In the blazing sun on the quadrangle, Dean William G. Bowling, Grand Marshal of commencement ceremonies, surveys preparations for this year's program from under the welcome, if temporary, shelter of a kindly offered straw boater. At right, with all the preparations completed, all the details worked out, and all the problems solved, the Grand Marshal leads the academic procession to the platform.

For a few behind-the-scenes views of all the planning, preparation, and hard work that went into the University's first outdoor commencement of recent times, see "Commencement—'63," beginning on Page Three.
COVER: Alumnus Bill Conway, director of the Bronx Zoo, and an African gerenuk. For the story of how Bill’s childhood interest in animals led to the nation’s top zoo job, see “Zoo Director” on page ten.
“Now, I suppose each of you knows what he's supposed to do.” Grand Marshal Bowling meets with the planning committee to map out strategy for an outdoor commencement.

Blazing the trial: “First they will march this way, and then they will march that way.”

Briefing session: “All right men, you have your orders. Don’t forget to synchronize your watches.”
Staging operation: The ceremonies were conducted from a special platform, erected at the western end of the Brookings quadrangle.

Battle of the hedgerows: In preparation for the ceremonies, the grass was cut, hedges trimmed, and dead bushes replaced.

Like a mine sweeper clearing a path for the troops, a vacuum cleaner is used to remove leaves and debris from the walks.
A sign painter touches up the grand seal of the University, which was mounted high on the wall of Ridgley.

Aerial patrol: Before the ceremony, a maintenance worker inspects the roof of each building surrounding the quadrangle to remove all loose tiles and to discourage the pigeon population.
Faculty Marshals instruct graduate candidates on proper commencement procedure at a final rehearsal of the big event.

Chalk talk: Student ushers are briefed before the ceremony, with the aid of a blackboard diagram showing seating arrangements.

Three days before the ceremonies, a rehearsal is held in the quadrangle, with key participants on hand to learn their parts. (It is obviously not a dress rehearsal.)
The day before Commencement, the sun was so hot that this lawn trimmer took refuge under an umbrella. Commencement day itself dawned cool and overcast—to everyone's relief.

"Now, let's see. With eighteen inches between chairs and six thousand chairs, that makes..."

The natural beauty of the quadrangle was enhanced by banks of ferns placed around the outer walks.
William G. Conway, AB 51, offers a treat to a friendly giraffe at the Bronx Zoo. As director of the great New York zoo, Conway is responsible for about 3000 animals.
When Bill Conway was four years old, he started a butterfly collection. Today, at 33, this Washington University alumnus heads the nation's biggest zoo.
widow spiders got loose in the house. Bill’s room was filled
with cages, aquariums, incubators, bottles of formalde­hyde, and a large and constantly changing collection of creatures ranging from insects and snakes to assorted species of birds and mammals. To encourage members of the family to knock before entering Bill’s sanctum, he mounted a large turtle shell on the door as a knocker.

For four years after his graduation from Washington, Bill was on the staff of the St. Louis Zoo. During this period, he also began to go on collecting trips all over the world and to serve as a consultant to other zoos. In 1956, he left St. Louis to go first to Colorado Springs to help establish a new zoo and then to the Bronx Zoo to become assistant curator of birds.

The curator of birds at the Bronx Zoo when Bill arrived there was the famous naturalist William Beebe. The two worked closely together for several years, both at the zoo and on collecting trips abroad. On one field trip to Trinidad, the veteran zoologist and his youthful assistant captured the first mossy-throated bellbird ever exhibited alive.

In 1960, Conway became assistant director of the Bronx Zoo and a year later was appointed director. He had reached the top position in his field just ten years after graduation from the University.

As the director, Conway is in charge of what amounts to a good-size city, with a population of about 3,600—including a summer peak of 600 human employees. He and his staff are hosts to some two and a half million visitors each year—and that number is growing fast. Since the Bronx Zoo was opened in 1899, nearly 137,000,000 visitors have gone through its turnstiles. The director’s jobs are many and diverse. First of all, he directs the Zoological Park’s scientific work and is curator of the entire collection, which numbers more different kinds of animals than any other zoo in the world. In addition, he must oversee a complex housing and display operation covering 252 acres, with its own police force, fire department, hospital, farm, restaurants, and maintenance and construction crews.

The position of the New York Zoological Park is unique among zoos, Conway points out, because it is at the geographic center of a huge urban population concentration—that exploding “megalopolis” embracing greater New York, Boston, Philadelphia, and Washington. With so many of its visitors from congested urban areas, the Bronx Zoo has an obligation to try to present the world of animals to a population rarely exposed to nature. “Until they enter our gates,” Conway says, “many of our visitors have seen only six kinds of animals before: the rat, squirrel, pigeon, starling, sparrow, and sea gull.”

The great zoo Bill Conway directs is in the midst of a vast expansion and rebuilding program. A large, multi-colored chart in his office lists the many new and exciting projects the Park has planned and shows the progress toward completion of each. Long a pioneer and innovator among the world’s zoos, the Bronx is entering an entirely new era out of which may come equally new concepts of the nature, purpose, and value of zoological parks.

In Conway’s view, a zoo is much more than a place where animals are put in cages or pits and people are invited to look at them. A zoo, he maintains, should be many things: an exhibition area, an educational center, a preserve for animals threatened by extinction, a reservoir from which dwindling species can be replenished, a scientific research operation. The Bronx Zoo was the first in the world to go beyond merely exhibiting animals to the stage of attempting to design the pits and cages to resemble the animal’s natural habitat. Today, it is leading the way toward a new concept: the idea of creating conditions for the animal in which it can lead its normal, unhampered life under conditions as close to the natural as possible. The first stage in zoo evolution, Conway points out, was to show people what animals looked like; the second, to show these animals at home; the third, now being spear­headed at the Bronx Zoo, to show people what the animal does at home.

The new program will attempt to give zoo-goers the opportunity to learn something about each animal’s behavior through natural habitat exhibits where the animals will be free to pursue their normal activities. “However, we will have to stop short of 100 per cent realism,” Conway admits. “We don’t intend turning our lions loose to hunt their own food among the antelopes.”

One of the major devices the Bronx Zoo is already beginning to employ and hopes to make universal is the replacement of distracting wires and bars with moats and other invisible barriers. Typical of this new approach is the “African Plains” exhibit, where herds of antelope, gazelles, and zebra graze under the watchful eyes of lions in a scene carefully designed to resemble an African plain in every detail. Hidden moats keep the lions from their prey and eliminate the need for bars. The African exhibit will be greatly expanded in the future and similar areas will be built to portray the fauna of Europe, Asia, and North and South America.

Among the many other exciting new developments at the Bronx Zoo are a “World of Birds” hall, a revolutionary new aquatic bird house, and a unique “World of Darkness” building. All three will conform to the new policy of permitting the animals to live their natural lives with a minimum of interference. “The World of Darkness” building will allow visitors to observe nocturnal animals of all kinds leading their normal night lives. By careful experiment, the Bronx zoologists have learned how to turn the animals around in their sense of time so that they will sleep during the day, under bright illumination, and carry on their normal activities during the day. During the day, the interior of the new building will be illuminated with red light, to which the animals are insensitive, so that visitors may observe them in action.

Bill Conway’s first zoo was a collection of cigar box cages, butterfly cards, and fishbowls in his St. Louis home. Today, he heads the nation’s greatest zoo, and at 33, is the youngest major zoo director in the world. However, he did get off to an early start.
When still in grade school, Bill Conway began collecting snakes. His friend here is a nine-year-old, thirteen-foot Indian python, whom Bill credits with a "fine disposition."

High in the Bolivian Andes, Conway (at right) and his colleagues capture the rare James' Flamingo, long feared extinct. Conway makes many field trips throughout the world, collecting and observing animals.
A young Bill Conway studies comparative anatomy in his St. Louis home. Bill began collecting animals in his early childhood, but soon branched out into serious study of animal structure and behavior.

The director's job at a big zoo involves many duties, including supervision of new construction. Here, Bill looks over progress on new aquatic bird building.

Conway and cockatoo draw a crowd of young admirers at the Children's Zoo. New York Zoological Park had first special children's area in the nation.
The director delivers a brief but pointed lecture on the dangers of throwing missiles at the animals to a group of school children. The children are not punished for such behavior. Instead, the director sends a letter to the principal of the school, urging cooperation.

Typical of the types of displays that the Bronx Zoo is developing under Conway's direction is this African Plains scene, where lions and zebras share a natural setting with hidden moats replacing wires and bars.
Phyllis Linneman, one of the Bronx Zoo's educational department staff, displays otter. The zoo has an active educational program, stresses educational and scientific work.

Conway has developed a close friendship with many of the zoo's animals. This sulfur-crested cockatoo shows his appreciation gently nibbling on the director's collar.

Followed by a line of baby geese which imprinting has taught to regard him as their "parent," Bill Conway strolls along the grounds of the Bronx Zoo.
My subject is "The Study of Contemporary History." By "contemporary history," I mean the very most recent history: the events that happened yesterday and that have already appeared in the morning's newspaper and other events not quite so recent as that. I would say that contemporary history includes the history of events in which the people who took part in them are still alive today in considerable numbers. From this point of view, the Second World War would obviously still be contemporary history. On the other hand, the First World War would be rather on the borderline between contemporary history and more distant history and the Civil War, whose centennial you are celebrating now, would definitely not be contemporary history any longer.

If we take contemporary history in this sense, it is an open question whether it is possible to study the history of so recent a past. After all, there has been a high standard established for studying the history of the more distant past, and the question is really whether one can study the history of the very recent past with the same high standards used for studying history in general.

Our generation is very conscious of contemporary history. We're conscious that we are living in history—that history is being made in our time. Someone of my age, born in Britain, has lived in a previous age when we mistakenly thought that we had left history behind us. I was just growing up before the outbreak of the First World War when Britain was at the end of a century of practically unbroken peace. We had had many small wars, but none of the magnitude of the Civil War since the Battle of Waterloo in 1815.

The political and human world had seemed to become settled and rational. It seemed before 1914 to people in my country out of the question that there should be such a thing as a world war between the principal, so-called "civilized" countries of the world. I have lived from an age in which we thought history was something nasty that happened to less fortunate or less virtuous people in the past into an age in which we ourselves are living in history and in a very momentous and hazardous chapter of history.

So contemporary history in practice means something to all of us whether or not the professional historian would say that it is possible to study it. We have to study it as best we can because it is very important to us. Surely contemporary history is really the door to all history.

How does a historian reconstruct the past and the lives, feelings, thoughts, and actions of people long since dead? The only human beings we know directly are, first, ourselves; secondly, the living people with whom we are in personal contact. Our whole reconstruction of the past is based on reading into past people the human nature that we are conscious of in our living selves. The study of dead generations depends on the belief, which I think is true, that there is uniformity in human nature. It is thanks to this uniformity that we can study the dead. People in the present are the key to the past.

There is an approach to contemporary history from another point of view. If you run through your mind a list of the greatest writers of history to date, quite a number of them have been people who have written the history
of their own times. If you turn to the ancient Greeks, for example, four of the most eminent of Greek historians—Thucydides, Xenophon, Polybius, and Procopius—were all writers of the history of their own times. I think of the distinguished Josephus, who wrote the history of the great war between the Jews and the Romans in which he himself took part. If you turn to the modern world, I can think of the Florentine political scientist and historian, Machiavelli. If I turn to my own country, I think in the living generation of Churchill. If I turn to outside the Greek world and the modern Western world, I can think of a famous Egyptian historian who wrote in Arabic, a man called Gabarti, who was writing history in Egypt at the time when the Persians suddenly invaded Egypt in 1798. He has written a fascinating account of the French invasion and occupation of Egypt, and how we Westerners, as represented by the French, looked to Moslems.

If you recollect some of the names I have run through in this very brief and summary catalogue, there’s something in common among all these men I have just mentioned besides the fact that they were writers of the history of their own times. All of them were, as well, what we today call “displaced persons,” a euphemism for people who have been persecuted, evicted, exiled, deported. It was because they were “displaced persons,” as we call them, that they accidentally became writers of history. These were all men of action whose active careers had been broken by some personal misfortune or turn of the political wheel, and they came back into action as historians. No doubt, that is one explanation of their greatness. Direct experience, by itself, will not make the great historian without his having the genius to take advantage of it. We, all of us, have direct experience of contemporary affairs but there have been very few great writers of contemporary history.

I am not trying to say that all great historians have been historians of their own times. There have been equally great historians who have written about times before their own. What gives some of us the urge to write history is the fundamental human faculty of curiosity, and we can have curiosity about things that happened in the more distant past as well as things that are happening in our own time or that happened yesterday or last year or five or ten years ago. Let me illustrate this point from an English historian, Edward Gibbon, who wrote The History of the Decline and Fall of the Roman Empire. He is one of the few historians who has told us what it was that set him off writing his history. He was treading around the continent of Europe after the return of peace after the Seven Years’ War, and one day in the year 1764 he was sitting near the capitol in Rome in the evening light looking down on the ruins of the Forum below him. As he sat there, he heard the chanting of vespers by the monks who were now in possession of what had once been a pagan temple and had since become a Christian church. The thought flashed through his mind, “When those ruins I see below me were intact, those Christians were in the catacombs; they were hardly tolerated, persecuted. Today those pre-Christian buildings are in ruins and the Christians are now on top.” Gibbon was filled with curiosity as to how this immense turning upside down of the previous situation had taken place. It was that which set him off writing the history of the decline and fall of the Roman Empire. There are many other cases in which some event in the quite remote past has fired people’s curiosity enough to make them try to write its history.

All the same, I think the talented philosopher Benedetto Croce is telling the truth when he says “All true history is contemporary history.” He said that in a book called The Theory and the History of the Writing of History, published in 1917. You will see what Croce’s point is: that an historian is a man who tries to jump clear of his own time and place. Every historian’s special job is to try to jump clear and feel himself into other times and places, whether recent or past. However much he may try, he remains a prisoner of the time and place in which he happened to have been born. One of the strangest accidents in life is where and when one happens to have been born. One might have been born with any other physical race in any other country at any other time in history. It is hard to break out of that mental prison from which one views the universe.

The historian in his job of trying to bring the dead back to life by the work of his imagination is bringing them back, so to speak, to his own particular point in the present. He is bringing them back in terms of his own picture of the universe and for his own contemporaries.

Our picture of even remote periods is, in a sense, a background to our own age. Let me illustrate that again from the case of Gibbon. Gibbon was deciding to write the history of the episode of human experience which had begun in the second century of the Christian era—that is about 1600 years before the time he was starting to write. What struck Gibbon was that the pre-Christian age of Greek and Roman civilization was very like the 18th century of the first Christian Western civilization. Writing from the standpoint of the 18th century and looking back at rather short range on the wars of religion, he shared the view of his enlightened contemporaries, which was a very just view, that the wars of religion were outrageous. He looked back across the gulf represented by what he called “Christianity and Barbarism” to the pre-Christian age of the Greek and Roman world which, to him, seemed to be an age of enlightenment and rationalism not unlike his own age, and he interpreted the Age of the Antonines, the Indian Summer, you might call it, of Greek and Roman history, in terms of his own 18th century.

This shows the difficulty of entering into other ages unlike one’s own. Gibbon started with the second century A.D. His method of interpreting the second century like the 18th century worked very well so long as he was dealing with the second century. But his theme was the breakdown and disillusion of the civilization of the early Roman Empire and the onset of religion and barbarism. The further he got down into the Christian century, the
Archaeologists have added in a marvelous way to the knowledge we already knew from literary sources. What has changed not the past Greek and Roman world; it is ourselves. The knowledge, it is true, has increased to a certain extent. It is very difficult to enter the point of view of the Christian or post-Christian world, and it is very hard for us to enter into the ideas of the Hindu and the Buddhist world, even though we are living at the same moment and can meet in the flesh.

That the past looks different to every successive generation is illustrated by the fact that during the last century or two the history of Greek and Roman civilization has been rewritten in every generation. That is not because the history of the Greek and Roman world itself has changed. The past, once it has happened, can not change. It is not because our knowledge of the history of the Greek and Roman world has changed appreciably. Our knowledge, it is true, has increased to a certain extent. Archaeologists have added in a marvelous way to the knowledge we derive from the surviving literature of Greece and Rome.

All the same, the additions through archaeology have been a rather small percentage compared to what we already knew from literary sources. What has changed is not the past Greek and Roman world; it is ourselves. The last few centuries of Western life have been centuries of very rapid change, and each generation has had quite a different point of view from its predecessors, not only about the present but about the past as well. When each successive generation looks back on Greek and Roman history, it sees it through different eyes; it is blind to some things its predecessors saw; it is alert to some other things they did not see. Therefore, you can find a succession of histories of the same Greek and Roman world in each Western generation.

All history is also contemporary history in a literal, chronological sense. Take our earliest recognized human or sub-human ancestors. The people who study early man give them at most a million years. Compared to the length of life on earth, which may be a thousand million years, this is just a twinkling of an eye. Our remotest paleolithic ancestors are our contemporaries compared to the earliest forms of pre-human life.

Though a million years is a very short time to compare to the existence of life on this planet, it is a very long time compared to the existence of anything like settled human life. Agriculture and the domestication of animals, which are the two basic technological and economic inventions to date, are far more fundamental, effective, and important than any of our own more recent inventions. They were invented, as far as we know, only about eight or ten thousand years ago, and that again is a twinkling of an eye compared to the million years during which man had been in existence.

What we call "civilization" is only about five thousand years old—about half the age of the time since man invented agriculture. The age of what we call "the higher religions" is younger still. The oldest of the higher religions is Buddhism, the kind of Buddhism Gautama Buddha lived at the turn of the fifth and sixth centuries B.C., so that even the oldest of the higher religions is only about twenty five hundred years old. Our planet is perhaps two thousand million years old, and we are told that it may perhaps continue to be inhabitable by living creatures for another two thousand million years unless our generation were to make it uninhabitable by fighting another world war with atomic weapons. So all history is contemporary history in a very concrete, literal, chronological sense.

Then let me come to quite a different reason why some people say that the study of contemporary history is really not practical; people who have pointed out with truth that in studying our contemporaries we cannot help having strong feelings about them and passing decisive judgments about them. That is quite true. On the other hand, it is true of our relations with contemporaries when we are not studying them but are in practical relations with them. It is of the essence of any human being's feelings of any kind with any other human being, living or dead, past, present, or future, that he likes them or dislikes them and that he judges their actions to be good or bad. Recognizing someone as being one's fellow human being involves one in passing judgments on him. If we are being attacked by a shark, we try to avoid being eaten by that shark; we do not have any moral indignation against the shark for attacking us because we do not believe he distinguishes between good and evil; we do not believe that his conscience tells him not to eat us; we do not believe he has a conscience. If a human being attacks us, then we do have moral indignation against him and pass judgment against him for doing wrong to us.

Recognizing someone as being one's fellow human being involves one in treating him as a moral creature and, therefore, in passing judgments on him.

When a human being is studying non-human nature, it is possible that he may be completely dispassionate and detached and impartial. It would be rather difficult for physicists to have any kind of favoritism for one particular electron or proton over another. I don't suppose an astronomer loves or hates this particular nebula or constellation more than that other one. But when our objects are other human beings, however remote in time, then the spectator is also an actor. He is himself part of the play on which he is looking. There is a web of human relations uniting all human beings, living and dead; uniting those who move as spectators with one part of their mind with those at whom they are looking.

Some people have said that this is very true of con-
temporary history. This element of emotion, of bias, of judgment, makes it impossible to have objective and impartial views of very recent events. They have maintained, however, that feelings and judgments gradually become weaker and eventually die away as a result of the mere passage of time. So when you are studying people who are remote in time from ourselves, the contention would be that it is possible to study them objectively and with the standards demanded by history. I do not believe this is true. Of course we feel strongly about Mr. Khrushchev and President Kennedy, about Castro, Nehru, De Gaulle, or the Chinese leaders; but we also feel strongly about Karl Marx, we feel strongly about Napoleon, about Luther, about Mohammed, and about Jesus. These people are very much in the past, and if you were to ask any of us who are the people of this moment who are exerting the greatest influence on the majority of the people today, it would not be any of our contemporaries, it would be one or other of the founders of the great religions. Those founders by now are rather remote in the past, yet every moment today they are exerting a strong influence over a great number of the living human beings.

I don't think you can say that the mere passage of time eliminates feelings and judgments. Let me illustrate this from a rather curious case of the Egyptian emperor, Ikhnaton, who lived in the 14th century B.C. Ikhnaton was a tremendous revolutionary. He took to writing the ancient Egyptian language in the living form of his day instead of in an ancient classical form. He took to having himself and his family depicted in a naturalistic style of art instead of in the conventionalized traditional Egyptian style. Above all, he tried to sweep away the pantheon of traditional Egyptian gods and to substitute for them one god. He was the first monotheist known to history.

Ikhnaton was a rather lonely revolutionary. Though he was an absolute monarch and able to put his revolution over during his lifetime, as soon as he was dead it was reversed. The vested interests, above all the ecclesiastics of the ancient religion, were strong enough to abolish his monotheism and to restore the previous Egyptian religions. For about 1600 years after Ikhnaton's death, he was remembered and execrated as the arch heretic.

About the third century of the Christian era, the ancient Egyptian language ceased to be. It ceased to be spoken and the ancient Egyptian form of writing ceased to be read and written. The Egyptians became converted to Christianity and adopted a form of the Greek alphabet to write the Christian scriptures and the works of the Christian fathers. Later they lost the memory of their own pre-Christian civilization and another 1600 years passed during which there was nobody alive in the world who had ever heard of such a person as Ikhnaton.

Then in 1798, Napoleon invaded Egypt, bringing a number of French scientists with him. As a result, some of these French scholars rediscovered the key to the ancient Egyptian writings. In the 1880's, the capital city established by Ikhnaton was dug up and his archives were discovered. Once again, people knew quite a lot about him.

The interesting point is that from the moment Egyptologists rediscovered Ikhnaton, those of them who were, shall we say, "John Birch Society" types thought just like the ancient priests about him. They thought him an awful villain and a great heretic. Those who were rather liberal minded, or slightly "pink," thought him a splendid fellow, a reformer, and a liberal. Something of the strong feelings which his contemporaries felt about Ikhnaton you will find existing today among Egyptologists who write about him. The moment knowledge of this controversial personality was revived, the feelings about him revived also. The fact that he lived as long ago as the 14th century B.C. is irrelevant.

One cannot eliminate bias or feeling by the mere lapse of time, but of course one has to try to deal with this bias. If one tries to eliminate all feeling or judgment, one will end by eliminating everything human from one's study of human affairs. One cannot eliminate bias, but one can be aware to some extent of what one's bias is and, to that extent, one can, perhaps, discount one's bias. I think every historian should try to put his cards on the table, both for himself and for his readers. He should say "I am a person born in such and such a place, at such and such a time, I come out of a certain social and cultural background, I am a certain age, belong to a certain political party and religion. These are the things that give me my slant on history. Now take note of these and discount what I say in light of my own subjective position."

Of course, one is often likely to be unconscious of one's own deepest prejudices. Fortunately, these may be very obvious to other people and they may be able to discount them. But the most insidious prejudices are those that are shared by the individual historian with the majority of the society in which he lives. Every community, every site, every civilization has its own prejudices, which are so widely shared that no one is conscious of their being prejudices. Prejudices of the Christian world are very obvious to Buddhists, prejudices of the Buddhist world are very obvious to Christians, but among Christians or among Buddhists, the distinctive Christian prejudices or Buddhist prejudices are not obvious.

Let me come to another question: the perspective that is given by the passage of time. Does it really clarify the historical facts or, on the other hand, does it falsify them? When one is studying contemporary history, the time perspective is virtually nonexistent. It is like looking at our own faces with our noses pressed against the looking glass. We are very close up against the events and we cannot stand back and see them in perspective. That is, no doubt, one disadvantage of trying to study the facts which have been reported to us only in this morning's newspaper. Some people feel that this makes it more difficult to obtain a just view of recent events than of events in the more distant past.

What is it the passage of time does for the historian? I think it does two things—one is to select the historian's evidence for him by destroying most of it at random. The literary evidence of the Greeks and Romans that has
come down to us is only a fragment of the total original body of Greek and Roman literature. It has been war here, a big fire in some library there, Christian fanatics there destroying pagan religious writings that has led to the present very haphazard selection. Obviously, if we had the whole body of Greek and Roman literature as it once existed, our picture of Greek and Roman history would be materially different from the picture that we have to reconstruct today from the surviving fragments.

In the 19th century, we attempted to say, "These barbarous upsets and acts of violence destroyed a great part of Greek and Roman literature, but that sort of thing is not going to happen to us."

Today we know better. Today the material for the study of recent history is vastly larger in bulk than the complete material for the study of Greek and Roman history ever was. In Britain, I have been told, the volume of cubic feet of public documents manufactured during the six years of the Second World War is equal to all surviving public documents of the kingdoms of England and Scotland down to the outbreak of war in 1939. I have also been told that if you took the documents manufactured in the Ministry of Food in Britain during the six war years and put them end to end they would extend for 17 miles. The chief need of the historian today is a motor bicycle to cover the ground.

At the same time, means of manufacturing documents have increased. People manufacture long documents much more recklessly now that we have shorthand typists to take them down than when they had to write them out themselves in longhand. Our documents have multiplied enormously. So have our means of destruction. In the past, man's means of destruction have always kept pace with his facilities for making records, and though the record of recent events is huge in bulk, it is obvious that an atomic war would destroy them probably more completely than conventional weapons have destroyed the records of Greece and Rome.

The second point about what time does for the historian: Time makes the historian's judgments for him. It makes them for him by giving an opportunity to one of the parties to some past episode to monopolize the telling of the story. Think of our knowledge of the history of ancient Canaan. It all comes from documents written in the two kingdoms of Judea and Israel, which were only two of many states in ancient Canaan. The picture we have of the Phoenicians and the Philistines, for instance, is an unfavorable one because we have it through the eyes of their enemies, the Israelites. If the Old Testament had happened to have been destroyed and if the writings of the Philistines and the Phoenicians had been preserved, we should have a picture of the same episodes of history in which the Israelites would appear in an unfavorable light and the Phoenicians and the Philistines in a favorable way.

Archaeologists in recent years have disinterred a certain amount of the religious literature, hymns, and myths of the Phoenicians, and these throw a very interesting light on the religious history of Canaan as given in the Old Testament. They give us a second source with which to check the Old Testament account of Canaanite religious history.

There were hundreds and hundreds of sovereign Greek city states but one of them, Athens, ran away with the writing of Ancient Greek history. When we read of the walls between the Athenians and their next door neighbors, the Boeotians, and their rather more distant neighbors, the Spartans, we see them not through our own eyes, but through Athenian eyes and we see them in very unfavorable light.

Here again, archaeology has come to our rescue. Excavations at Sparta show that the Spartans had great artistic sense instead of being just pure militarists, as the Athenians represent them. The Boeotians, whom the Athenians represented as rustic boors, had very fine plastic art and poetry. This is the way the past is simplified for an historian. It is simplified by being distorted.

Contemporary history has a great advantage here because if you are writing about the history of the very recent past, nobody has had time yet to monopolize the telling of the story. My wife and I have spent most of our working life in writing rather recent contemporary history and there we have the story from every side.

In all contemporary transactions, you can hear all sides. That is a very great advantage for trying to get a balanced view. Contemporary history hasn't had time to suffer from the distortions produced by the passage of time. Also, our evidence for contemporary history is not confined to documents because there are still people alive who were actual actors in the events or witnesses of those events and we can consult them.

Some historians have a rather simple-minded view about documents, as though they were geological strata, objective pieces of material which cannot lie. But anyone who, like myself, has had even a temporary, amateur part in public administration and in the making of documents, knows very well that documents are most misleading sources of information. In a sense, they are always written for some purpose, and while their purpose is not generally to falsify the truth, the purpose of some documents is to falsify the truth. The purpose is always something practical and therefore people do not waste their time by putting into documents things that are obvious to everybody who is taking the action with which that document is concerned.

Often these things that are so obvious to the people concerned immediately that they don't think it worth putting them on paper are the key points about that particular transaction. An historian, coming to that transaction later, without the advantage of having been alive at the moment to take a part in the affair, doesn't have possession of the key and the gaps in the information lead him very much astray. There again, contemporary history has some advantage over past history.
Chimney motif is emphasized in "The Cluster."

An early Osver portrays landscape of city chimneys, mood of quiet desolation.

Astoria Nocturne—1948.
"I am essentially a landscapist," Arthur Osver declares, "only the landscape is becoming more and more an inner, personal one."

Reproduced on these pages are some representative Osver landscapes—both external and internal. They range from his earliest "Ash Can" school of starkly literal urban scenes to his latest and most abstract work.

Arthur Osver is a member of the faculty of Washington University's School of Fine Arts and a painter of international reputation. Born in Chicago, he was educated at Northwestern University and at the Chicago Art Institute. He has taught at the Brooklyn Art Museum, Columbia University, and the Cooper Union Art School, has been artist-in-residence at the University of Florida and the American Academy in Rome, and has been visiting critic at Yale University.

Twice the recipient of Guggenheim Fellowships, and now on the art advisory committee of the Guggenheim Foundation, Osver has won the Prix de Rome, the John Barton Payne Medal, and the Temple Gold Medal and Purchase. His paintings are in the permanent collections of the Metropolitan Museum, the Museum of Modern Art, the Whitney Museum, the Tokyo Gallery of Modern Art, and the Rio de Janeiro Museum. He is also a trustee and member of the fine arts committee of the American Academy in Rome.

Asked to comment on his own work, Arthur Osver once said, "How explain things that are as mysterious to me as the workings of my inner self? . . . In this day of headlong flight from Nature, perhaps the phenomenon that I'm not in flight is the first thing to begin with. I like Nature!"

A portrait of the artist: Arthur Osver.

The Osvers at home. Mrs. Osver (formerly Ernestine Betsberg) is also a painter.
Recent works of Arthur Osver carry the theme of "internal landscape" into abstractions that are still inspired by specific scenes.
In this article, Professor Callahan examines the state of the nation's schools and calls for a new vision for American education. "The best way to cope with the problems that confront us and to insure that our society will endure," he declares, "is by channeling enough of our talent, energy, and resources into the education of our children."

Dr. Callahan is a professor of education in Washington University's Graduate Institute of Education. He received the master of arts degree in history from Washington University in 1948 and holds a doctor of education degree from Columbia University in the history and philosophy of education. His recent book Education and the Cult of Efficiency has aroused nationwide discussion and was chosen by the National Education Association Journal as one of the outstanding education books of 1962.

The Revolution We Need
In American Education

By RAYMOND E. CALLAHAN
Professor of Education

The public school has been one of the basic institutions in American society for over a century. It was conceived and developed because it was thought that the new democratic society required a new kind of education. The new school would provide the knowledge men needed to govern themselves and thus insure the continuation of a free society, and it would, perhaps, by contributing to equality of opportunity, help to realize the promise of America.

Looking back from 1963, it is difficult to say precisely to what extent the public schools have realized the hopes of their founders. Certainly the public schools have contributed to American society and to the development of countless Americans. Whether they have contributed enough is the question. My own judgment, based on my study of American education since 1890, is that they have not. We have been quick in our praise of the value of education and slow in allocating our resources, both human and financial, to it. I think that we have done as well as we have because a relatively small number of dedicated men and women have poured their talent and energy into public education.

I suppose that a case can be made that we in America have done pretty well. We survived a great depression and a major war, and we have become, for the moment at least, the most powerful nation on earth. This is true, but I would argue that we have been fortunate; fortunate in our cultural heritage, our geographical position, and our natural resources, and reasonably fortunate in our leadership. We may not be so fortunate in the future, and I
believe that our margin for error has been too thin. I think that anyone who will take the trouble to acquaint himself with the human conditions in the heart of America's cities cannot be optimistic. I think, too, that the recent developments in Birmingham, in Jackson, and in Paradise, California, show just how thin the veneer of our civilization is in some places.

I believe that the best way to insure that we will be able to cope with the problems which confront us and to insure that our free society will endure is by channeling enough of our talent, energy, and resources into the education of our children. I will be accused of having too much faith in education. My response to this is that I have faith in sensitive, thoughtful, knowledgeable, human beings. Education is involved because men are not born sensitive or thoughtful or knowledgeable.

I have no illusions about the difficulties that lie ahead. I do not expect man ever to solve his problems completely and to achieve utopia (which would be pretty dull in any case). I do hope that we can educate our children in such a way that in the critical moments that lie ahead the scales can be tipped on the side of reason and humaneness. Therefore to increase our margin for error and to strengthen the foundations of our free society I believe we must greatly improve our public schools. To do this I think we will need to change some of our traditional patterns and initiate new policies and programs.

First, we must begin to take bold steps to attract large numbers of our most able and socially responsible young men into teaching and keep them there. I say men for two reasons. The first is that we devote much time and energy to preparing young women, most of whom remain in teaching for only a few years. I don't know precisely what it costs to educate a teacher at Washington University, when the length of service is considered. The medical schools spend far more in time and resources to prepare each doctor but almost every one goes into and remains in the profession. From this standpoint we probably average more money and effort spent to prepare each teacher than we do for each doctor. Of course, the resources expended on these young women are not wasted. They do teach for a short time, and they teach their own children, and some of them return to teaching when their children are grown. But we spend time and resources building a profession which keeps collapsing and we have a chronic teacher shortage.

The other reason for recruiting men is professional. The motivation for many of the young women who come into teaching is to provide insurance against not finding a husband, or if they are successful, to help him through medical or law school. They expect to be transients. Furthermore, in the nature of things their family has to come first, their profession second. Thus it is unrealistic to expect these young women to be concerned with problems involving the long-range improvement of the profession. Their careers are not really at stake. This is one of the reasons why there has not been more vigorous action from within the teaching profession to improve the profession and American education generally. Over the years I have had many outstanding women in my classes, and I know they have been outstanding teachers. I hope they continue teaching or return to it when their family situation makes it possible. We need them. But I think they will agree that the profession needs more able men to give public education the leadership it needs.

My stress is on able men because of my faith in intelligence. If we could bring 10,000 of our most talented young men into the public schools each year, I would be confident that by 1975 or 1980 the public schools would be vastly improved, and that the teaching profession would be qualified to handle the autonomy it must have and would be in a position to see to it that we get the excellent schools we need. I believe this step would do more to insure the continuation and improvement of our free society than anything else we could do.

I think it is obvious that in order to attract talented men in the numbers we need we are going to have to take vigorous action and develop special programs. We know that there are many very able students who do not even go to college, so the human resources are available if we have the determination to tap them. The new U. S. Commissioner of Education, Francis Keppel, and the state commissioners in the fifty states should give this matter top priority. The best hope is through the federal government, but state governments, the foundations, and the universities can also contribute. President Kennedy has already asked Congress for 20,000 scholarships for students in medicine. No doubt such scholarships are needed. It is important to keep people alive and healthy, but it is hardly worthwhile if they are to be functionally illiterate, with all this means to them of deprivation. Why not 20,000 scholarships for teachers for the public schools?

If such scholarships are made available, careful control will have to be exerted over the selection process and the institutions which will participate. In the selection we should seek not only high intelligence but, whenever possible, individuals who seem to have a strong sense of social responsibility. I would even select some who appear likely to be rebels. It will also be necessary to do everything possible to see that these men remain in teaching. Subsidies for salaries (we do this for vocational and agricultural teachers) will be necessary, partly to retain these men, partly to insure that they do not all teach in the wealthy suburban districts.

Some control over teaching conditions will certainly be necessary. We must begin changing the teaching situation so that intelligent men, interested in ideas, will get job satisfaction from teaching. There is little job satisfaction possible under our present arrangements, in which a teacher is expected to prepare for and teach five or six classes of thirty-five students each day, five days a week. Teaching under the proper conditions is an exciting job which will attract our best minds. We must create those
conditions. Once we do there will be no need for crash recruitment programs.

SECOND, A MAJOR EFFORT will have to be made to control entry into the profession and to raise standards in teaching. It has been possible and it is possible today for almost anyone, regardless of his ability, to enter teaching. This is so partly because of the nature of our certification requirements and partly because of the nature of higher education in America. In most states the certification requirements are a bachelor's degree plus a series of courses in education. There are no additional qualitative controls such as examinations. The only control over quality is within the individual college or university, and therein lies the problem. There are more than 1,800 colleges and universities in the United States. They range in quality from schools like Chicago, Oberlin, and Swarthmore, to schools with standards so low that anyone who is not mentally retarded can get in and out. All the studies of college students show, and my own experience confirms, this great range in abilities. At the lower end are students with less than 85 I.Q. Of course only a small percentage of students are at this level. More important is the fact that a very large number falls below 100 and an even larger group below 110. I do not wish to discuss the issue of whether these students should have been admitted to or graduated from college. I do not care how many Americans have bachelor's or even doctor's degrees. I do care, however, when these individuals pick up an education course or two, get a temporary permit, and end up in a classroom with our children.

In my judgment no person with an I.Q. of less than 120 should be allowed to teach in the schools. The medical schools and the good law schools and the College of Liberal Arts at Washington University will not accept students below this level. Neither will West Point or Annapolis. When I have to go into an operating room, I am glad that someone has seen to it that the person performing the surgery has high intelligence and excellent training. But we should not enforce this minimum standard because the medical schools do, but because this is the minimum level of ability a teacher needs to teach effectively. This judgment is based on twelve years of teaching college students and comparing their academic performance with their verbal ability test scores. Students below 120 cannot deal effectively with ideas or concepts and cannot therefore communicate them or explain them to someone else. I will not quibble if the minimum standard is set a few points below 120, but not much below that figure.

The ability tests we have are not perfect but they are very reliable and we must have the courage to use them. We will make some mistakes but that is part of the human condition. The alternative is to continue our present policy and continue to allow incompetent persons to teach. No one can calculate the damage this irresponsible policy has done to our children and our nation. Many, if not most, of our teachers and administrators are persons of high ability, but many of them are not. When this fact is realized it is obvious that much of our discussion about what has happened to our schools misses the main point. Many of the people "teaching" in the American schools do not have the ability to understand Dewey’s ideas or Skinner’s ideas, much less apply them in the classroom.

I know that high intelligence is not the only quality that a good teacher needs; someone will always remember a person of high intelligence who was not a good teacher. I admit that this is possible, but the reverse is not. Nor do I deny that a person with average or even low intelligence may be able to do many of the things teachers are now forced to do. But they cannot teach effectively those courses which involve ideas, and most of the courses in the school curriculum do.

The other aspect of the problem of raising standards concerns the teacher's professional competence. We must do our best to see to it that only persons who can demonstrate a reasonably high level of competence in their teaching fields, and have a reasonable amount of knowledge of what we know about the instructional process and human behavior, are allowed to teach. The present system, based as it is on credit hours, is convenient and easy to administer, but ineffective. We should require every teacher to pass a series of examinations and then demonstrate teaching competence during a probationary period before he receives a teaching certificate. The examinations should be written and passing standards established by committees of public school teachers and scholars from the universities, and they should be administered by the state departments of education.

The examination system is not perfect and it creates certain problems, but it would be a tremendous improvement over our present system. The medical profession and the legal profession use examinations for certification and we can use them effectively in education.

THIRD, A MAJOR EFFORT will be needed to change the nature and to improve the quality of the schools of education. I lack the space here to explain in detail the reasons for the inadequacy of these schools. Partly it is the lingering legacy of the normal school tradition in which teachers were taught what they would teach their students. Partly it is the notion of education as a separate academic discipline, when it really is a professional field which must rely on knowledge and tools of analysis and research from the basic disciplines, especially in the social sciences. This concept of education as a separate discipline, plus the neglect and even hostility toward teacher education by many people in the liberal arts, has led schools and departments of education to seek autonomy and has created an unfortunate gulf between them and the rest of the university. Important also has been the service orientation
which has led us to attempt to offer the public schools all kinds of services which we were not competent or equipped to offer. This orientation has also led us to lower our standards in graduate work in an effort to upgrade the work of the schools. The idea has been that regardless of a teacher's ability, since he is teaching, our job is to take him in and if possible to improve his competence. Unfortunately, this often resulted in awarding master's and doctor's degrees so teachers could move up on a salary scale or move into administrative jobs. American education has been hurt grievously by our failure to distinguish between service programs and degree programs. Schools of education have suffered too by the large number of men who were trained to be practicing administrators but who became professors of education. I have given an account of this development with its unfortunate consequences in my recent book.

But whatever the reasons, the past is behind us and it is the future we need to worry about. I think the institutional changes we need are along the lines of those which Robert Schaefer (now dean of Teachers College, Columbia University) introduced when he, with the support of Thomas Hall and Lewis Hahn, created the Graduate Institute of Education at Washington University in 1955. This institute was designed to function within the framework of the Graduate School of Arts and Sciences and under the control of a University-wide Council on Teacher Education. The conviction underlying this design was the notion that the preparation of teachers and the serious study of education could best be carried out within the framework of the University so that the same high standards of teaching and scholarship characteristic of the University generally would be assured in education. It was based also on the belief that education is not a separate academic discipline, but a professional field dependent on the basic disciplines, and especially on the social sciences and history and philosophy, for its effective operation. So an attempt was made to keep close contact between the Graduate Institute of Education and other departments and schools within the University.

A new professional school also required a unique faculty—a faculty which would be composed of individuals from the social sciences and history and philosophy who would bring their knowledge and research tools to bear on the study of education, and persons with training in education and with teaching experience in the schools. The dream was to combine theory and practice: to have research professors working in close relationship with clinical professors, who were in intimate contact with the real world of children and teachers. It was hoped that such a faculty could discharge both functions of a professional school: the training of new members for the profession and the production of knowledge.

Every effort has been made to apply the Institute's philosophy in its programs. At the undergraduate level the work in professional courses has been cut down and improved and more time is available for work in the teaching field. All secondary teachers must have an academic major and their advisor is in that department with the education faculty available for counseling in the professional courses. Efforts have been made also (and I hope that these will be completely successful very shortly) to see that all elementary teachers have an academic major. In the master's programs, students are required to take advanced work in the teaching field: history, English, science, etc., along with advanced work in the professional courses such as educational psychology and philosophy of education. The same is true of the doctoral programs, as all students take an extensive amount of work in other departments and thus utilize the great resources of the University.

So far as standards are concerned, we are fortunate in having an excellent college of liberal arts and graduate school of arts and sciences. All our undergraduates must meet the high admission standards of the college and must have a 1.5 grade point average in their major before being admitted to the teacher education program. Graduate students must meet the graduate school requirements and must demonstrate a high level of ability as measured by the Miller Analogies Test. The standards for admission to doctoral work are very high and all students, to succeed in the program, must put in a minimum of two full years in resident study.

I will agree that not all schools of education need to follow the precise pattern we have developed at Washington University. I will contend, however, that the basic principles upon which the Institute was founded and now operates must prevail if American education is to be improved: the nature and quality of faculty must be changed, close ties with the rest of the university must be made, and academic standards must be raised drastically.

Fourth, the professional teachers' associations must be strengthened in order to protect teachers in the classroom and to give them a strong voice in determining educational policy. Today teachers are probably the weakest occupational group in the nation. I could present a ton of evidence of intrusions by pressure groups or individuals into the schools demanding that a book be removed or a grade be changed. When this happens, teachers and administrators can only resist by persuasion; if the situation comes to a real showdown their only recourse is to capitulate or resign in protest. Chancellor Eliot put his finger on the problem in a speech he gave last January. He pointed out that because teachers must deal with ideas and seek the truth it is impossible for them to please everyone in a community. Therefore, in a free society the teacher needs protection—for somewhat the same reason that a judge in a court of law needs protection. Some of our great universities, including Washington University, have built up a tradition of academic freedom. But this is not true of many colleges and universities, and it certainly is not true of the public schools. Nobody is going to give professional autonomy, including academic freedom, to teachers. They
are going to have to fight for it and the best way to do it is through strengthening their professional associations.

Teachers need to change other aspects of their situation in the schools. No academic teacher can teach or should be expected to teach five classes totaling 150 to 200 students. Good teaching is hard work requiring great intellectual energy and the time to read and think and prepare. The number of classes must be reduced and the amount of time teachers spend in class must be reduced. Teachers need clerical help so that they can use their time and energy teaching children and stop being clerks. The tasks which have been imposed upon teachers, such as monitoring lunch rooms, study halls, and playgrounds, should be handled by nonprofessionals.

In the years ahead teachers must have more of a voice in setting educational policy, including the amount of money which should be spent on education. We can learn here from the British, where representatives of the teachers, the local education authorities, and the Ministry of Education must meet and come up with recommendations on the school budget to submit to Parliament. Teachers are not perfect but they know better than anyone else how much money is needed for American education. We must move to a situation where their recommendations at the local, state, and national levels must be considered, and away from the present situation where their opinions are simply advisory, when they are asked at all. Teachers have understood their role as public servants very well. The same cannot be said of their understanding of their responsibility as professionals. They have been reluctant to seek or use power themselves, but they have assumed that the public would have the knowledge to use power and money wisely for the best education of their children. I think it is time to concede that this assumption is false.

It can be predicted that some school board members and state legislators will not be happy when and if teachers seek their proper voice in the control of American education. That can already be seen by the negative reaction to the courageous action of the Utah teachers in voting overwhelmingly not to sign contracts unless the legislature voted sufficient funds to run the schools properly. Nevertheless, I think it is only a matter of time until teachers will take action to strengthen their organizations to make them effective to protect themselves and the children and to improve American education. In this process I hope that we can avoid the "professional" versus "union" battle. I hope that our lay leaders, including school board members, will see the wisdom of having a strong, independent teaching profession. I hope too that school administrators will join with teachers, and not fight them or try to control them. All steps to improve the public schools will be wasted if our teachers remain in a weak, vulnerable position.

FIFTH, WE MUST MAKE basic changes in our arrangements for financing public education. Everyone who knows anything about education knows that we need more money. Everyone has agreed to this since the turn of the century. It is quite true that money alone is not sufficient. We could have an abundance of money and still not have an excellent educational system. But the reverse is not true. There is no question of our ability to support our schools in this great nation. If we were a poor nation like Ireland or Mexico, that would be different. A nation that spends more than twice as much on the purchase, operation, and maintenance of automobiles as it does on education has a problem in values, not in economic capability.

We have the resources to support an excellent school system, but I think it should be clear by now that we will never get the resources we need by appeals to the good will of Americans. We cannot compete with color television and sports cars. To get the money we need we will have to change our sources of revenue and make basic changes in the structure for decision-making regarding the allocation of resources for education.

Look for a moment at the situation in Missouri. Every year the schools have a financial crisis. Every year, if administrators can get the teachers mobilized, e.g., get them out ringing doorbells, and if they can get PTA's mobilized, they can maintain the tax levy where it is. If they cannot, we have an arrangement where the levy reverts back to a ridiculously low figure which would not enable us to operate the schools on a half-time basis. We must put forth this tremendous effort just to keep what we have, which is inadequate. Then we use the real estate tax, which accounts for some 56 per cent of our revenue in Missouri. Because of the great differences in property value this arrangement has built-in inequality, as demonstrated by the great difference in the amounts spent for pupils in the St. Louis County communities of Clayton and Kinloch. To make matters worse the tax bill is sent out once a year with a payment deadline at Christmas time. Furthermore, the school tax is one of the few taxes that people have a chance to vote against, so that all their pent-up hostilities against taxes in general can be vented against our children.

A colleague from New York, after studying our financial structure in Missouri, said that if someone from Mars looked at this structure, he would have to say that it had been deliberately designed to strangle, but not kill, education in this state. Imagine what our defense posture would be if we had the right to vote on the amount of money that should be spent on defense in every local community in this country. The whole system places too great a burden on human nature.

We cannot continue to allow the decisions on how much money will be spent on education to be made in the local districts. These decisions are going to have to be made at the state and national levels, and the profession should have a key role in making them. Furthermore, we must get away from the real estate tax and move more and more toward the income tax on a withholding basis. I don't have
any illusions about the difficulty of doing this, but it must be done.

Sixth, we need to confront and take action to solve the problems of education in the slum areas of our great cities. Of all our problems these are the most complex and will be the most difficult to solve. In comparison, the task of providing excellent schools in the suburbs seems simple.

With every year that passes a larger number of young men in these areas, most of them Negroes, drop out of school and end up out of school and out of work. In a few years St. Louisans will be able to marvel at their beautiful riverfront with its great arch and its magnificent new sports stadium. When they do, they may be unaware that a mile or two to the west, in the heart of the city, there are thousands of young men who are growing up with only a slim chance of obtaining employment except in some menial task. Most of them will spend their lives in a miserable environment. They will live without self respect and without hope. This situation is a direct result of decades of neglect. In human terms this neglect constitutes the most severe indictment of our civilization.

We must start at the nursery school and provide an excellent education throughout the elementary schools. This means able teachers with extensive academic, social, and psychological training. It means classes of not more than twenty students. It means small, attractive, neighborhood schools. It means medical care and plenty of good food. It means an intensive educational effort with parents. In every way we must compensate in the schools for the cultural barrenness of the home and family.

Difficult as the problems are at the elementary level, they get more complex in the secondary schools. We need excellent teachers, small classes, light teaching loads, and adequate equipment in the academic programs. In these programs it is extremely important to identify the academically talented student, see that he stays in school and gets a fine academic training, and that he gets a university scholarship. We must not repeat the mistakes Booker T. Washington made and neglect these students. In the troublesome years ahead they will have to provide much of the leadership in American society.

For the students not going to the universities an elaborate series of vocational and technical schools is needed. To do the job we will need professional men and technicians to work with us, not simply in an advisory capacity, but on a full-time basis. For example, we will need engineers to help plan programs for training technicians in their various specialties—electrical, chemical, industrial, aeronautical, marine, etc. We will need help too, both in planning schools and programs and in placing graduates, from leaders in business and labor.

For almost all the students in the slum areas we are going to need work-study programs. The work aspect of the program is essential not only to make the training more meaningful, but to enable these young men to earn a few dollars so they can hold their heads up and take a girl out on Saturday night. In this effort business and labor must cooperate even to the extent of hiring young men where, from the standpoint of sheer efficiency, they might not be absolutely necessary. In these instances government must assist by providing subsidies for at least a portion of the salary.

It is important also for the schools, regardless of the student’s ability, not to neglect the cultural aspects of his education. Technical training for jobs is indispensable in our complex industrial society, but man is more than an economic unit. Something like the British continuation schools might be established in which students continue their education in technical and cultural courses even after they are on a full-time job. It will be necessary to have trained guidance workers, along with the teachers, to keep a close watch on each student, so that, for example, a boy who is originally placed in a technical school but who demonstrates that he has the ability to be an engineer can be transferred into an appropriate program. For human reasons, and to provide educational and work incentive, we must keep the doors open for these young men.

It is obvious that to provide the kind of educational program I am suggesting will take great resources, both human and financial. In 1963 it costs a minimum of $800 per pupil per year to provide an excellent academic secondary education. It will cost twice that much per pupil for technical education. But as Secretary Wirtz has pointed out, this is only a small fraction of what it costs to keep a person on relief for forty years. And it is only a fraction of what it will cost to land a man on the moon.

I think it is clear that the federal government must provide most of the leadership and the resources. The cities will not do the job, neither will the states, dominated as they are by legislators from the rural areas. Probably our best approach is through the creation of a Department of Urban Affairs. If such a Department is established, its most important work will be on educational problems, and the Negro will be its greatest beneficiary. The great gains which the Negro is making in gaining entry into restaurants and public parks are long overdue. But this victory will be a hollow one indeed if it is not accompanied by drastic improvements in the educational programs in the cities. Genuine equality, with the chance to live and work effectively, can only come through education. In this respect it was most gratifying to have President Kennedy speak out as he did in San Diego recently, pointing out the relationship between educational backwardness and the civil rights problem. We in education have had very little leadership from the White House in the twentieth century and we need it very badly.

I have no illusions whatever about the difficulty of bringing about the changes we need in the American school system. It will take a great deal of thought, energy, and money, but whatever it takes, the job must be done.
When B. F. Skinner of Harvard conceived the basic ideas behind teaching machines in 1954, he was trying to help his daughter learn grade school arithmetic. Since then, these devices have been used to teach history, spelling, algebra, Russian, and even poetry. Their use has spread from the primary grades to the university. In this article, the author, who with several of his colleagues has been using teaching machines to impart mathematics to sociology majors, describes their goals, procedures, and results.

SOCRATES COMES TO SOCIOLOGY

By L. KEITH MILLER
Assistant Professor of Sociology

SOCRATES WAS THE FIRST teaching machine. Or perhaps we should say the teaching machine is a modern version of Socrates. In any event, they both approach the problem of teaching in remarkably similar fashion: As Socrates carried on a dialogue with the student in which he taught by asking questions—beginning at the simplest level, assuming virtually nothing of the student, and then leading him gradually to a mastery of the material—so, teaching machines do the same thing.

Socrates used this method to perform the amazing feat, if we are to believe Plato, of teaching the Pythagorean Theorem to an ignorant slave boy. Furthermore, he used only fifty-two very short questions in the process. In view of these results, perhaps we can forgive him for claiming that he was not teaching at all, but rather causing the boy to recall knowledge gained in a previous life. While Socrates as a teaching machine was eminently successful, he was frightfully inefficient—he could instruct only one student, or at best, several students, at a time.

The quintain was the second teaching machine and it introduced a degree of automation into teaching. It was used during the Middle Ages to teach knights to strike a shield accurately as they rode by on horseback. The shield was mounted on a pivot attached to a beam which, if struck on center, fell over backwards, but if struck off center, pivoted around fetching the knight an immediate blow. While there was only one Socrates, many quintains were produced, making the instruction available on a large scale. Unfortunately, advances in the art of warfare have outmoded this teaching machine.

Now, in the 20th century, we have put Socrates and the quintain together to produce “modern” teaching machines. Our modern teaching machines do nothing more than engage the student in a dialogue in which he is asked questions and is required to answer them. He is then immediately informed of the accuracy of his answer (by gentler methods than those used by the quintain). Because of Gutenberg's notable development in the Middle Ages, the instructor's part of the dialogue is made available on a large scale: it is printed on paper. Spaces for the student's written answers (his part of the dialogue) are also provided on the printed page, as are the correct answers.

The paper is enclosed in a box through which, by means of gears, ratchets, and levers, the questions, answer blanks, and printed solutions are moved into, and out of, the view of the student. Only after the student has turned the gears and moved his written answer to a question away from the space, so he can no longer change it, does the box permit him to view the correct answer to that question. For after all, if you ask him a question and provide the answer on the same sheet of paper he will surely "peek," at least occasionally and perhaps at the most crucial times. Socrates of course prevented this by simply waiting until the student replied before revealing the answer. We must confess that our modern solution is crude, which is perhaps fitting, because only a "modern" student would be so crude as to cheat in the first place; I cannot imagine a student of Socrates cheating. The presence of a lock on the box prevents any other technique by which the process might be altered to permit cheating.

It is the dialogue between the student and the instructor, by means of the printed page, that is the heart of a teaching machine. The box is no more important, although somewhat more expensive, than the flesh and bones of Socrates. Rather it is what is inside the box—what is called the “program” by devotees of the teaching machine—that counts. The program consists of a carefully constructed sequence of questions. If we put a poor sequence of questions into the box, then we end up with a poor teaching machine—somewhat akin to having a Sophist as a teacher instead of Socrates.

The first teaching machine was invented by Professor B. F. Skinner of Harvard to teach his daughter arithmetic. Intuitively one can see that such a machine should be ideally suited to teach any material consisting of logically organized facts and principles. It is understandable, therefore, that mathematical subjects were the first to be pro-
grammed and still outnumber other subjects. Some people, when first introduced to the idea of a teaching machine, even insist that such material is the only type suited for this method of presentation. While I shall show some of the results of using teaching machines in non-mathematical courses, I shall first explain their use in teaching statistics to social scientists.

Anyone who has ever attempted to teach statistics to social scientists is bound to be intrigued by Socrates' notion that even an apparently untalented person can be taught any subject. The typical social science student is not only mathematically untalented, but often proud of it. He has had usually one year of high school algebra and he may have had a college course in mathematics; usually he has done poorly in both. Since statistics necessitates a solid foundation in algebra, and often involves intricacies of higher mathematics, teaching such a course to social scientists is certainly as severe a test for Socrates' theory as was Meno's slave boy.

My own interest in teaching machines derives from precisely this source. The frustrations of attempting to teach social statistics for two years made me ready to try just about anything. My first attempt to apply teaching machines to statistics resulted in a very short program which taught some simple statistical manipulations. After writing the program, which consisted of several hundred questions, I tried it out on a fairly capable graduate student. To my surprise, after finishing the program, he scored 100 per cent on a final exam. But because he was unable to answer some of the questions in the program, I discovered some weaknesses in the sequence. At one point a question required him to make a logical "jump" that he was unable to make. This deficiency was repaired by adding some questions before the troublesome one, thereby helping future students to make the "jump." At another point, I found that what I thought was a clearly worded question was totally unintelligible to the student. Once discovered, this problem also was easily repaired by rephrasing the question. Not only had I taught this student something, as judged from his exam, but he had taught me something about my program.

Armed with a revised sequence of questions, I tried the program successively on a bright undergraduate with some mathematical skills, a fair student with no such skills, and, finally, a student who also had no mathematical ability and who later flunked out of school. After each of these students completed the program, he was given a thorough test on the material covered, and any errors he made were used to revise the program for the next student. To my surprise again, each student, including the poorest one, scored 95 per cent or higher on the final exam. Each one of them taught me at least as much as I taught him. For had I given the initial program to the poorest student, I doubt that he would have learned a fraction of what he learned from the thoroughly revised program.

That initial program of 200-300 questions has now been expanded to a series of programs totalling perhaps 10,000 questions. It will eventually total about 15,000, if my typewriter holds out. The program begins with a thorough course on high school algebra, covering such topics as removing parentheses, multiplying numbers with exponents, and using logarithms. It then deals with simple descriptive statistics such as the mean and variance, and
then with more complicated statistics such as the correlation ratio, analysis of variance, and finally, probability, hypothesis testing, and estimation. This coverage is comparable to most year-long courses in social statistics. While the course is by no means a finished, let alone a polished product, a final exam at the end of the first full semester of use produced some rather startling results.

The thirty students in the course scored an average of 96 per cent on some seventy questions. Further, the lowest score in the class was a 90 per cent. Just to make sure that the examination had not been too easy, we asked three graduate students who had been among the best statistical students in the previous year's conventionally taught class to take the test. They scored an average of 55 per cent on the same test. In other words, the use of the teaching machine resulted in somewhere near perfect performance on an examination of students' understanding of the material. It was near enough to perfect, in fact, that every student in the course received an "A" as his grade. Performance on an examination is not, of course, all there is to understanding the content of a course. One might ask whether the students were simply forced to learn the material by rote with no real comprehension of the basic principles.

An objective example of their comprehension in depth came on the last class of the semester. I presented the students with a formula and asked them to decide what simpler formula could be derived from it and then to go ahead and derive it. Without any assistance, half the class completed the proof correctly. With only one hint, the remainder of the class did the same. The complexity of that particular proof is sufficient that few statistics courses for social scientists even attempt to teach it. This example, along with the students' own perceptions, has led me to conclude that they understood the material to a far greater extent than is ordinarily true in other courses. Perhaps it should be added that the last class of the semester was the first one I had held. All the rest of the instruction was a result of the dialogue carried on privately with the teaching machine.

After teaching the course once, I found that while students can definitely learn statistics by using teaching machines, many of them feel some degree of resentment at having to sit in front of a machine from five to ten hours a week. This discovery led me to change the way in which the course is administered. Now it is presented in a fashion which amounts to tutorial teaching. At the beginning of every week, the students are given a "unit" of work, consisting of between 500 and 1,000 questions dealing with a single subject such as logarithms. They are allowed to take this home and use it like a book—in the absence of a box which prevents them from cheating. When they feel they have mastered the material, they then come in and take a self-administered test in the cheat-proof box. As they are taking the examination they can keep score since the machine presents the correct answers. Thus, taking the test is also a learning process—one which lets the student and me know how he stands. If a student makes more than five per cent error on the test, he is required to study the program again, returning later to take the test a second time. This general procedure had previously been used by Donald Bushell in the introductory sociology course.

The advent of teaching machine instruction in this
1. When adding a series of numbers, "casting out nines" is a way of checking that your answer is ________ correct (right, etc.)

2. One technique for checking arithmetical work is called "casting out ________ nines.

3. To cast the nines out of 10 we subtract 9 from 10 to get ________

4. To cast the nines out of 14 we subtract ______ from 14.

5. Casting the nines out of 14 gives us the result ________

6. Casting the nines out of 16 we subtract 9 from _______ to get the result _______.

7. "Casting out nines" is just a curious name for _______ nine from a number. _______ subtracting

8. Casting out the nines from 9 we get 9-9 = _______.
While this procedure departs from the ideas discussed earlier, the results do not. Examination scores for two classes in introductory sociology—one taught in the conventional manner and one in which frequent fill-in tests were given—indicated that the "fill-in" class averaged about 90 per cent while the other class averaged about 55 per cent. Further, the lowest score in the frequently tested class was about equal to the highest in the conventionally taught class.

Confronted by such results, people usually have two immediate reactions. The first is that the students who had been given the constant tests had already been tested on the material and would therefore certainly score better on an overall examination. This is not only quite true; it is precisely what we are seeking to accomplish. Just as in the standard teaching machine program, we teach the students by allowing them to use, and practice with, the materials presented. In other words, the daily tests teach the material by giving students practice with ideas and principles to which they have previously reacted only in the passive manner characteristic of reading.

A second reaction to these results acknowledges that the use of teaching machines may teach students how to fill words into blank parts of sentences, but questions whether they can deal with the material in a creative way—in a way, for example, which can be tested by using essay-type exams. Dr. Rodney Coe of the Department of Sociology and Anthropology is now conducting an investigation of this possibility. His initial results for one essay examination indicated that students taught in the conventional way scored about 70 per cent, while students who had been tested daily by teaching machine technique scored about 90 per cent. In other words, there is reason to believe that students actually learn the ideas involved in a course by being forced to use them repeatedly in the very minor way characteristic of placing a crucial word into one simple sentence.

In this brief article I have set forth the manner in which teaching machines have utilized some principles first demonstrated by Socrates. In the process I have stressed that the teaching machine is simply a box—a mechanical gadget—which permits the widespread use of specially prepared material called a program under carefully controlled conditions. As the reader can see, the courses now being taught actually use the box for only a small percentage of the learning process, and some of the courses do not use a program at all. Thus the actual administration of the courses has departed rather sharply from the use of the teaching machine which I initially described.

Such refinements in the use of teaching machines and programs, both here and elsewhere, will, and must, continue. One necessary advancement is the development of effective applications and techniques which are less costly than those now in use. Besides the considerable expense of the teaching machines themselves, there is the cost of preparing and revising the programs. I estimate that it has taken me at least 2,000 hours to create the statistics program, which is by no means a finished teaching instrument.

I personally look forward also to the day when the granting of graduate degrees is handled in a manner based on teaching machine principles. It should be possible to decide what literature in his field a Ph.D. candidate should know, perhaps with alternatives depending upon his interests or specialization; and it should then be possible to design relatively short tests of the type usually used in teaching machines, covering at least the major points in the material. The student would then read one article or group of articles, and would come in and take an examination when he was ready. After he had taken a number of tests on specific works he might then take a general review test to place each specific article or book into a broader framework and, incidentally, to guarantee that he had not merely "memorized" the material. A procedure such as this, while by no means getting at all of the behavior expected of a Ph.D. candidate, certainly would get at one important part of it. Unfortunately the academician has been thought of too little as a behaving organism to speculate much further in this direction.

Speculation about the specific directions this still youthful field of teaching may take are equally difficult. The best we can do is to build on what we have learned so far: that the teaching machine requires of the student an active involvement in the process of learning, much as was required of the students on the other end of Socrates' questions; that its ability to inform the student immediately whether he is wrong or right is an advantage; that it aspires to teach, and apparently can teach, the act of teaching by discovering where the student makes errors; that unlike all lecturers and most teachers, next year's program is far better than this year's; and finally, that it aspires to teach, and apparently can teach, the modern slave boy—the low-ability or low-I.Q. student—as well as his "aristocratic" peer.

Socrates, often considered the paragon of Man Thinking, has, upon reconsideration, become a paragon of Man Behaving, a change which is now proving of tremendous practical value in the classroom.
THE ARCHITECT
AND THE CITY

For the 110 years that Washington University has been part of the St. Louis community, it has made many contributions to the area, some large, some small, and it has exerted many influences on the life of the community, some obvious, some more subtle. Perhaps the most visible, tangible evidence of the University's influence on the community is the large number of outstanding St. Louis area buildings that were designed by alumni of the University's School of Architecture.

On these pages are pictured just a few of these buildings. It would be impossible to include all the buildings Washington alumni have designed. Instead, an attempt was made to present a broad survey of some of the different kinds of buildings and of some of the different approaches to design. The buildings shown here are all in the St. Louis area, but work by Washington University graduates can be seen throughout the country and in many other parts of the world. The University campus itself offers such outstanding examples as Olin Library, Steinberg Hall, the Gaylord Library, and the new residence halls.

The idea of picturing these buildings in the Magazine came not from an architect, but from a 1951 Education graduate, James K. Mellow, whose hobby is architecture and architectural photography.

Joseph R. Passonneau, dean of the School of Architecture, sums up the relationship of a school of architecture with its community in this way:

"A university is concerned with the two uniquely human functions: creativity and systematic learning. A college is concerned with 'learning to learn,' and a college must be judged primarily by the quality of the personal lives of the men who are its alumni. A professional school, however, is concerned with the creative side of human activity. It can, therefore, be judged to a very considerable extent by the professional work of its graduates and faculty.

"An architectural school affects a metropolitan area through the specific buildings that alumni design and, more subtly, by the thousands of buildings done by the people influenced by these architects."
The kind of relationship that existed between the medieval architect and his artist-craftsmen, evidenced in the great cathedrals of Europe, has been effective once again in the building of the National Shrine of Our Lady of the Snows. Richard Cummings, project designer, originated the conceptual design of the shrine, while sculptor William C. Severson collaborated with him and applied his techniques and knowledge in the actual construction of the thin shell concrete structure which houses the shrine and the main altar. Details such as the bronze doors, altar cloth, statues, and frescoes were designed by other artists working within the framework of Cummings' master discipline. The shrine, which is a work of the Oblates of Mary Immaculate, a Roman Catholic order, contains pleasant drives and walks and other religious facilities.
Dramatic and unusual forms in reinforced concrete have been made possible only in our generation by developments in mathematics and in materials of construction. It was particularly fitting that this mode of construction should have been selected by the Roman Catholic order of Benedictines, one of the oldest orders in the Church and one which believes that both architecture and theology must be restated in terms intelligible to each age. The Chapel, focal point of a complex including a monastery and a school for boys, is a circular building 130 feet in diameter in convoluted shell form.
FLORISSANT JUNIOR HIGH SCHOOL

Designed as a closely knit complex of five connecting buildings—four of them pierced by a single corridor, open below and enclosed above—this school was built in 1961 and accommodates 1500 students. Sunlight is controlled in the three classroom buildings by placing their windows to the north, and in the arts and science building by a masonry sun screen. The fifth building contains two small gymnasiums and a large, dividable gym, plus a band room and a small stage.
The chief problem in designing this building was to provide a composite facility, capable of housing youngsters with several kinds of aural disorders, college students attending the Institute for training as teachers, and married and single faculty-residence directors. The "C" form decided on by the architect separates the building conveniently into men's and women's units and lounge-recreation areas. It also provides an open courtyard which, together with high windows and masonry grille, gives the occupants a sense of both openness and privacy in a congested area of the city. The building was completed a year ago.
RESIDENCE OF MR. AND MRS. CLARENCE HOPKINS KING
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When Mr. and Mrs. Clarence King returned to St. Louis after several years in Florida, they wanted to build a house that would be flooded with daylight and devoid of glare. For this reason the house in St. Louis County was built around several small gardens to take advantage of all exposures and to insure maximum privacy. The skylit kitchen opens directly into a small, private garden for convenient outdoor dining. The house became so popular with the King grandchildren that, in 1961, a year after its completion, work was begun on an addition. The new studio room (not shown), used for painting and music-making, is a virtually indestructible area with red quarry tile floors and used brick walls. The house and terrace are also of used brick.
The dividing line between the outdoors and indoors is minimized by the use of redwood, field stone, and other natural materials in the home of Mr. and Mrs. Henry C. Barksdale, Jr., and their young children in St. Louis County. A successful effort was made to preserve the rough terrain of the heavily wooded site on Dry Ridge Road. A series of eight doors open from the living and dining rooms to encourage easy access to the concrete and gravel patio and a small swimming pool. The oriental feeling of a recent addition (at right above), separate from but connected to the house, is carried out in a Japanese garden.
BETTENDORF-RAPP SUPERMARKET

Clayton

Completed in 1953, this supermarket was one of the first of such vast size (35,000 square feet) to be built in this country. The sense of spaciousness created by the long, low building is further accentuated by the wide aisles and the use of only one supporting column in the main area of the store. A waiting area with comfortable chairs lines the front interior wall, and a lunch counter is located near one of the two entrances.
POSTAL PLAZA SAVINGS AND LOAN

St. Louis

Located on a somber corner of 18th and Olive Streets, in a canyon of tall, old buildings, this structure provides a change in pace for an architecturally underdeveloped area on the periphery of such fine buildings as the Plaza Apartments and the Federal Office Building. By not attempting to compete with nearby massive structures, the Postal Savings building furnishes welcome open space, upgrades the site on which it is located, and acts as encouragement for future developers in the immediate area. The building's concrete frame is enclosed by glass and a granite curtain wall outside and is utilized acoustically inside. Twin planted areas adjacent to the front and rear entrances add to the freshness the building itself provides.
A functional and orderly plant, with such appealing features as fountains, gardens, and colorful tile, forms the engineering campus of the McDonnell Aircraft Corporation. It has been described as a new kind of work environment, especially designed for creative thinking and effective achievement in the airplane and missile fields. The four wings of the plant are simple in plan (with movable partitions inside for flexibility), and are angled across the plot, east and west, to eliminate sun glare. Two irregularly shaped spray pools serve the air-conditioning process and enhance the landscape design.
ST. LOUIS PLANETARIUM

The startling form of the new St. Louis Planetarium has jolted many an unsuspecting motorist traveling past Forest Park on Highway 40. Its shape has confused some St. Louisans, who thought they were going to enter the building and look out the top at the night sky. Actually, visitors see the celestial universe recreated within an aluminum-lined circular chamber with the aid of a complex and delicate Japanese-made projector. The flair at the top of the structure is functional, for visitors can climb the winding stairs surrounding the chamber inside the building and emerge on an observation deck to view the stars in person. The curvature of the shell blocks out extraneous light from the city and the highway. The hyperboloid concrete shell building, 72 feet high, is a mathematically pure form, created by rotating one straight line at an angle around a second, vertical line with which it does not intersect. The design was prompted by St. Louis Mayor Raymond R. Tucker's wishes for a Planetarium unique to St. Louis and symbolic of the space age. The building also contains exhibits, classrooms, and a library.
A controlled-climate building which has gained international attention, the Climatron was developed in consultation with Dr. Frits Went, director of the Garden, and is based on geodesic principles established by R. Buckminster Fuller. Serving as an educational, recreational, and research facility, the large structure (175 feet in diameter and over 70 feet high at the center) is glazed with 4000 separate pieces of Plexiglas acrylic plastic suspended from an aluminum framework. While neither Joseph D. Murphy nor Eugene J. Mackey is an alumnus of the School of Architecture, the service each has rendered to the School as a faculty member, together with their outstanding architectural achievements—including the University's new John M. Olin Library—represents a unique and genuinely close relationship with Washington University. Mr. Mackey was on the architecture faculty from 1941 to 1952 and is now a lecturer in hospital administration; Mr. Murphy taught in the School of Architecture from 1935 to 1953 and was dean in 1948-49. The Climatron is one of the most frequently visited buildings in St. Louis.
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The Library is the heart of the university. The university, with its library, has several important functions, one of which is the training of young and not-so-young minds. I'd like to take this occasion to talk about some of our modern attitudes toward the use of the mind, and particularly the capacity of the mind to make relevant judgments.

I should like to begin by talking about moral judgments. I choose this subject reluctantly because I know from experience that a portion of one's audience turns absolutely glassy-eyed with boredom at any mention of moral values. But I want to begin with some field in which it is exceedingly difficult to make judgments and in which, at the same time, judgments are unavoidable.

Most moderns are reluctant to make moral judgments. Some have defended this reluctance by asserting that the neutrality with respect to values that is useful in certain kinds of scientific investigation is equally justifiable in everyday life. Others have waved the banner of moral relativism, pointing out—that quite accurately—that our own moral precepts have shifted with the years, and that other societies have other moral precepts. Social scientists have achieved this perspective at the cost of great struggle, and we need not begrudge them the legitimate benefits thereof.

But when it is taken as a guide to daily living it leads to a sort of moral laissez-faire—a notion that one must tolerate all sorts of values because, after all, we have no scientific proof that one value is better than another. Those who hold this view are inclined to believe that such open and permissive tolerance of all sorts of values will somehow lead to a good result. In this view it is not necessary—or perhaps even seemly—to take sides in a moral controversy, because somehow the competition among values will work the whole thing out. In fact, one does not even need to believe in any particular values: one simply looks on from the sidelines with an amiable anthropological curiosity. The slogan might be “Pass no judgments.”

To reduce this position to absurdity one need only imagine the attitude spread to the entire population. Then no one would believe in anything and everyone would be an amiable anthropological observer. But there would be nothing for the observers to observe because no one would have any values.

What interests me about moral neutralism or moral laissez-faire is the illusion—a typically modern illusion, I believe—that the mind can abdicate its judging role.

Even those people who have argued most strongly that they must be neutral with respect to moral values have failed to live by this stern code. They continue to be morally indignant when someone cheats them. Statistics showing that a substantial proportion of the population are cheaters does not ease the indignation. In short, as far as everyday life is concerned, moral neutralism is an interesting conversational gambit, but no one really lives by it.

Now I should like to leave the subject of moral values,
and turn to another highly controversial subject. Let’s talk about Webster’s Third International Dictionary—possibly the most controversial dictionary ever compiled. I am not one of those who believes that Webster’s Third should be put through a shredding machine and used as tinder to burn its editors at the stake. But I do believe that it reflects an attitude toward the judging mind that we have already seen in other spheres.

In matters of language, there has always been a distinction between good usage and common usage. Good usage was defined by the dictionary-makers and literary men of the day; common usage was how people actually used the language. Modern research has shown that “good usage” never did have the preserved-under-glass quality that the arbiters of the day liked to think it had. On the contrary, it is undergoing constant change. And one of the pressures that brings such change is the pressure of common usage. If enough people use a word in a way that is contrary to good usage, it often stops being contrary to good usage. Thus we have come to look at language in a new light—as a living, changing system. So far so good.

But there is nothing in the research that says our best minds should not be just as rigorous as they wish in defining taste and correctness for this generation, knowing it has changed in the past, knowing it will change in the future, knowing that the usage of the streets will influence that future, but still not hesitating to set standards of taste and usage. When the editors of Webster’s enthrone common usage, they are not reflecting the research results so much as the modern aversion to making judgments.

I am not going to argue the point. I just want to call your attention to the recurrence of something not unlike a Kinsey approach. If enough people do it, it’s all right. Look to the statistics! Pass no judgments! “Whatever is, is right.” It is, in a curious way, a profoundly conservative doctrine.

Now let me change the subject again. Everyone is interested in creativity and this has led us back to a new interest in the role of the mind. Consider creativity in science. Science has developed a most impressive apparatus—huge laboratories, immensely sophisticated instruments, elaborate procedures—but it is not an apparatus that runs itself, and the creativity of the system is not in the apparatus. The creativity is supplied not by the new instruments but by a very ancient instrument—the human mind. I say ancient because so far as we know the human mind is fundamentally the same instrument that it was 5000 years ago, or even 30,000 years ago.

When we turn to a study of creative individuals we find that the creative person has a richer and more varied array of ideas, images, and hunches than the normal person. When he is trying to solve a problem he has more hypotheses and more varied hypotheses. He is more open to experience so that perceptions, images, and possibilities flood in on him from outside. He is less rigidly resistant to ideas rising from the unconscious mind.

At this stage of the creative process the watchword would appear to be “anything goes!” But there is a stage of the creative process that has received far less attention. The creative individual who has opened himself up to such a rich and varied range of experience exhibits an extraordinary capacity to find the order that underlies that varied experience; I would even say an extraordinary capacity to impose order on experience. All great creative performances involve precisely such an ordering of experience. And indeed it is possible that the creative individual would not be able to tolerate such a wild disorder of ideas and experiences if he did not have profound confidence in his capacity to find or impose some kind of pattern on this chaos.

It is interesting to ask why we have glorified the relatively undisciplined, chaotic phase of the creative process and almost ignored the disciplined, law-seeking, form-imposing side of creativity. The answer, at least in part, is that there is something about that aspect of the creative mind that doesn’t quite suit the modern temper—something perhaps a little frightening. It is not a mind that seeks a consensus before it moves. The gifted artist may be humble before the stern requirements of his task, but when he is functioning at the height of his powers he trusts himself. The scientist of great originality may be humble before the natural order, but in the critical moments of creativity he has an almost breathtaking confidence in the capacity of his own mind to penetrate and comprehend some aspect of that order. In such moments, both artist and scientist are more than a little imperious. They are most decidedly not other-directed.

As I said, this does not suit the modern temper. It is more in the modern mode for us to shrink from making judgments, even to believe that it is somehow presumptuous or arrogant to make judgments. We feel that it is more seemly to devise a system and let the machine make the judgments, or gather statistics and let the statistics make the judgments.

“... moral neutralism is an interesting conversational gambit, but no one really lives by it.”
We fear the judging mind. Even more, we fear the judging and purposeful mind. And let's face the fact that we have good reason to fear it. All of recorded history tells us what tyranny and dogmatism can flow from that mind. A good deal of social organization is designed to protect us from that tyranny. From the earliest times, legal systems were at least in part systems of procedures that minimized the capricious judgment of any one individual. That is what we mean when we speak of a government of laws, not of men. Our own society is rich in social and organizational arrangements that protect the individual from being at the mercy of some other man's dogma and tyranny.

It would be catastrophic if we were to forget this distilled wisdom of the race. Yet the paradoxical truth is that that same judging, purposeful mind that can cause us such trouble is an important instrument of creativity and change and the source of all form and style.

So in conclusion let me say just a few words about that marvelous dangerous instrument, the judging mind.

We cannot evade the necessity and the responsibility for using the mind to make judgments. It is not a matter of choice. "Life is fired at us point-blank" as Ortega said, and there is really, literally, no place to hide. I was discussing these matters with a young man recently and he said, "I don't mind making judgments that involve myself alone but I object to making judgments that affect the lives of other people." I sympathized with his position but had to tell him that his reluctance would make it impossible for him to be a second grade teacher, a corporation president, a husband, a politician, a parent, a traffic policeman, a weather man, a chef, a doctor, or a horse race handicapper—in fact it would force him to live a hermit's life.

We may be reluctant to make moral judgments, but if we ignore that necessity it simply means that we shall make such judgments without being conscious of them. We may be reluctant to make aesthetic judgments, but even the casual observer of our lives, our homes, our manner of expression will see that in fact we have made many such judgments—well or badly.

We may feel inadequate to the task of making political judgments, but the decision not to make political judgments is a decision with political consequences. So we have not really managed to stay out of that battle.

So, to sum up, we must use our minds to judge. We must use them as life requires, not just where we believe that judging is a sound and safe process but wherever life demands that we judge.

The tasks of parenthood alone force us into countless judgments that we are not ready for, judgments that we doubt anyone can make wisely. And so it is with the rest of life. It is filled with hazardous judgments. We make them consciously or unconsciously. We make them well or badly. But we make them.

It's the mark of a mature and thoughtful man that he sees this necessity. He not only sees the necessity, he sees the dangers. And he not only sees the dangers but he sees that some of them can be averted.

How may they be averted? First of all, by accepting the principle that every judgment is no more than a tentative approximation of the truth, subject to revision. In the phrase "subject to revision" we find the key to a truly modern role for the judging mind. This has some useful consequences. If we recognize our judgments as subject to possible revision, we shall be less inclined to force them down other people's throats, or to back them with bullets.

The other major principle in averting the dangers of human judgment lies in the training of the mind. The mind has an enormous capacity for error, self-deception, illogic, slowness, confusion, and silliness. All of these tendencies may be diminished by training, and that, of course, is the function of education.

This great building that we are dedicating today will be filled with the record of man's effort to train and enrich and refine the capacity of the mind to make relevant judgments. And this university counts that objective as one of its own major purposes. We must never let the vast complexity and fascinating clutter of university life distract us from that central aim.

Every one of the major fields of knowledge has devised ways to train the mind. One of the ruling academic sins is to imagine that one's own specialty is the only one in which a finely tempered judgment is required. In the neighboring field, we imagine, judgments are either made by formula or by the sort of inspired guesswork one finds in poker playing.

This great building is the one part of the university that won't make that mistake. It is the one part of the university that will take into account the whole enormously varied range of man's judgments and of his attempts to refine those judgments.
IN THE LAST Alumni News, there was room only to drop in a last-minute notice about the Time magazine article naming Washington University as one of the four "take-off" universities of the nation. The Time article emphasized the growing importance of the urban university and remarked on the many such institutions now blooming across the country.

"While none of them are yet another Harvard, Chicago, or University of California," said Time, "some of them are poised for take-off in that direction. . . . At least four such schools, all private, have now outstripped their regional reputations and stand ready for national recognition." The four schools the magazine names are Western Reserve University, the University of Rochester, Tulane University, and Washington University.

Speaking of Washington University, Time says "St. Louis' Washington has in fact already taken off." The article lists among the University's strongest assets its long-famed medical school, its six Nobel Prize winners, its increased faculty salaries, its long tradition of academic freedom, and its "booming sponsored research."

The article also pays tribute to Chancellor Thomas H. Eliot, whom it describes as a "ferocious faculty raider." It reports the recent additions to the faculty of such nationally known scholars as Judson T. Shaplin, acting dean of the Harvard graduate school of education, and "Princeton's eminent historian" Robert R. Palmer.

Time concludes the article with the prophecy that "By 1973 the academic cartographer may well list beside the Everests of Harvard and California many a major minor peak—including Tulane, Rochester, Washington, and Western Reserve."

COMMENCEMENT—'63, THE PICTURE story which opens this issue of the Magazine is a departure from our usual custom of covering each year's commencement in detail. We decided this year to concentrate instead on all the planning, preparation, and plain hard work that goes into an affair of this size and complexity. This year seemed an appropriate time to emphasize the behind-the-scenes work involved, because this was the first commencement to be held outdoors in many long years.

The success of this year's commencement depended a great deal on the weather. A rainy day could have washed the best laid plans of marshals and men down the drain. To be prepared for the worst, an alternate rain plan had been drafted to use in case of bad weather, but putting that plan into effect would have required some advance warning. What the planners were really worried about was a sudden shower breaking too late in the game to shift the scene from the quadrangle to the field house. What an unexpected downpour would have done to the truly impres-
Summer on the campus brings out all sorts of delights: blossoms and buds and flowers—and pretty students like Gay Armstrong.