government's propaganda charges against us while at the same time opening their minds to the universal appeal of freedom.

While I was in Moscow an international hockey competition was in progress to which an American team had been invited.

"Why did your team decide at the last minute not to come?" Soviet students at the University of Moscow asked me. "Was it because we beat you at the Olympics?"

I repeated as persuasively as I could what I had been told was our official explanation, i.e., that after the eruption in Hungary in October 1956 we were calling off cultural exchanges with the Soviet Union in protest.

"In protest of what?" the Russians asked. At least this gave me an