

GENERAL SESSION – WEDNESDAY, MAY 5

Barriers To Communication

DR. RALPH G. NICHOLS
Head of The Communications Program
University of Minnesota
St. Paul Campus
St. Paul, Minnesota

Just about 35 years ago, a very young man was being installed as president of the University of Chicago. He was only 30 years old and a lot of people wondered if such a young fellow could make a success in such an important office. At that time, Chicago was rated the second most important institution of higher education in the country, excelled only by Harvard. Shortly after his installation, young Hutchins made a very noticeable speech. In it he developed one central thesis. He said the most precious possession man owns is his ability to communicate. It is the one factor, he argued, which permits us to maintain dominance over the animal world. Many other animal species reproduce faster than we can. Many have better developed sensory mechanisms. Some of them even have larger cranial capacities. But, in no other single instance does any animal life form have an ability to look at a set of data, analyze them, draw conclusions about them, and predict their likely recurrence. In this sense, man makes time stand still.

Lawrence Appley, president of the American Management Association, challenged to define management recently, said, "management, that's simply the business of getting other people to do

the things that must be done." If that definition makes as much sense to you as it does to me, then the very heart and soul of management itself must be communication. For how can we get other people to do the things that must be done if we don't communicate with them? Certainly, we spend a lot of time in this business of communication. The telephone companies are continually making surveys of it and every time they report one of their studies, they say that for white-collar folk, between six and six and a half hours of every eight-hour workday is spent in communication.

Because of both its qualitative and quantitative significance in the life of every individual in this room, it strikes me that every one of us should be deeply concerned about any barriers which may arise from time to time, impeding the free flow of communication in our organizations. Four such barriers deeply trouble me.

"The Good News Complex"

Barrier No. 1, I would like to call "The Good News Complex." This one has an ancient, indeed a Biblical background. One of the early kings in Israel was a fellow named Ahab. Early

in life, he decided he would like to conquer all the countries surrounding his. He conscripted a big Army, trained it carefully, and carefully set about the business of subjugating all his neighbors. He made very good headway with this. Nation after nation fell before his armed might. Finally, every nation had been subjugated but one. Syria, the biggest, toughest, strongest neighbor he had remained independent. He wasn't quite sure he could defeat those Syrians. And so to his court one day he ordered his 200 prophets—men whom he kept on his payroll, trying to get a prediction ahead of time on how the war would turn out if he were to engage in it. He seated these prophets in a semicircle around in front of him. At the right end of the semicircle was the oldest, most senior and respected prophet of the group, and then the thing steadily ran downhill until it got to the youngest, least respected man of the 200.

He started over at the right end of the continuum and he said, "Sir prophet, what do you think will be the outcome if we attack the Syrians this spring?" This old man stood up, looked very soberly back at his monarch and after thinking a bit said very carefully, "Oh king, I predict that if we attack the Syrians we will defeat them. We'll overrun their lands, subjugate their people, and make them pay tribute to us always."

"Very good," said the king.

"What do you say, Number 2?" Number 2 prophet stood up, saw which way the wind was blowing, made precisely the same prediction Number 1 had made. One after the other 199 of those rascals stood up and told their superior that he was going to win the war that spring.



Dr. Ralph G. Nichols, University of Minnesota, talks about Barriers to Communication.

Finally, more or less as a matter of formality only, for the man didn't have much status, he got clear around to the left end of the continuum where was seated the youngest, least respected prophet of the number, a little fellow by the name of Michiah. And he said, more or less as a formality only, "What do you say, Michiah?"

This little chap stood up, and he was looking terribly sad. Tears were practically running from his eyes. He started to lie to his king, changed his mind in mid-stream, gulped a couple of times, decided to make a clean breast of it and he said, "Oh king, last night I had a dream. In that dream I saw a vision. And in that vision I saw our Army marching into Syria and theirs coming out to meet us. We engaged them in

combat and fought furiously several hours. But slowly their left flank turned our right. Then the right the left. They overcame the center of our line. They rushed through our forces into Israel and subjugated our people."

"Throw him in jail," said the king. "I'll have no bearer of bad tidings in my realm." And they threw poor little Michiah in jail.

The Bible is a little fuzzy on what became of him. I think the king's brother came along shortly after and put him to death. It makes not one whit of difference that that little prophet was the only man out of 200 who had courage enough to tell his superior the truth. It did him no good. He learned a bitter lesson way back there, thousands of years ago. A lesson that you and I learned the first day we took a job for wages. That lesson is, if you want to get ahead in this world, don't ever carry bad news upstairs. If you want to be promotable, you've always got to tell your superior that things are going swell. Whether it is true or not, you say, "Things are fine out in our department."

"The Big Liars"

When I walk through the campus in the morning, I always hear some professor scream out across the street at another one, "Hi Bill, how are you?" "Swell," he says, "how's it with you, Joe?" "Fine," replies the other. The big liars. One or the other is almost certain to be suffering from a hangover, headache or a bleeding ulcer. It makes no difference. We scream back and forth at each other across the sidewalks, the streets, and up and down the corridors all day long, "Swell," "Fine!" Why do

we do it? It's because we want to be known as hail fellows, well met. Jolly good members of the team. Optimistic and cheerful. Things go swell, we say, out in our department.

Now this business of the good news complex so deeply ingrained in all of us works a little mischief in a communication sense. In almost every business enterprise of any size at all, we have in control a thing called the Board of Directors. And these dignitaries usually have a monthly meeting. Up at the top floor of the establishment, in a heavily carpeted room, they seat themselves around a huge, beautiful oaken table in heavily upholstered armchairs. The Chairman of the Board calls the meeting to order and asks the Comptroller to make his report. This dignitary stands up, reads a lot of numbers, and it develops they have been making some money. Everybody looks pleased. The Chairman congratulates his colleagues on being such wise overseers of such a forward-looking enterprise, adjourns the meeting and they all go out to the Country Club and play another round of golf.

Now, this goes on for seven straight monthly meetings. At the eighth monthly meeting, the pattern is broken. The Comptroller comes in, lays his report in front of the chair of the Chairman and disappears. He doesn't want to be around when the big blowup comes. Sure enough, this month, the last figure written at the bottom of the right hand column of figures is written in red ink. They've been losing money.

Of course there is a blowup. The Chairman is furious. Who has been falsifying his report, he demands. Everybody says things are going swell in his

department, yet we're losing money. How can it be? He immediately appoints a committee. Now the assignment of this committee is to go down through the ranks of management to discover who has been falsifying his reports. They can't find out. Even if the Chairman puts himself on his own committee he can't find out.

You and I learned early in life how to pass the old buck of responsibility along faster than any Board Chairman can chase it, and he can't possibly find out who has been falsifying his monthly report. But, he still has an out.

Efficiency Experts

This Board Chairman can go outside his own payroll and hire an efficiency expert to come in and look over the operation. Now, these efficiency experts are one of the truly great phenomena of our period of history. A few years ago you could hardly find one of them. Twenty years ago there were only 20 Ph.D.'s in the whole field of industrial engineering. Today there must be a million of them. Some people call these efficiency people efficiency experts, some call them private consultants, some people call them industrial engineers. I don't care what you call them, but they are certainly around us in great abundance. Pick up any telephone book in any hamlet, village, or city in America and you will find great columns of these private consultants ready to tell you how to run your business.

Now, its going to cost you a little something, if you're a Chairman of the Board and hire one of these men. The cheapest one I ever heard of got \$50.00 a day plus expenses for his work. The

most expensive one I ever heard of is a Canadian. I was told that he gets \$1,500 a day plus expenses. I guess he's worth it. They say that man can go into any business operation in the world and inside a few days time, a few weeks at most, he can make recommendations which if the directors are sensible enough to put into operation will put their old ship on an even keel again and they will start to make money.

But, don't you see my point? It pays to note that the good news complex is a costly luxury. If we're only going to report good news upstairs, we have to hire an outsider to discover what's wrong with the operation and we have to pay for that indulgence. If you'll look at it on a national scale, it gets terribly grim in a hurry.

National Insecurity

Seven years ago, you and I went to bed at night and slept right through the night. We were secure. We know we were secure. Every time we picked up a newspaper or magazine, the headlines told us that we were the best of everything. We had the highest standard of living in the world. We had the biggest and best Army, the finest Navy, the best Air Force. We had practically all the brains in the world right here in the United States. At the end of World War II we screened out all the best German scientists we wanted, brought them over to Washington, put them in laboratories. We had it made. And then one morning about seven years ago, when you picked up your morning newspaper you did what I did. You read the screaming headline there and it said the Russians had sent a Sputnik up into the

stratosphere. I was terrified. I'd never heard of it. Reading the story, I suddenly got very insecure, recognizing that the Russians must have something we didn't have.

President Eisenhower was furious. He immediately appointed a committee and the assignment of that committee was to try to discover who had been falsifying his reports. As nearly as I could tell, trying to follow the report of that committee, what the Senators told their President was that a lot of things we thought we had we didn't really have. They were plans on drawing boards that one day we might be able to get, but so far they hadn't been materialized. And for seven straight years now, you and I have slept a lot more restlessly through the night, for we haven't been quite certain that we ever caught up with those Russians again. It's the influence of the good news complex at the national level.

I haven't been exaggerating or falsifying this barrier to communication. Two scientists by the names of A. H. Lund and F. H. Poffenberger, have been busily studying what the American people believe basically. And, they have measured what we believe and run correlations between it and every other attribute they could measure. Three of their statistics I want to report to you. The correlation between what Americans believe and the facts in the situation is .42. Now all the statisticians among you know that a perfect correlation is 1.00. So a positive correlation of .42 is sort of interesting but not very significant. The facts don't have a great deal to do with what we believe. You can build up that figure of .42 if you've had experience with the facts and then run a correlation between belief and experience. The

correlation figure moves up to .64. But, do you want to know what we really believe in America? We believe the thing that we want to believe. The correlation between belief and desire is .84. This is the highest correlation they have ever been able to produce, running correlation figures between what we believe and all the other attributes measurable. It's the effect of the good news complex so deeply ingrained in all of us from childhood on through life.

"Memorandum Mania"

Barrier No. 2 to communication is a lot worse. I would like to call this one "Memorandum Mania." I think it all got its start over in Terre Haute, Indiana a few years ago. The story, as I heard it was, that a manufacturing company there had a breakdown on their assembly line. It threatened to bankrupt the company. There was a very serious delay in production. The Board of Directors immediately went into a protracted session and said, what happened, what on earth has been going on. The Chairman of the Board appointed a committee to investigate it, the committee made its report. As nearly as they could tell, somebody had told somebody else to do something, the second man had misunderstood the first, the whole process of production had broken down.

The Chairman of the Board said, "We may possibly survive this catastrophe, but I'll tell you one thing, we'll never survive the recurrence of it. We've got to come up with some kind of a preventive program that makes it impossible for this thing ever to happen in our business again." They thought, and they thought, and they talked and they talked,

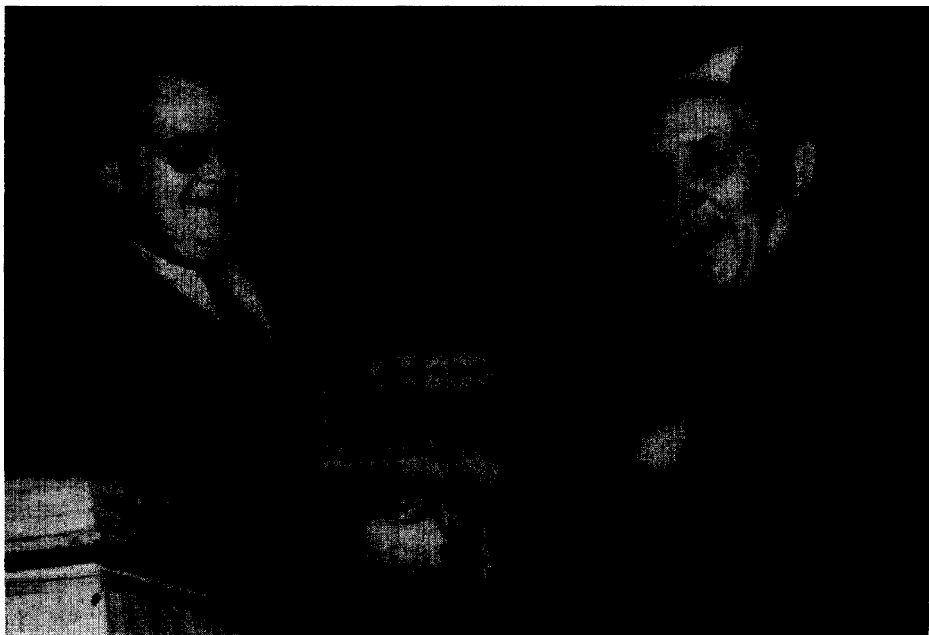
and finally they came up with a slogan. That slogan was, "Never Say it—Write it," and they printed that piece of insanity on every memorandum pad in their company, on the top of every letterhead. They put it on every bulletin board, they put it in every restroom, in every payroll envelope. Wherever an employee turned if he worked for that company he was faced with this inane admonition. "Never Say it—Write it."

Now, it wouldn't have been so bad except that a couple of executives from the duPont Company happened to be visiting in Terre Haute. One of them picked up one of these letterheads and read that slogan and he said, "That's interesting isn't it?" They talked it over on the plane back to Wilmington and, horror of horrors, they sold it to duPont. And duPont printed on the top of their letterhead, "Never Say it—Write it."

And heaven knows, if it's good enough for duPont, it's good enough for practically anybody and thousands of enterprises in this country today have adopted that insane slogan, "Never Say it—Write it."

Paper Flood

Now, it still wouldn't have been so bad, I guess, except that the first manager who wrote one of these memoranda took it to his secretary and said, "Type this please." In all innocence the girl looked back at him and said, "How many copies do you want?" This was a shock. He hadn't realized he could have more than one. But, being a manager he quickly recovered his wits and he said, "Well, how many can I have?" "Oh," she said, "I guess you could have about five legible carbons without any



John W. Ryan (right), General Conference Chairman, receives coin collection gift from ASTD President Charles Campbell.

additional work really. I can type them off with just one typing and the only additional cost would be for the paper itself which is negligible." "Good," he said, as a brainwave hit him. Why not let the boys around here know that I'm on the stick? After all, it took me 30 minutes to write that memorandum." So quickly he said, "Send a copy to Martha Williams, one to Joe Walters," and he named off five of his pals in management he would like to let know he was on the ball. Now, this still wouldn't have been so bad except that a rat by the name of Wright built a duplicator. It's a nice little gadget, you can get one for 70 bucks. I have one in my own office, and you can run one master copy through this Wright machine and you can come out with 50 or 60 legible carbons of every idea you ever get in your lifetime. And you can let 50 people know that you're on the ball.

This wouldn't have been so bad except that a bigger rat by the name of A. B. Dick built a better duplicator and by-golly, you could run a master copy through the Dick machine and you can come out with several hundred legible carbons of every idea you ever get in a lifetime. And that's what we've been doing. We have been sprinkling each other with carbon copies of reports and memoranda until today you and I are drowning in a sea of paper. It is a sea which is steadily, slowly but certainly choking the life-blood of efficiency out of every business enterprise in this good land of ours.

Forms and Forms

I suppose that one of the very finest companies in my state of Minnesota is

Minnesota Mining and Manufacturing Company. I have enormous respect for these people. I have had some very pleasant contacts with them. A few years ago, they sent me a copy of their annual report. I was much impressed to find that they had done about three-quarters of a billion dollars of gross business during the preceding year. I turned to that segment of the report that dealt with communication costs and was much impressed to discover that they had spent about a million and a half dollars for communication, during the previous twelve months.

Immediately I thought, "Gee Nichols, if you could show the 3M company how they could save 10% of that million and a half dollars that would be worth something to those people wouldn't it?"

I was still fondling that delicious idea when my eye fell on one entry in that segment of the report. It said that they had used 3,400 different memorandum forms for inside-the-firm communication during the previous year and I thought, "Holy mackerel, how can the human brain ever dream up 3,400 different memorandum forms?"

I was still wondering about that when I got down to St. Louis for a convention of some kind of the ASTD. On the program that year they had a very interesting man. It turned out he was the head office manager of the Emerson Electric Company of St. Louis, and he made a fascinating speech. He said he had just counted all the different memorandum forms they used in his company and that the number totalled 5,000. I suddenly realized that Minnesota Mining is small potatoes in the business of dreaming up different memorandum forms. This man went more carefully into his topic. He

reported that 120 of those forms had never been used. Another 200 or 300 had been so infrequently used there was no possible justification for keeping them in inventory. Yet, in high supply, month after month, Emerson Electric was keeping 5,000 different kinds of memorandum forms.

Files and Files

Shortly after that I got to my National Speech Convention, held in Chicago. We had an interesting man on our program there that year. It turned out his name was Colonel Parr, from the U. S. Air Force. He made a fascinating speech. In it, he said he had just counted all the different forms that they used for communication inside the Air Force, and the number totalled 6,007. He really dug into his topic. He told how many billions of pages they had to print for these forms. How many tons of paper pulp they had to buy to build them. And then he got to what I thought was the key statistic of all. He said, as a matter of fact, it takes from 50 to 55 million cubic feet of storage space just to store the paper of the U. S. Air Force. "Holy Moses," I thought, "where does the Navy put its paper? Where does the Army store its paper? Fifty million cubic feet. We could have a new university if we didn't have to store that paper. We could have a couple of new airports, some new highways, some new bridges, some new high schools. But we can't have any of these good things because we've got to store the paper of the U. S. Air Force." Oh, it's no joke any more. We're drowning in it, this paper.

It go so bad in one plastics company in New Jersey that they filled up all the

floor space in their administration building with files full of paper. Then they rented a warehouse nearby and filled it up, with files. And then, in desperation one day, having run completely out of floor space, they put a row of files in front of the administration building outdoors, on the sidewalk.

This wouldn't have been so bad except that a couple of executives from the holding company that owned the plastics company came through there on a visit. And it happened to be raining a little bit that day and they stood there and their mouths dropped open to see the girls run out of the building, try to get some paper into a file somewhere and get back under cover again without getting wet. And one of them turned to the other and he said, "This is the worse specimen of public relations I have ever seen." The other agreed.

Immediately, they appointed a committee. Now the assignment of this committee was to study this problem to see what could be done about it. Eventually they made their report. As a result of that committee report, that company emptied three thousand file drawers, burned 170 tons of paper, and managed to get the residue of the stuff under the cover for the time being. I am sure it was a stopgap measure and didn't solve the problem on a permanent basis.

Clerical Birthrates

Now somebody has to handle all of this paper that we are moving around. The people who handle paper for a living we call clerks. Now a clerk doesn't build any new Fords, Chevies or Plymouths. She doesn't produce any corn or hogs or potatoes. She doesn't really

produce anything tangible that can help our standard of living any, but she does move a lot of paper. Sometimes she files it. Sometimes she retrieves it. Mostly she just circulates it. Back in the year 1900, one out of every 40 people who made a living in America was a clerk. By 1940, one out of every 10 people in America who made a living was a clerk. And, by 1960, one out of every six people on this nation's payroll was a clerk. With one assignment—to move paper around. Oh, the birthrate of these people is enormous. If it continues at the present rate, by 1980 or 85, every second person in America is going to be a clerk. You still can't get enough of them. You never meet a manager but he is hunting for another clerk or another secretary. The birthrate of these people must be enormous, as they are increasing five times faster than any other element of society.

Coping with Correspondence

I'm a very small frog in a good size puddle, I guess, at the University of Minnesota, but every week there come to my desk about 15 to 20 big brown envelopes with contents I don't know how to handle. You all know the brown envelopes I am describing. They have a string that holds them together. I untie the string, pull out the contents of the first envelope. It always seems to be some kind of a report, 20, 30, sometimes 40 pages thick. I look at the title on this document, it doesn't seem to be related to what I think I'm doing for a living, so I'm about to toss it into a waste basket somewhere when suddenly I discover a little printed sheet stapled at the upper left hand corner at the

front of the report. I look closely and one entry on that sheet has been boldly checked in pencil. I identify the entry and it says, "For your information." I check to see who sent me this thing and it had come out of a dean's office usually. Now, I am afraid to throw it away. Some dean thinks I ought to know what's in this thing, does he? Well I haven't time to read 40 pages now, I'll have to assimilate it later, I think, and I carefully lay it on the right hand corner of my desk and open up the second big brown envelope.

This one is much like the first. There is a big, thick document of some kind in there. The title makes no sense to me at all. I'm about to throw it into a waste basket, when I find this ubiquitous little sheet stapled on the front of the thing. I look and this time the entry checked in pencil says, "For your file." There's a problem for you. My files are so full of paper now that my knuckles bleed every time I try to get anything in or out of them. There's no space in there for this thick document, so I lay it on top the first and open the third brown envelope.

It's about like the first two. I go through the same mental manipulation. I find the sheet, and this time the entry checked says, "Usual Procedure." I don't know what the usual procedure is with this stuff. Afraid to throw it away, I stack it on top the first two and open the fourth.

The fourth one is quite different. This one seems to be some kind of a questionnaire. Somebody wants to know something. About 10 or 12 pages of something he wants to know. I learned four years ago never to fill out a questionnaire. If you fill out a questionnaire

and send it back to the bird who sent it to you, he's going to send you his report later on, and you're not going to know what to do with it. Well, I stack these things up one on top the other and after a couple of weeks the thing usually gets to be 12, 14, 16" high.

One day, opening the office window to let a little air through the place, the breeze comes along and topples the whole thing off on the floor. Now a crisis has arisen. I buzz for my secretary and when Mrs. Huvda comes in I always pick it up and I say, "Mrs. Huvda, will you take this junk out to your office and systematize it, organize it, or something?" A look of horror always comes on her face, but she loyally gathers it up, totes it out to her office. A couple of hours later she comes back and she says, "Well, Dr. Nichols, I think I have this arranged, where do you want me to put it?" I never can think of a decent answer. I usually say, "Well, put it in a file." Then she always says, "But we have no more file space." In a moment of petulance, I then may say, "Well requisition another file."

If I do, I'm a rat. For what I have then literally said to the good tax-paying citizens of my state is this, "Get out there you farmers, you mechanics, you sales people. I want the profit of \$6,500 worth of your goods and your services next year to pay for my new steel file with four drawers in it." For that is what is required. Worse, than that, I have said to those same good tax paying citizenry, "Keep working folks. I want the profit of another \$4,100 worth of your goods and services every year from now to eternity to pay for the operation, maintenance and storage cost of

my new steel file with four drawers in it, for that is what is required."

If these figures sound extreme to you, write for Bulletin No. 5, New York State Department of Commerce, and you will find them listed there. If our sales forces knew what we do to them every time we requisition another file for the Home Office they'd go into open rebellion. Fortunately, they don't know and we can go on buying more and more files.

The problem of the unread report is the gravest problem in the American economy. We're drowning in paper, let none doubt it. Dr. V. A. Bush, director of the scientific development program has put it in these words: "The work of hundreds of able men is being lost every 24 hours because they are discovering great truths, filing these truths in files from which they never again can be extricated." He goes on to point out that we have the know-how to do thousands of things better in our economy but we can't synthesize the parts of our own know-how. The parts are lost in deep files full of paper and cannot be located.

Ah, it's no joke any more. If you folks are anything like me, you fill a briefcase full of paper every night at 5 o'clock. I tote mine home, drop it behind the front door of the house. The next morning I pick it up and tote it back to the office again. I have not been on top of my job for 15 years. And the reason I am not on top of it is I can't handle the paper fast enough that flows through me and past me all the time. Every year, 28,000 new books are printed and published. Seventy thousand periodicals are circulated and you and I know that to keep on top of our job

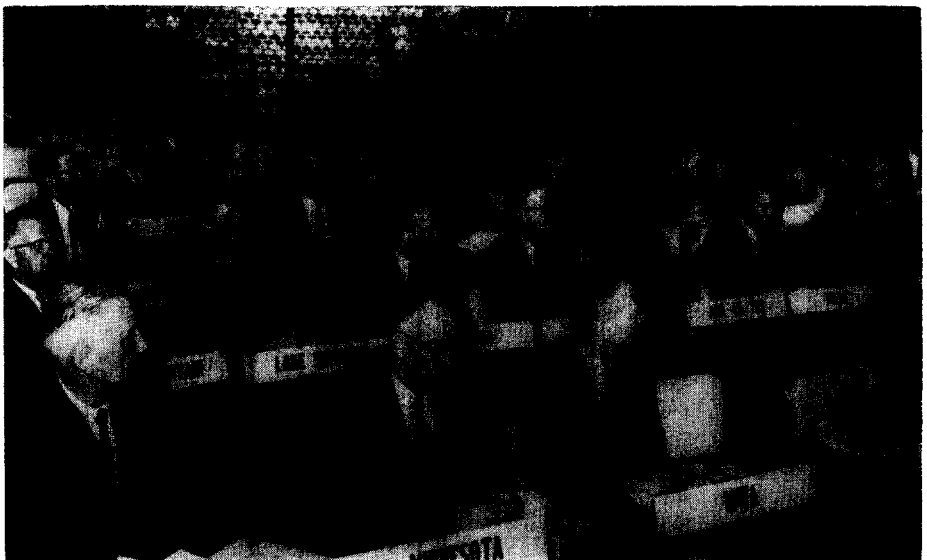
we ought to read at 1 or 2% of all that literature. We're lucky to read one tiny fragment of 1% of it. We can no longer keep up with the flood of paper in which we're drowning.

"Problem of Status"

Barrier to Communication No. 3 I would like to call the "Problem of Status." Way back in early colonial days one of our greatest thinkers, Tom Jefferson, came up with an enormously important idea. Fortunately I guess he wrote it right into the Declaration of Independence. What he said was this: "All men are created free and equal."

He hastened to explain that he didn't mean that we all had equal ability, what he meant was that we are all equally important in the eyes of our God. We could get equal treatment from our government. Equal justice out of the courts. Perhaps an equal opportunity to learn and to study.

Oh, it's a tremendous idea. We have never been able to make it work and you know it. I guess there is no one in this room but who has a boss. I know I have one and every now and then we become very sensitive to the fact that we are not quite his equal. Now I work under a swell Dean. I like the man I work for. Eleven months a year I call him "Woody" when I see him and 11 months a year he calls me "Nick" when he sees me. We get along just swell 11 months of the year. The 12th month everything goes to pieces. This is budget-making month. And every Department Head has to come in and have a conference with his Dean and lay out his program. On the way up the hill to meet my Dean, I always give myself a pep talk. I say, "Nichols, for heaven's sake get in there and communicate this Spring. Now it's not only your neck at stake, man, it's the necks of all the people in your department depending on you. You've got the evidence here.



ASTD General Council Meeting at the Conference.

You've got the proof we've got to have more people, more money. Get in there and communicate."

Well, I knock at the door and he says, "Come in." I walk in and he says, "Have a chair." I sit down and he's way off across a big desk, leaning back and says something about, "What did you have in mind?" I start to talk and his face tightens up and tension gathers in that room. Before long I go to pieces. I begin to stutter and to repeat and I just cannot communicate clearly in that situation.

It's the problem of status and the tension that always results when superior and subordinate are in communication with one another. We cannot get away from it. If you have been reading any of these modern books like "Point of No Return," "Status Seekers," "Pyramid Climbers," "The Man in the Grey Flannel Suit," and the like, you know what I am talking about. Then tension gets inside the white-collar worker until you just can't believe the quantity of it that arises and what it does to efficiency in communication.

Organizational Communication

The Savage-Lewis Corp. of Minneapolis is an advertising communications firm. A few years ago they were determined to determine the communications efficiency in representative American industry. They made a very careful study of 100 industries. I would like to report their data to you. In order to understand these figures you will have to recognize that typically, in these 100 industries, there were five levels of management above the worker pool at the bottom. Up at the top always was some kind of a Board of Directors, right below that a

vice-presidential level, general supervisory level, plant manager level, foreman level and then the manual workers down at the bottom. Sometimes unionized, sometimes not.

Early in their study they found that one director talks very well with another director. Sometimes these fellows achieve 90% efficiency in transmitting meaning from one brain to the other. One foreman talks very well with another foreman. Sometimes these fellows achieve 90% efficiency transmitting meaning from one brain to the other. Horizontal or lateral communication with our own peers seems to be no great problem to us in our organization. But when you start vertical communication downward you get an entirely different picture.

I would like to ask you to take a look at it. Let the Chairman of the Board call in a vice-president and tell him something and on the average only 67% of the message will get through to the brain of the VP. Now if that is a valid statistic, and I have no reason to doubt its validity, it would be a lot of fun to look inside a vice-president sometime when the Chairman of his Board is talking to him. That VP must be a seething mass of thyroxin, adrenalin, urine, shaking knees, quavering fears, tensions of all kinds.

Let the vice-president give the same message to a general supervisor, 56% gets there. Let him pass it on to a plant manager, 40% gets home. Let him give it to a foreman, 30% arrives. Let him give it to the squad of workers who are his responsibility and on the average in 100 industries today, only 20% of any message can come down through five levels of authority and get to its ultimate recipient.

Holy mackerel! You wonder how they can even operate with that kind of level of efficiency. And where does it stem from? It comes from the problem of status, the tension that gathers inside us. This is the problem of status and we've never been able to solve that problem.

Cultural Heritage

Barrier No. 4 to communication is in all senses I suppose the most important of the four. It is the increasing weight of our "Cultural Heritage." Now I am sure that all you people know what I mean by cultural heritage. I simply mean the sum total of human knowledge. All that man has ever learned in previous generations, through experience, thought, association with other people.

Way back thousands of years ago a very deep thinker came up with an enormously important idea. He said that we ought to teach our kids before they are 12 or 15 years of age all the things that their parents know. Then we could kind of give the youngsters a running start in this world. Other people around him saw the merit of the idea and they put it into practice and we soon called it "transmitting the cultural heritage." It was no problem back in early days to transmit what the parents knew to the young people. All you had to do in the "Year One," for instance, was tell the youngster how often to shear the sheep, how to handle the sheep dog, where the best water could be located, where the best grass grew, and then most importantly of all, how to handle a big stick which they called a staff with which you could drive off perhaps the saber-tooth tiger that occasionally at-

tacked the flock killing a number of the animals. Educators came along later and called it the "Saber-Tooth Curriculum."

Knowledge Snowball

It was no problem to teach the youngsters in those days all that the father knew. He could tell them before they were 12 years old. But something has been happening to this cultural heritage of ours. I would like to ask you to think of it in terms of a tiny little snowball resting up at the top of a long mountain slope. Back in the "Year One" that little snowball no bigger than your fist represented the sum total of human knowledge. That mountain slope was covered with a warm wet blanket of snow. Somebody gave that little snowball a nudge and it started to roll down that hillside. It took 1750 years for that snowball to double in weight and complexity. By 1750 we knew just twice as much as we had known in the "Year One." But something happened then. It began to pick up speed. I don't know whether the slope got steeper or what happened but in 150 years only, by 1900, that sum total of human knowledge had redoubled and we had a factor of 4 attached to it and then frighteningly it increased further in its rate of increase at some kind of geometric ratio that nobody understands. By 1950 we had a factor of 8 attached to the sum total of human knowledge and then, horror of horrors, in ten years time only, that sum total of human knowledge redoubled the fifth time and we had a factor of 16 attached to it! It's no joke anymore trying to transmit the cultural heritage.

It wasn't so bad back in the early 20's. I lived on a western Nebraska farm with

my folks who were farmers. Early in my life my father taught me how to hitch up the old team of mules we had on our homestead. He taught me how to milk a cow, taught me how to plow a furrow across the field without letting the point of the plow bob up all the time above the surface of the ground.

One day, I think I was about 12 years old, walking across the barnyard he called to me and said, "Ralph come here a minute." I walked up to him and his voice sounded very odd to me for some reason and he said, "Do you know what self abuse means?" I said, "No, I don't think I do." "Well," he said, "come in the tool shed here. I've got to tell you the facts of life." I followed him into that little building. He turned around, perspiration had suddenly popped out on his forehead and in the palms of his hands. He talked very seriously to me for 5 or 10 minutes about the glandular and reproductive processes inside me. When he got done he said, "Now, do you understand it?" "Yeah," I said, "I guess I do." "Good," he said. And turned with a sigh of relief to walk out of that little building.

Looking back at the incident now I think he figured that day that he had completed transmitting the cultural heritage to the kid. He had told me all the things that I was going to need to know in my lifetime. He missed the boat. I haven't hitched up a team of mules in 45 years. I've hardly milked a cow since the day he showed me how to do it.

At that, my Dad did a lot better by me than I am doing by my own two boys. I have a couple of them at the University and I don't even know what they are talking about. The other day

I heard one of them say to the other something about *inzomatic hydroxylation*. I never heard of either one of them. I didn't know what he was saying. The other kid thought a while and then he came back and said something about *anti-matter* and the *electron spin*. Anti-matter? I have trouble understanding what matter is. Anti-matter, I haven't the foggiest notion what it is. Electron spin, I never heard of it. If there are any fathers in this room, some of you surely must be sharing my discomfiture. I'm out of communication with my own youngsters. I don't know what they're talking about, what they're thinking about, and I haven't the vaguest notion what they are going to need to know five years from now.

Teachers as Communicators

It falls to my lot in life to attend a lot of teachers conventions and teachers institutes and every time I go to one of these usually there are a bunch of pedagogues seated around a table discussing their problems. (Incidentally, our school teachers are the professional communicators we have employed to help us transmit this growing cultural heritage of ours.) And one good conscientious pedagogue looks across the table and says, "I wonder what we should really be teaching the youngsters these days?" Gee, they would like to know. They would like to do a good job in their classrooms but their problem is they don't even know what the world is going to be like five or ten years hence.

It's that factor of 16 operating. Is there any man in this room who can

stand up and honestly face the rest of us and say I can read, write, speak and listen with 16 times the efficiency of Aristotel, Socrates or Christ? You can't do it and you know it. When I read my manual of income tax instructions I wonder if we write half as well as Aristotel did. It's that factor of 16. We've got 16 times as much to teach and to learn and we have not improved the skills of communication by a factor of even 2 in most individual cases. We've got a problem. It's all wrapped up in that factor of 16.

Last week I read an article that said by the end of 1967 we were going to redouble that cultural heritage again and have a factor of 32 attached to it. What are you men and women doing in your department with this factor of 16 or 32? What is going to be the training and development program of the future? I get terrified when I contemplate it and recognize that we haven't even recognized the urgency of the problem in our laps.

I would be a rat and I think, rather unethical, if I were suddenly to walk off the platform and say well there are the four great problems facing us, ladies and gentlemen, without suggesting that maybe we have a resource or a solution of some kind. Fortunately I can honestly say that I think we do have one tremendous resource with which we can work and to which we can turn. Inside the brain of every individual in this room exists, we are told, 11 billion nerve cells. Nobody ever counted them. It would take a lifetime to do it. What the medic did was to count a small number, weigh it, then weigh the total and estimate that we must have at least 11 bil-

lion cells in our brain. The number actually is not important at all.

The important fact is that eminent neurologists and physiologists have been telling us for years that no man makes effective use of more than 5 per cent of his higher mental faculties. Not even an Einstein made good use of 1 billion of the 11 billion cells in his brain. Oh, we have the power, the latent force, the capacity up there to handle that factor of 16, or 32 or 64 or 128 when it hits us and it's going to hit us. We have the tool, the strength, the power, the capacity to do the job in front of us.

The thing that terrifies me most is when I visit a high school, walk out through the gymnasium and find \$10,000 worth of football equipment . . . I'm not an opponent of football, I love it . . . and then walk right around the corner down to the communications laboratory, the speech classroom or the English classroom, and not find one single tachistoscope. Not one overhead projector, like that thing we've been using this morning. Not one piece of technologic equipment that would help us to do the job of transmitting the cultural heritage at 16 times the pace that Socrates was able to employ.

The Education-Business Bridge

It terrifies me that when I look at two gigantic enterprises going down the highway of life I find all too few bridges connecting the two. We spend about \$35 billion a year for public supported education. That's one enterprise. We spend about \$35 billion a year in private training and development programs. And in how many cases are bridges built

from one across to the other? We have about 2,000 colleges and universities in this country. Do we have 100 of them operating with business hand-in-hand? Is there a bridge in 100 cases over to the campus nearby? 300 cases? 500? Certainly you cannot argue that there would be a number larger than 500. We need desperately 1,500 substantial bridges built between the private enterprise and the public enterprise in education. We need to cross those bridges all the time and carry information and ideas and theories and application of the theories. I suppose in the future the pattern will be that the public supported schools are still going to be largely responsible for furnishing the theory and the substance.

But it is the private enterprise training and development upon which we've got to depend for the application, the practical application of these theories. We've got to depend upon you folks for the technology we desperately need. We've got to depend upon you basically for the motivation that we must have.

The most-needed single tool in America today is a device into the one side of which we can talk at the rate of 100 words a minute and have it come out on the other at 2, 3 or 4 hundred words a minute. Talk in one side at 200 words a minute and have it come out at 400 on the other side. Such a tool would revolutionize the whole educative process. When are you going to produce it? The brain is up there. It has power in it that would handle communication at four times the speed that we normally employ now. This is the greatest promise of the future. It's the emerging pattern of training and development. It's something to which we ought to give our energy and our concern in the years to come.

You people well know that mental efficiency is the foundation of all efficiency. It was the brain that turned a savage into a king, the lowly wage earner into a captain of industry. As of 1965 we cannot even perceive the levels and the heights to which our brains may yet carry us.

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