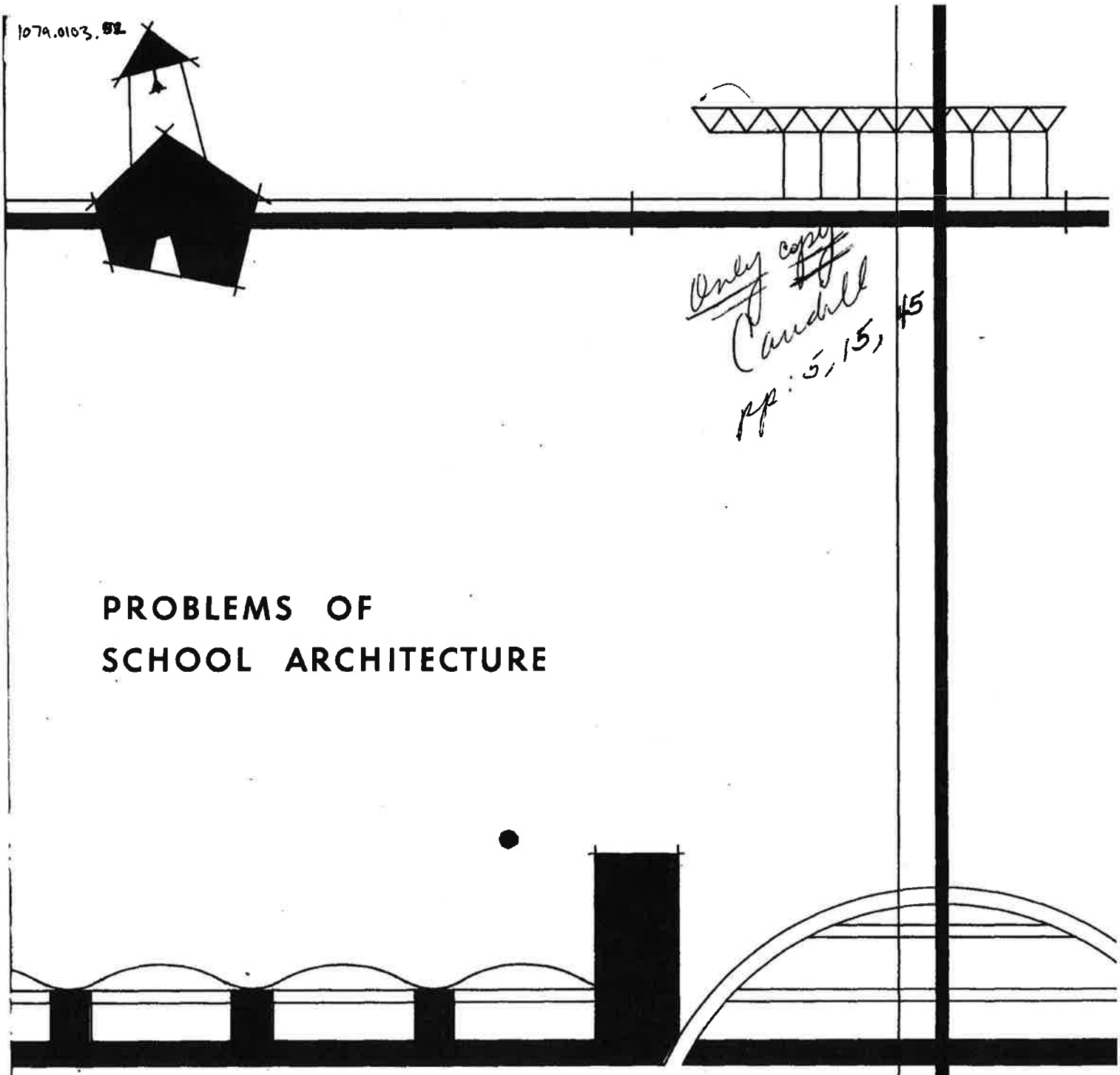

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PROBLEMS OF SCHOOL ARCHITECTURE

PROCEEDINGS

A. A. CLEVELAND CONFERENCE

WASHINGTON STATE UNIVERSITY

PULLMAN, WASHINGTON - JULY 20 - 21, 1959

Washington State Institute of Technology
Proceedings

PROBLEMS OF SCHOOL ARCHITECTURE

A. A. Cleveland Conference
Washington State University
Pullman, Washington
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Sponsored by

School of Education
Zeno B. Katterle, Dean

Architectural Research Section
Division of Industrial Research
Robert P. Darlington, Head

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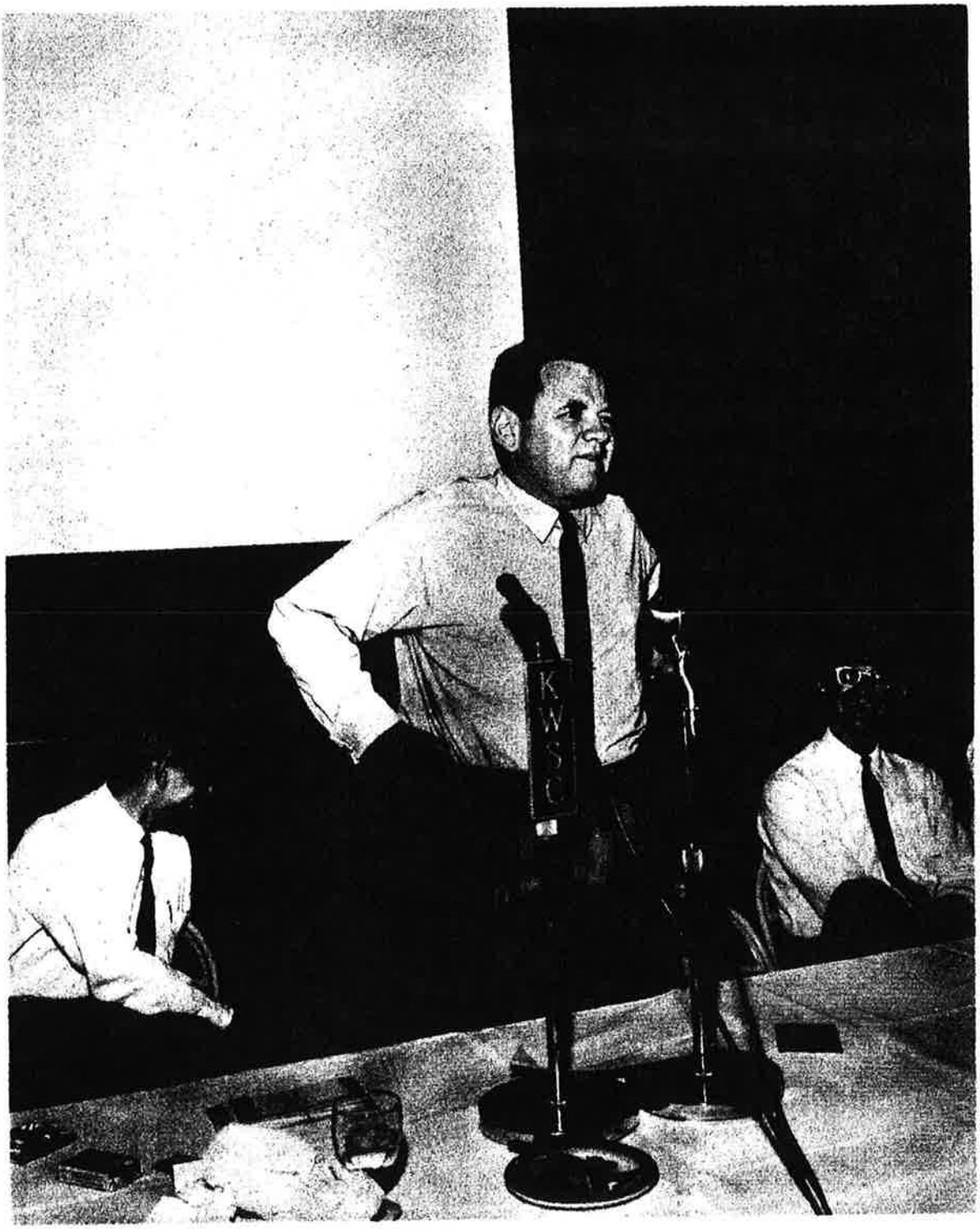


Zeno Katterle

Bill Caudill

Roy Wilson

1. PEOPLE AND CONCEPTS

"School buildings teach--good or bad, but they teach. It is our opportunity to make sure that they teach the kinds of values and appreciations that free men need."

Arnold C. Tjomsland
Director, School Building Facilities
Washington State Board of Education

"There's real danger in thinking a school has to last 50 years. I know none that has weathered the educational evolution."

Ralph Burkhard, A. I. A.
Architect
Seattle, Washington

"Beauty for schools is a good investment. Its dividend will be improved morality for the whole community. And, after all, isn't this what we are seeking?"

Kenneth W. Brooks, A. I. A.
Architect
Spokane, Washington

"The fundamental process of education is concerned with individuals. We have known this for 50 years, but no one has developed a school plant with this as a primary objective."

Zeno B. Katterle
Dean, School of Education
Washington State University

"The ability of people to adapt themselves to their environment is good and desirable. Such adaptation, however, should not tax the physical and emotional limitations of people. Therefore, our concept of flexibility should be people-centered as well as building-centered."

John M. Morse, A. I. A.
Architect
Seattle, Washington

"We have demonstrated a real belief in the need and value of a progressive, problem-solving approach to the years ahead."

Robert P. Darlington, A. I. A.
Head, Architectural Research Section
Washington State University

"The architect should re-evaluate his service and rededicate himself to the task ahead. At this time the bottom drawer in the drafting room should be locked."

Robert B. Price, A. I. A.
Architect
Tacoma, Washington

"What would John Dewey and Louis Sullivan have to say to challenge this group?"

Raymond C. Schneider
Consultant, Stanford School
Planning Laboratory
Stanford, California

In chemistry, a catalyst is a substance which accelerates a reaction, usually positive, and which may be recovered practically unchanged at the end of the reaction.

Architect William W. Caudill proved to be a catalyst of the first magnitude when dropped into the Cleveland Conference pot with the other ingredients, school architects and school superintendents from throughout the Pacific Northwest.

The pot bubbled and fumed handsomely for two days until Caudill was recovered, practically unchanged, except, by his own admission, "most profitably." Many nuggets were precipitated out during the reaction, including those above retrieved by Caudill and dangled aloft at the end of the conference for the bedazzlement of all.

A meeting of architects and superintendents which can produce such provocative concepts must be judged not only a success, but a necessity. The raising of problems, the search for solutions, the discussion of approaches, the airing of ideas and philosophies cannot but help to create an environment of closer cooperation and deeper thinking which will result in better educational architecture. The benefits, inevitably, will accrue to the school children of the area and to the society to which they belong and to which they will contribute as they mature.

2. THE PROGRAM

The A. A. Cleveland Conference followed a course of investigation and development designed to bring out problems of educational architecture and to search out approaches and possible solutions to these problems. The first day was devoted to problem raising and the second day to problem solving.

To carry out this program, a number of people were called upon and a number of techniques were used. The initial challenge was offered the first morning by Bill Caudill in his keynote talk, The Challenge of Research in Educational Architecture. Further specific problems and the research approach to them were given next by Robert Darlington, Head of the Washington State University Architectural Research Section, in his talk on School Architectural Research at Washington State. The morning was concluded by a panel discussion, chaired by Dr. Zeno B. Katterle, Dean of the Washington State University School of Education, on What Do We Need to Know More About? The members of this panel were chosen to represent considerable experience in both the educational and architectural fields. Dr. Arnold C. Tjomsland, Director of School Building Facilities in the State Board of Education, was joined by Kenneth W. Brooks and Robert B. Price, practicing architects in Spokane and Tacoma, respectively.

The panel went beyond Caudill's and Darlington's talks in looking at specific areas in the field of school architecture much in need of thought, discussion, and solution.

Thus the morning set the stage for the afternoon investigation by small discussion groups of a great number of problems shared by educator and architect alike. The problems aired in these groups formed the material for the problem-solving approach the second day, which began with a review and provocative analysis by Architect Robert B. Price of Tacoma. Then followed a panel, chaired by Professor Gordon Rutherford of the WSU School of Education, discussing the question, The Problems: What Can We Do To Solve Them? Here again Bill Caudill gave the benefit of his architectural experience, and was joined by Dr. Raymond Schneider of the Stanford School Planning Laboratory, Dr. Louis Bruno, Superintendent of Schools for Pullman, and Dean Katterle.

The discussion groups gathered again before lunch to talk over the cooperative approach to problem solving by architects and administrators, and took a massive brainstorming blow after lunch at one specific problem, How Can Architects and Educators Achieve Better Communication on School Building Problems? Just short of 200 ideas came out of the ten groups during the 45 minute session.

A final panel discussed Applied Imagination and the Washington State Regional School Laboratory, the potential role of the School Lab in solving school building problems. Bill Caudill, Ken Brooks, and Chairman Bob Darlington were joined in this discussion by Professor Harry Weller, Chairman of the Department of Architectural Engineering, Professor William McDougall of the School of Education, and Orville G. Lee of the Architectural Research Section.

The summation, or critique, was given by Bill Caudill in the form of the concepts listed earlier under People and Concepts.

Two mealtime talks on the first day enlivened and rounded out the proceedings. At the Monday luncheon, Dr. Roy K. Wilson, Executive Secretary of the National School Public Relations Association, and Director of Press and Radio Division, National Education Association, spoke on The Communication Aspects of School Building Problems. And at the evening banquet, Bill Caudill again held forth, ably assisted by Bob Price at the chalkboard, on the philosophy of The Great School Plant.

THE CHALLENGE OF RESEARCH IN EDUCATIONAL ARCHITECTURE

William W. Caudill, A. I. A.
Caudill, Rowlett & Scott
Architects

I'm glad to be here. I think I have more friends here than I have in Texas--naturally. This is a real fine place--the atmosphere is good. You sure did me a dirty trick, though, covering up all these nice walls with architecture. This is the reason why I'm so welcome here. The architects just love to have me come up here to the State of Washington because it makes them look so good. Then over on this wall the display by Perkins and Will gives me a complex, too, because I'm often called "the poor man's Larry Perkins." But, despite this, I see some people I haven't seen for a long time.

This guy Bud Barlow has given me a lot of credit. I think I should tell you where credit is due. At Texas A & M, I couldn't make a living holding down just one job, so I was doing research and teaching and practicing at the same time. Naturally, I got some complaints--from parents whose kids I flunked, and from my college associates. Professors didn't like me particularly. I remember Dean Barlow getting one letter of request from the guy that shared my office, a college prof asking me to get off--I was neither in architecture nor research. I had an office in the School of Architecture, but I spent all my time in research and I didn't belong there. And then the architects, they loved me to teach and to do research. Of course, they didn't like the idea of paying the salary to their competition. They went right in to Dean Barlow. One day, he called me on the carpet. I thought when he called me into his office, (you don't go to the Dean's office very often), he had some important things to talk about. He said: "Bill, I'm worried about you." Boy, this just happened not too far off where six architects had asked the State Senator to go after me--and Bud said: "I'm worried about you."--and I knew this was it! He said: "You know, I haven't heard a complaint about you in two months, what the hell are you doing?"

My job is even tougher to program than it is to preach on research and educational architecture. This should be good because, frankly, I can't tell you in crystal clear terms "what is research?" or, for that matter, "what is architecture?" I <u>can</u> tell you what they are <u>not</u>.

For example, yesterday morning when I woke up about six o'clock I went to the window to get some real inspiration from the beautiful view. I was burned up a little bit when I found this view sliced up, and I counted it, into 468 pieces. By force I was able to pull up one of the venetian blinds, which cleared up about one-fourth of the area so I could look out, only to find this small view chopped up into five pieces. One type of venetian blind, developed decades ago on a pseudo-concept of environmental control, can be traced back as far as the fifteenth century, and in my room it took all that time to degenerate. I was in Williamsburg, Virginia, two weeks ago, and the venetian blinds they built in the 17th century were certainly a lot more functional than the ones messing up my view. There should be laws to protect beautiful views as well as laws to protect beautiful women. This crime would not have been brutally committed if the people who were responsible for selecting these environmental controls had been a bit more research-minded. The process through which a well-meaning person went in the selection of these devices to control light,

air, ventilation, and view is not research, because research is an attitude of mind; research is finding better ways of doing things. Research is probing, but not necessarily digging, to the fifteenth century; although research at times does involve digging. If you want to dig, dig in about 1850; particularly, study the Crystal Palace and you'll find a lot better ways of controlling light and air and view than this particular technique built here in the 20th century.

Research means many things to many people. Pure research is one thing to Bud Barlow; applied research is another thing to him. To one architect practitioner research might mean merely the library investigation before the preliminary plans. To others, like Bob Price or Ralph Burkhard, research goes much further and they extend it to the realm of experimentation. To one educator, research may mean merely the survey of what has been done, but to another like Zeno Katterle here, research is a creative endeavor. To one professional researcher, it may mean only a collection of salient facts for organized dissemination, but to Bob Darlington this is only one phase of research because research is broad and must include scientific investigation as well as experimentation.

Now, one of the best statements containing a real insight to the meaning of research that I have ever heard is one made by Dr. Bud Barlow here, during the time he was my boss. He was conducting some visitors through the engineering labs and he came upon our door. He didn't want to show them the crude stuff that we had so he let them stick their heads in, and he knew exactly what we were doing but he made this statement: "Boys, do you know what you are doing, or is this research?" That's the best definition. It was research, and he knew it because I had a sign on the door. We knew what we were doing, partly. We were probing, if you please, and we were pursuing perfection. Well, so much for research. Now we'll get on to architecture, and it will be just as vague.

For one thing, architecture is not shelter engineering, but shelter engineering might be a part of architecture. For example, take Bob Darlington's house--a fine home. Well, this is an example of architecture; it's more than mere shelter. Perhaps architecture is why he built the house on top of the hill. He was seeking an architectural effect to produce certain emotional responses. The architecture in this case reached out to capture the magnificent view of Pullman, a mural that changes by the sun, hour by hour and season by season. Perhaps architecture is a reason why I blew my top yesterday morning when I discovered someone had brutally mutilated the inspiring scene from my window. An architecture is more than just shelter, more than lighting, more than adequate ventilation, more than safety, architecture concerns itself with qualitative space as well as quantitative space. Architecture is shelter engineering plus. This is important when we get into the discussions today and get lost in foot candles and brightness balances and prefabrication. Architecture is shelter engineering plus. And here is architecture and research having something more in common than "arch". Research, too, must be more than mere investigation. It must have this plus factor. Significant research, particularly as related to education and educational facilities, must have the ingredients of creativity, intelligent interpretation and proper application.

Well, this is sounding like so much audio-blare. Let me see if I can give a little clearer look at this thing and put it on a more practical and lower plane.

What is a good school plant? It must be good shelter. This is a fact; there's no doubt about this; no argument about it. Although some architects, I am told

by some of my clients, consider that it doesn't have to be good shelter. "I don't understand why they gripe so much about a few little leaks." But it must offer mature and adequate protection against the cold, the heat, the wind, and the overly bright sun. It must provide comfort, because without comfort learning can be deterred. But a schoolhouse can be perfect shelter and still not be a good schoolhouse, for it must facilitate the teaching program; it must work for the educating process; it must have the right kind of spaces, proper sizes and shapes, the proper relationship of spaces, the proper kind of equipment to function as a school plant. But a school is more than a shelter and it's more than a "machine for learning," because if the children, after they move into a new schoolhouse, find that it doesn't feel good, it simply is not a good school plant. The architecture of a school plant must respond emotionally as well as physically; it must stimulate; it must inspire; and like a good teacher, it must teach. And if during this conference we can find ways to make the schoolhouse teach, then we will have accomplished something.

Now, back to research--I can't stick to the subject here.

I'm not going to steal your thunder, Bob Darlington, as to hit you the next session on architectural research. No one can do it better than yourself. Through his leadership Washington State University has become very prominent in architectural research based on the school field.

Well, that leaves me on educational research. Of course, as an architect, I'm most qualified to talk about educational research. I think you should know, particularly you architects, that there is plenty of educational research going on. It's going on, not only here in Washington, but all over the United States. We hope that in a few weeks we can announce even a larger educational research program here at Washington State University. But let's not count our little chicks. I can't keep up with this mass of research in education, and this is good--because I can't understand it anyway. But there are a few projects that I can understand because they have architectural implications. Some of these projects are scaring the professional pants off me because they're going to play Old Ned with us slow-thinking architects. For example, last week I was told about a research program in one high school in Illinois where 14 research projects were going on simultaneously, ranging from the team concept of teaching science to the environmental effects that the room has on standardized testing. In Harvard, Professor B. F. Skinner has developed a machine for learning based on the stimulus response concept of psychology which is, in estimate, a reinforced teaching device. If this thing, and other machines and gadgets come to the front, it's going to change our whole outlook on schools. In Newton, Massachusetts, they have reshuffled class ratios of teachers to group sizes and established evidence that the one to 25 teacher-pupil ratio which has been with us for centuries has no validity for certain learning experiences. I'm not much of a scholar, but I got my secretary to investigate that one, and she traced in just a short time this 1 to 25 teacher-pupil ratio back to the fourth century in the Hebrew Torah. In Durban, Michigan, there is a junior high operating, I am told, without bells. How radical can you get? That's undermining the very foundation that I have. What's left I don't know. In recent weeks a report came out which some of you have no doubt read. It's from the Commission on Experimental Study of the Utilization of Staff of Secondary Schools and is called Images of the Future. And if this thing is taken seriously it certainly spells hard times ahead for the stock plan thinkers, and if this thing has professional acceptance, and I have a hunch it's going to because Dr. Trump, a professor at the University of Illinois, who headed up the Committee and wrote the report, is now going to the National

Association of Secondary School Principals, which you might say is a pretty conservative bunch, and things are going to happen, I suspect. And when this does, the school plant cannot be the conventional egg crate where each standard compartment holds two dozen or so egg-heads plus a standard teacher. Now, if the teaching machine gains ground, it will certainly change the school plan by requiring space unknown in schools today. And if the team concept of teaching gains acceptance, we may have to give up the classroom cell in both elementary and high schools, and those of us who have fought for the self-contained classroom may be fighting against it before too long. If the trend continues to break away from the 1 to 25 teacher-pupil ratio, we shall have to provide teaching spaces for up to 400 and down to 10. If the fight for teaching the individual is won, God have mercy on the poor architects and educators whose security lies in the status quo. When I think of teaching the individual I think of one of my best friends and also supposedly my boss for the last two years, a dear friend, Dr. Grant Venn, Superintendent of Schools at Corning, New York, and in my opinion, one of the great young school administrators in the nation. He always preaches teaching the individual; he hasn't gotten on any bandwagon yet on the school-within-a-school or the departmentalized set-up or the age-neighborhood, but he's trying to make a flexible school where instead of giving lip service, he's really trying to teach the individual. And that's why I'm so insecure today, because I've been with Grant for two years. Well, these things scare me. This is nothing in the future; this is hitting us right now. For example, right now at the secondary school level in our own little practice we are doing specifically three completely different types of high schools and doing parts of five different kinds. Let me spell these things out and maybe you have all five or ten or thirty of them. For instance, we're doing a high school, the type all you folks have done, the departmentalized high school where you have compartments of these little academic countries called mathematics, English, Social Studies, P. E., and so forth with a strong emphasis on doing a thorough job of subject matter teaching, and most of our work has been based on the departmental type high school.

We also are doing two high schools based on the school-within-a-school concept where, in the attempt to take the sting out of mass education, you take a big chunk of school and bust it up into pieces so that the individual won't get lost completely. Then, instead of one big school of 1200, you build three little schools of 400, if my division is right, and you put it on the same site. In other words, you have a little school here of 400 where they are teaching 10th, 11th, and 12th grades. Then you have another little school here with 10th, 11th, and 12th grades and so forth.

Then we're building a third type school where, on the same premise, I suppose, of trying to do something about mass education, it's broken up into small parts except it's based on sort of a grade level basis with the sophomores here, the juniors here, and the seniors here, in either separate wings or completely separate buildings.

We have our school up which is exhibited in Moscow. I hope you see it, Zeno, and tell the Russians that this is typical of all American schools. It really flatters an architect to say that he produces a typical school. You don't win prizes and make a reputation on doing the average. Anyway, (I'm not trying to be sarcastic; I'm trying to be modest and brag at the same time. Some guys can't get by with this sort of thing). So here you would be teaching 10th grade in this one building--10th grade social studies, 10th grade mathematics, 10th grade English, and so forth. Over there you would be teaching 11th grade, and over there you would be teaching 12th grade and so forth.

A fourth type of high school is the famous Random Falls concept where you not only bust up the compartments within a school plan but you break down the big wall that separates the school from the community, and the learning activity penetrates into the community. You may have a classroom in a courthouse or the church or the stores downtown. My nephew, this is in distributive education, spent a third of his time going to school downtown. Things might even be so bad that they might even have classes in architects' offices. That would be a real learning experience for the youngsters.

Then the fifth school is the so-called Trump plan which is quite different. It has all kinds of architectural implications, and even now we're doing a little of this sort of thing. For instance, here a typical high school student will spend 40% of his time in classes above 100. They're doing this right now. I visited a class in Newton, Massachusetts, where they were teaching 350 in a mathematics class. He will spend about 20% of his time in classes from 10 to 15. He'll spend the remaining 40% of his time in individual studying. Before this thing came out, Grant Venn was advocating individual teaching cubicles. So, it's not altogether new, but this really plays heck with the school plan.

Now, if the departmentalized high school is replaced with a school-within-a-school or with the age-neighborhood school or with this 40-20-40 Trump plan school or with the Random Falls schools, the problems of the architect and the educator alike will expand to the nth-power, particularly if these other items I spoke about are superimposed on these five distinct high school types. I suspect that it won't be long before we shall be building schools without classrooms.

I'm wondering now if there is an architect or an educator in this group prepared for this.

4. ARCHITECTURAL RESEARCH AT WASHINGTON STATE

Robert P. Darlington
Head, Architectural Research Section

School research work started at Washington State in the summer of 1952 when the Department of Architectural Engineering, the School of Education and the Division of Industrial Research sponsored a study of the planning of elementary schools in the state of Washington. Although primarily a summer project, the study and the subsequent writing of the bulletin, Guide for Planning Elementary Schools in the State of Washington (1953), carried through much of the following academic year.

The success of the initial project led to further studies in 1953 and 1954. The problem of school lighting, always a controversial topic, was investigated first through the compilation of A Bibliography of School Lighting (1954) and then through a first-hand study of the daylighting techniques used in a number of schools in various parts of the state. The bulletin resulting from this latter study, Daylighting for Schools in the State of Washington (1955), was intended to point out the scope of the daylighting problem, suggest new possibilities, focus attention on the interrelated factors, make clear the inherent impossibility of a final answer to the multiple problems of school lighting, and analyze some of the systems in use.

While the lighting studies were going on, a suggestion was received in the summer of 1954 from Mr. Harold Silverthorn, then Consultant in School Building Facilities, Office of the Superintendent of Public Instruction, Olympia, that a study be made of school maintenance problems. As a result, a questionnaire on maintenance problems was sent to the 260 school district superintendents in the state.

The 50% return on the questionnaire listed over 90 maintenance problems. Seventeen of these were mentioned frequently enough to warrant consideration as major, widespread problems:

1. Leaking roofs, primarily flat.
2. Maintenance of asphalt tile and other resilient flooring.
3. Refinishing classroom furniture and woodwork.
4. Peeling paint on exterior walls.
5. Heating.
6. Wood floors.
7. Cement floors.
8. Marred corridor walls.
9. Porous masonry walls.
10. Window cleaning.
11. Lawns and grounds.
12. Exposed metalwork.
13. Interior paints and colors.
14. Shower room maintenance.
15. Toilet room maintenance.
16. Dry rot and mildew.
17. Plaster.

A study of the first of these maintenance problems, leaking flat roofs, resulted in the publication in 1956 of Built-up Roofs in the State of Washington. This

publication recognized that one of the principal factors contributing to a sound building is the best roof that the requirements demand and the budget will permit. The bulletin presents a discussion of roofing materials, their application, and their maintenance as they relate to building use and structural type, including geographical and climatic influences. It also presents and discusses certain specifications and details of roofs and roofing used successfully in various areas of the state.

This was followed by publication in 1957 of School Floors: Selection and Maintenance of Resilient Flooring in Schools. School Floors covers types of resilient flooring in general use, selection considerations, critical use areas, use recommendations for specific areas, and maintenance recommendations. 1957 also saw the publication of K-3 Neighborhood Schools, a Technical Report on the principles and problems involved in locating and establishing small kindergarten-through-third-grade neighborhood schools. During the period from 1952 to 1957, the research work in schools was listed as the School Building Research Program of the Division of Industrial Research, and was still primarily a summer program. Actual physical research was not possible, however, because of the lack of specific research facilities.

The solution to this problem started with Dr. Zeno Katterle, Dean of the School of Education. Zeno, in the early days of the program, raised the question of setting up a display area for educational equipment and materials. With space at a premium on the campus, the decision was made to build something suitable. During the ensuing discussions, it was decided to go much further and design and build a school research laboratory.

Among the criteria for such a school lab, the major one was flexibility. Actually, the lab as visualized was not to be a permanent building, within which research activities took place, but a flexible framework which would itself take part in the research program.

The one structural system which answered this prime requirement was the Unistrut bolted steel framing system. The Unistrut Corporation of Wayne, Michigan, had worked experimentally with Unistrut buildings from right after World War II and had worked with the College of Architecture and Design at the University of Michigan in 1954 and 1955 in developing and building an Architectural Research Laboratory on the university campus.

Mr. Charles Attwood, president of the Unitstrut Corporation, was approached in late 1955 concerning his firm's willingness to help develop the school laboratory at Washington State. Their cooperation was dependent on the securing of commitments from regional manufacturers and suppliers in the Pacific Northwest. These commitments were obtained during the summer of 1956, and Unistrut proceeded to manufacture, assemble and ship the parts during the 1956-1957 academic year. The complete structural frame was donated by them and made possible the realization of the whole project.

The foundation was dug in the fall of 1956, and actual construction was begun in June 1957. Three architectural engineering students, and one each from mechanical engineering, electrical engineering and education, erected the structural frame during the summer. The roofing was applied in the early fall, and exterior wall paneling and interior finish work proceeded during the winter of 1957-58.

The majority of the materials and equipment were donated and were featured during an open house in the spring of 1958.

What was the purpose of the Washington State Regional School Laboratory, as it was officially named? When it was first used during the 1958 summer session, what were the goals?

Basically, the Regional School Laboratory was to be the heart of a working architectural research program devoted to the improvement of education and educational architecture. Although each of the three sponsoring groups was interested in the whole process of coordination and in the end product, each also had special professional interests. The School of Education had a particular interest in the actual classes which could be conducted in the Laboratory and the teaching techniques which could be demonstrated there. From their point of view the building could be of considerable value in the instruction of future teachers and in the training of school administrators and school consultants. New educational techniques could be studied here, also, as well as the relationships between these techniques and classroom design.

The Division of Industrial Research was interested specifically in new materials and products, and in the technological aspects of school buildings. Two rules guided the selection of materials for the School Lab as the project developed. One, use regional products wherever possible; two, use new products wherever possible. This satisfied the requirement that the laboratory be used as a demonstration center as well as for research and experimentation.

Finally, the Department of Architectural Engineering had some special concerns of its own. Most general in scope was the development of a program of architectural research. More specific were questions concerning educational functions, the forms developing from and enhancing these functions, questions of scale, color, proportion, lighting: in short, the functional, aesthetic and emotional environment best suited to different learning situations.

One point has been stressed from the beginning: the Washington State Regional School Laboratory does not attempt to set up and demonstrate ideal classrooms. Instead, it works more realistically with specific teaching situations, tries to develop environmental conditions to an optimum for these situations, and looks for general lessons which might be learned from these experiences.

The story of the School Lab was told in Washington State Regional School Laboratory, published in the fall of 1958. Specifically, the following projects have been carried out or are contemplated for the Regional School Laboratory.

In the summer of 1958, a demonstration seventh grade class was conducted in the east classroom, and a reading clinic was held in the west classroom. The latter project tested the flexibility of the classroom, the amount of chalkboard provided and the several types, the lighting, the acoustics, and the general atmosphere. The seventh grade class demonstrated the "core" procedure of teaching, in which a major problem is studied and all work--English, science, social studies--is related to it. The 1958 class chose a rather simple problem: "How can we achieve peace in an atomic age?"

In the six weeks during which the class met observations were made of the activities of such a class and studies made of the type of classroom most suitable for classes using the core procedure.

A year later, in the summer of 1959, two other classes were conducted in the Regional School Laboratory. Fifteen grade school teachers attended a social studies workshop in the east classroom to investigate techniques of teaching

social studies to the elementary and primary grades. The classroom requirements for a course of this sort are quite different from those of some other courses, and again we learned much about fulfilling these requirements and the flexibility desirable for doing so.

In the west classroom, a demonstration third grade class was held. Twenty-five third grade pupils were observed two hours a day for six weeks by 20 grade school teachers. Reading, art, arithmetic, and social activities were demonstrated and the classroom requirements analyzed.

During the 1958-59 academic year, the entire School Lab was occupied morning and afternoon by the Department of Child Development Nursery School. This nursery school has been held for a number of years in a single large room in the Home Economics Building. Now they had a chance to try the flexibility inherent in two rooms and in the School Lab structure. Many changes in materials, wall panels, and wall openings were made during the year. Some were successful, others were not. Further experimenting will be done with the nursery school group during 1959-60.

Also during the coming year a start will be made on an interdisciplinary project to study the effect of the classroom environment on the learning process. The School of Education, the Departments of Psychology, Sociology, and Child Development, and the Architectural Research Section will cooperate in this project. In the west classroom, the ceiling will be raised and lowered and the walls brought in and moved out in a regular sequence to determine the effects on the nursery school children in terms of alertness, fatigue, excitability and other factors which have a bearing on the learning process. This project will continue for a number of years and will involve children in age groups up through the elementary school level. Eventually, variables other than space size and proportion may be studied, also, for example, lighting, color, and acoustics.

Finally, the Washington State Regional School Laboratory has asked to be designated as the Northwest Research Center of the Educational Facilities Laboratories. This would provide us with a larger budget to enlarge our staff, expand our service activities, work more closely with the School of Education in graduate work and in the training of administrative personnel, and extend our research activities.

5. THE GREAT SCHOOL PLANT

William W. Caudill, A. I. A.
(Assisted by Robert B. Price, A. I. A.)

I believe in the team concept. I would like to introduce my cohort who will help me with the program, Bob Price. Bob and I are roommates and we have devised a formula for you on "How to Get A Great School Plant." This formula is a very simple one; it has only seven variables. The formula is:

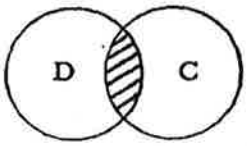
$$(P + D + C)(X) = \text{GREAT SCHOOL PLANT}$$

where $X = (S + E)(A + I)$

Now, let's find X, and this is the key to the great school plant. A, as you see in this formula equals Architect. Now, just an architect isn't enough to produce this great school. But with the Architect, with A, we need I, Imagination. That's the trick, to get an Architect with Imagination. OK, now let's find out what S is. S is the Superintendent. There are all brands of superintendents. I've worked with them all, unfortunately. You guys have a hard time raising good superintendents and we have a hard time raising good architects. But the trick is to get a Superintendent with E, who is a real Educator, not just a business manager, not just a public relations expert. I'm not looking at you, Angelo Giaudrone; I wish we had some like you in Texas. I wouldn't be doing schools in Wisconsin.

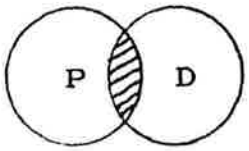
Now to get X you multiply these four things and you're on your way to a good school plant. An architect alone, and I hate to say this, Royal McClure, but an architect alone cannot produce a good school. Some of the best educators have been frustrated because they've had to work with mediocre architects, and some of the best architects are psycho cases because they had to work with people who got their training in places other than Washington State University. But, it takes (A + I) (S + E) and sort of a dynamic inspiration from interaction to get X.

Now, after you have X, you then go to the other formula in which P is Program, D is Design, and C is Cost. These are the three main factors in designing a successful school plant. The formula is (P + D + C) (X). Let me give you a little explanation here. If we had D + C = P this wouldn't do the trick because you can have the best design, and the most skillful, creative architect, with the skill to solve problems, and the sensitiveness to get the emotional quality in the architecture; and you can have the most highly engineered cost control of this thing and put a lot of stress on money, but if you have worked within the area where the two circles containing C and D overlap you have the formula:



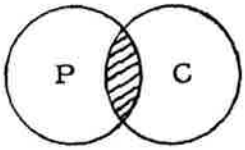
D + C - P = O (Palace)

Add the formula D + C and if you forget to consider the Program, if you don't put emphasis on the Program, then you're going to get one of those palaces that the Readers' Digest talks about. It's not going to be a school. They lay the stuff to cost, but if this thing doesn't facilitate the architectural program, if you leave out program you're going to get a palace.



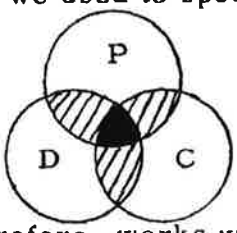
P + D - C = O (Bankruptcy)

OK, P + D - C doesn't do it. For instance, you can do this job of programming and have a nice package all wrapped up with a ribbon and you can have a very creative architect who takes the program and molds a building around it into a beautiful functional plant. But if you forget to consider the third phase, Cost, then you're liable to bankrupt your community. You have to consider it simultaneously, so P + D - C won't work. And then we come down to the other combination of P + C - D.



P + C - D = O (Henhouse)

You can program it and you can do a wonderful job of architectural and educational analysis to determine the real needs, not just what your teachers want. (There's a real trick to that, also). You can do a good job of putting emphasis on cost control, you can count nails. But if you leave out the Design factor, the creative, sensitive hand of the architect-artist, you'll end up with a henhouse. I ought to know--we used to specialize in henhouses.



A good school plant, therefore, works within the overlapping of these three circles, these three major considerations, Program, Design and Cost. This will give you a good school plant, but to get a great school plant you must have all the factors to make up the complete formula:

(P + D + C) (X) = GREAT SCHOOL PLANT

I would say that in Washington you have your share of great school plants; in fact, I must confess that I feel very humble up here. You have some of the finest architects; you have some of the finest educators in the nation; and when they get together you're in a position to develop this great school of (P + D + C) (X). The result is through this dynamic inspiration from professional interaction. Bob Price and Ithought this would fit right in with your education lingo. We did our best to work in "interdisciplinary" but we just couldn't do it.

So there you have our formula for producing a great school plant.

(P + D + C) (X) = GREAT SCHOOL PLANT

6. THE PROBLEMS FROM THE DISCUSSION GROUPS

Each of the ten discussion groups at the Conference was charged on Monday afternoon with enumerating some of the "Major Problems of Education and Architecture," and with settling on one as the most serious or most provocative problem raised by the group.

Following are the ten problems, one from each group, judged most important. After the listing of each group's problem are the other problems brought out in that group's discussion session.

Group A: How can we get a provocative and stimulating set of educational specifications (program) to guide us in the orderly development of a building program?

1. Lack of factual information on costs of maintenance.
2. How many and the size of multi-purpose areas in the Junior High School.
3. The maximum classroom versus a classroom combined with an auxiliary annex.
4. What is the responsibility of the superintendent with the construction?
5. How can we get the Washington Survey and Rating Bureau to be a business-like organization?
6. What is the best procedure to follow in selecting an architect?
7. Appraise the amount of space to be developed to specific areas.
8. Should we have more comparative analysis of building materials?
9. How can we get original art in schools?
10. How do we get the school board to go along with modern concepts?
11. Toilet facilities for small children.
12. State Board ruling of no negotiations with bidders after opening bids. Confer with State Board.
13. Lack of known research being reflected into the educational specifications of the administration and board.
14. Design of administrative suite, guidance, counseling and health to provide maximum service to staff, public and community.
15. Is it time to re-evaluate the P.E. program and what it is accomplishing?
16. How does one provide for 12 months operation without pricing yourself out of the market on a 9-month basis?

17. Can the educators have more information with respect to 1st costs of materials to obsolescence and maintenance?

18. Why cannot landscaping be a part of the total picture of environment?

Group B: Do we need more flexibility in designing for future changes to adapt to current standards and needs? (Suggested solution: Try to encourage ourselves to get away from minimum standards.)

1. Is the requirement that 20% of floor area be provided in glass a sound requirement? Should it be reviewed? It is possible that the requirement should be on light level.

2. How can the public be educated towards better esthetics in the Arts, landscaping, etc., in our school buildings?

3. Mechanical systems seem to work fine for heating, but impossible for cooling.

4. Will the buildings that are being built now be inadequate or useless in 30 years because of changing life or community life--should the planning be more flexible for future change?

5. How do you get sufficient wall space for chalkboard and tackboard when windows take up so much space?

Group C: How to design each school plant with flexibility in mind, including: program change, curriculum change, lighting, population density, teaching method change.

1. How to design for the future with the value realities of today and to achieve future flexibility in today's new buildings in light of cost, e.g., sound control, light control, temperature control?

2. The problem of secondary lighting, including solar gain, long vision, ventilation and temperature control.

3. What differences in the various age groups (of the learners) should reflect in the plant design for the various age grade levels?

4. The field house versus the gymnasium to serve the P.E. and athletic facility.

5. The impact of technological teaching devices on curriculum and thus plant design.

Group D: Pressing need for revamping concepts of building and use of building in order to permit their utilization in years hence; flexibility to meet change in curriculum.

(Professional educator must lead the way in concepts and let the architect conceive the design accordingly.

Community must be instrumental in changes to be most effective.)

Also:

Planning "learning centers" dispersed around the community so that all people may reap the benefits (libraries, etc.) and the learning process may continue throughout life; encompassing independent study in a multiple number of circumstances and environments.

Make total survey of whole community (services, taxes, professions) before continuing planning process. Actually obtain collective intelligence as opposed to individual specialists.

Communication among community and architect is basic to understanding.

1. Question of which party is responsible for the preliminary evaluation of what the school will become.

   Various pressures exerted, externally, to stress specific phases of a school program, thereby limiting flexibility to some degree.

2. Educational processes continually change--actual education or learning process remains static, so structure should be able to change to fit the process.

   Financial inadequacies determine limitations in flexibility.

3. Community representation on planning for educational plants in order to have continued support.

4. Do children need stability in their environment? (Adults' lack of direction affects children)

5. Location of school sites.

6. Type of ceramic tile for non-bleach.

7. Planning of schools to include and fit community (environment).

8. Long-range planning.

9. Selection of 7-8 or 7-8-9 Junior high.

10. Environmental use of wood in construction.

11. Defending of individualism instead of stock plan.

12. How can we bring about at a more rapid pace electronics and still retain environmental stability?

13. Heating of building.

14. Architects realize understanding with schools before emergencies and differences arise.

15. Legal protection for school districts in disagreements and misconstructions.

16. Light control.

17. Building on unimproved sites.

Group E: In light of impending program changes, particularly at the secondary level, how can we develop educational specifications for architects in order that they may design buildings that will be functional ten to fifteen years from now?

1. What basic points to be considered for building Junior High?

2. How to get bond issue passed.

3. How to get adequate administrative facilities in planning--help from state planners.

4. When to remodel, when to abandon.

5. How to foresee future trends so that special areas do not become obsolete.

6. How to get through to school board who have preconceived ideas of what school should look like. How to get them to use an architect for his professional ability rather than a drafting service.

Group F: How can the architect improve (or design) construction when the philosophy is not given? Do we know what the educational specifications are? If we knew, we could go ahead and design for what we want to accomplish.

1. Visitors approve the heavy construction in vocational shops. High school shops with pleasing effect are not approved by the visitors.

2. Comparison of one facility with others. How to educate the public in accepting things that are "lush" in their thinking?

3. How to get air conditioning into school construction?

4. Funds for construction.

5. Color and its effect on students and faculty.

6. Construction of buildings to handle influx of students.

7. 3-story building--concrete 1910--should the third story be removed? Safety and looks.

8. Effect of television--planning for its use.

9. Facilities for large classes and small classes--is it coming?

Group G: Problem of advanced structures is more a problem of public acceptance than any mechanical or design problems.

1. Leaking roofs as a number one problem.
2. Glass areas--control of heat, light and leaks.
3. Educational specifications for architects.
4. Future needed materials for performance standards.
5. Problem of expensive science equipment installed now with future obsolescence.
6. Air-conditioning--what approach to develop public acceptance?
7. Code for light in classrooms more flexible.
8. Qualified person to read blue-prints and interpret specifications to act as liaison in each district.
9. Cooperation of architects and administrators to define responsibilities of administrators.
10. What should superintendents do, relative to helping architects?
    a. Very careful programs written down to assist architects as one essential.
    b. Any suggestion by superintendent is appreciated by architects (should be to architect--not contractor).
    c. Suggested clearer understanding between architects and school boards as to service architect is going to perform. Architect should do better job of letting board know what they can expect.

Group H: Improvement in the communication between architect and educator and, in turn, the lay public. Also encourage school districts to employ educational consultants.

Also:

The determination of the depth and breadth of the secondary curriculum considering the individual, the large class, and extended adult education; and as these relate to a 15 to 20 year projection.

1. What constitutes proper environment with regard to space treatment?
2. What can architects do under the new State Board ruling to insure their bids coming in under the budget?
3. How to get people looking ahead and to get school boards to plan for the future by acquiring sites for future needs.
4. How do increasing individualism and expanding number of students per classroom interrelate?

5. How can maintenance be cut down by arrangement of buildings and classrooms? Control of heat and light.

6. What would be considered a well-planned administrative core for a school? Health, counseling, storage, etc.

7. How can we be assured the building will be used for the flexibilities for which it is designed?

8. What are the techniques involved for determining the needs for space 15 to 20 years from now?

9. How to correlate the added features at later dates with the original thoughts and facilities.

10. What can we do to get before the public what is involved in the consulting needs for getting the overall facilities?

11. Do we need architects in the education management to help in the flexible planning idea and creative thinking?

12. What are the depth and breadth of high school curriculum necessary for the future?

13. What will effect of adult education be on secondary education?

14. What about the various codes governing our buildings?

Group I: Architect and owner relationship and communication.

Also:

Flexibility and adaptability of schools as new ideas come in.

Also:

Education of teachers and administrators to forward thinking.

1. Site.

2. We as architects have to become better versed in education. Architect has to get closer to problem of interpretation.

3. Educators defining trends of education in the future. Architect must design for today.

4. Know what educators themselves are trying to do.

5. Economics of what is available.

6. Can conceive of school to handle twice as many children in same space.

7. Practical flexibility.

Group J: How can we improve communication and understanding to the architect from the educational staff and community as a whole?

1. What are the problems for the junior high in its relationship to the senior high? Facilities? Future changes in teaching philosophies?

2. Is it practical to have classrooms of different sizes?

3. How should we go about completing a senior high already started as to future needs?

4. How to plan a senior high for a small number of students.

5. Agricultural training in the schools today--how can we improve on this type education to lower costs for such facilities? This applies to other vocational classes.

6. How can we provide landscaping for our new schools?

These were problems which came from one hour and thirty minutes of discussion in ten groups of architects and educators. The following day the same people were to discuss some of the ways in which they could work together to solve the problems, and to tackle one problem en masse via the brainstorm technique.

An analysis of the major problems listed above showed that communication was involved in some way in over 50 per cent of them. Therefore, the problem of better communication and understanding between architects, educators, and public was selected for the brainstorming session on Tuesday.

In addition to communication, there was much concern in the discussion groups with the problem of educational specifications, which is one aspect of the communication problem, and with flexibility of school building design, particularly to allow for future curriculum changes.

7. REVIEW AND ANALYSIS

Robert B. Price, A. I. A.

To review and analyze all facets of the problems raised by 200 participants as they sat and discussed for over one hour and a half is quite a problem. However, I have endeavored to the best of my ability to make this report.

In making this analysis, I have made some definite assumptions. They are:

1. All architects attending this conference want to design the best possible school plant of which they are capable.

2. All superintendents attending this conference want to build the best possible school plant housing the best conceivable program that it is possible for them to administer.

3. All lay groups represented at this conference want both the best possible school plant plus the best possible scholastic program that are attainable for the money available.

There were a number of problems raised in yesterday's discussions. However, I am happy to state that for the most part the dominating problems were of a large, over-all nature. As expected, a common denominator ran through all the groups, and the big approach was found by all groups.

The most important problems were given priority. As you will note, even though they are grouped into three classifications, the problems have much in common. They are:

1. Educational specifications.

2. Communication.

3. Flexibility.

Taking them in order, I shall first discuss educational specifications.

A good set of educational specifications should set objectives, aspirations, aims and goals. It should not be a dead list of requirements giving sizes, shapes, materials and finishes. Writing these specifications should be the superintendent, who, in addition to being an administrator, should also be a "real" educator.

Interpreting these specifications should be an architect with imagination. Working together, the architect and superintendent should evaluate and challenge the educational specifications in the light of designing a building to meet the specifications.

If this relationship of superintendent-architect is sound, with mutual trust, and with admiration for one another's abilities, the problem of communication is partially solved. However, all parties concerned with the problem of obtaining a "great" school plant should participate in the preparation of the program.

Included should be:

1. Representation from the citizens' groups. This should include both proponents of the school program as well as opponents. This is the only way to close ranks and present a united front to the citizenry who in the end must pay for the project. You must have a strong citizens' group.

2. Strong school board representation is a must. All facets of the problem must be aired. The board plus the citizens' group is the liaison between the public and the professional educator and the designer.

3. At this stage the superintendent should act as captain of the team, molding and forming this committee into one harmonious group.

In addition to the superintendent it is important that imaginative, progressive staff members be present to suggest, comment and criticize. For these staff members are those who in the end must make the whole plant work.

To all of these groups must be added the architect. Not just a designer, but a designer with imagination. The architect should be present to help organize, evaluate and make suggestions in terms of a building or buildings. For the architect is the technical adviser to the group. It is he who will, by skill and imagination, bring the whole program to reality.

As it was stated yesterday, there are very few of us, be we educators or architects, who can, with any degree of accuracy, see much over five to ten years into the future. Therefore, even with a good program plus a good plant we must have flexibility: flexibility for the future to meet future programs and future space needs.

However, the word flexibility is very overworked. It can mean a number of different things:

Flexibility of building
Flexibility of program
Flexibility for future equipment, such as T.V., slides, audio-visual, etc.

Flexibility can be a matter of moments, such as sliding a folding partition, adding to or subdividing space.

Flexibility can be a matter of hours, as in John Lyon Reid's Hillsdale School, with its modular movable walls.

Flexibility can be a matter of days as in our schools, where over a vacation or a summer the entire interior can be rearranged by the use of non-bearing walls within a space-frame structure. The one thing about which I believe we are in complete agreement is that we do not ever again wish to shackle ourselves as in the past with structures in which changes cannot be accomplished by some economical means.

Flexibility raises many problems. Problems of cost, sound, and codes, to mention a few. Each must be studied and evaluated in relation to the anticipated need and the cost. I believe this would be a wonderful subject for Bob Darlington's group to use as a research project. As a practicing architect, I know

from experience that the small or medium-size architectural office has neither the time nor money for such research. However, the architects of the state, I know, would welcome with open arms the findings if such a study were made by Washington State University.

In summary, if as architects we could obtain imaginative, stimulating educational specifications, and if as educators you could obtain progressive, delightful, functional architecture coupled with flexibility for program changes, the time spent at this conference will have been well spent.

8. ARCHITECT-ADMINISTRATOR COOPERATION

Following the problem-raising on Monday by the discussion groups, and Bob Price's analysis of these problems the next morning, the same groups met to discuss ways and means of working together to overcome the problems.

As in Section 6, the reports of the individual groups are listed below.

Group A:

1. Administrators and architects should have (or create if necessary) mutual respect for one another. To accomplish this:
   a. The architect should thoroughly explain the responsibilities of his profession.
   b. The superintendent should thoroughly explain the responsibilities of his profession.
   c. The school board should thoroughly explain the responsibilities of their group.
   d. Encourage an exchange of ideas of all participants in all facets of the work.

Group B:

1. Establish through the State Department a group of teams (perhaps three) of architects and superintendents across the state to follow up several selected school projects to use as test cases, from first concept on to provide objective material to assist other groups in accomplishing their goals.
2. Architects should talk more to superintendents than superintendents to architects. Get a better balance of discussion so architects can get superintendents' point-of-view.
3. Real problem is money. Retain architect on preliminary basis to develop preliminaries. Use this to help obtain funds.
4. Better advertising and public relations.

Group D:

1. Areas of State Board help:
   a. Outline state programs as they relate to local community.
   b. Better orientation of State Board of Education person felt desirable.
   c. Make State Department a clearing house of experience of architects and administrators; maybe issue a bulletin quarterly.

d. State Board help in site selection: more objective than local selection, speak with more authority; under normal conditions generally a great help.

e. Are the specialists and vocational people of the State Department called upon by the superintendents? If so, are their experience and recommendations helpful? (Helpful, but not too frequently called upon.)

f. It would be helpful perhaps for architects and administrators to review certain restrictions now imposed by the State Department.

2. Architect should assume a greater responsibility for coordinating mechanical, electrical, and structural design, and all work performed by his consultants.

3. Thoughts on secondary light:

   a. Maybe we are overdoing continuous fenestration.

   b. One architectural instructor recounted his actual teaching experiences; very adamant on no secondary lighting.

4. Team of superintendents, architects, and State Board of Education: divisions of state government who are in a position to exercise control could be asked to establish means of communication between architect and superintendent with a continuous interchange of ideas between all three.

Group E:

1. Maybe we should design and build for 20 years instead of the 30 to 40 years now.

2. How about salvageable parts? Expendable parts?

3. Over-all shelter with completely modifiable interior; outlets and plumbing can be planned and coordinated with ducts.

4. For areas of shifting population, leaving schools with no children, design schools for sale to other types of organizations.

5. How about three small libraries instead of one large?

6. What about plenums overhead for mechanical equipment rather than buried under slab? More flexible.

7. Mechanical developments cannot be foreseen. Perhaps the interior should be made really flexible, then the room design can be determined without worrying so much about the mechanical aspects.

8. Materials people are lagging in some research areas, and could help a lot. For example, a really soundproof movable partition is needed.

9. Architects would like to be able to talk to teachers; someone other than the administrative staff. Architects would also like to be in on original thinking, help select sites, be in on pre-planning, tell school people what to expect in city planning and in shifting populations. Architects feel they can help in districts that have no previous experience.

10. Architects sometimes speak to a group, discuss problems and plans, then find they have been isolated entirely from another opposite-thinking group. All groups should be involved in discussions concerning everyone.

11. Architects should avoid having pre-conceived ideas and relying upon stock plans.

12. Administrators should plan ahead to allow architects enough time to do a good job, instead of forcing them to work under pressure.

13. The line should be decided where the architect starts (or stops) determining actual school program; also, architects should avoid imposing their ideas of education upon the educators.

14. There should be an evaluation of people's ideas vs. the architect's experience.

Group F:

1. How long should the architect and school people work together before producing a building? (Time element)

   Alternatives suggested:

   a. Educational specifications--allow at least (four months?) (variable) for the architect to work with the educational specifications before any drawings are made.

   b. Sometimes one year to one and a half years should be allowed for the board, the administration, and the staff to develop the educational specifications before the architect even comes in.

   c. Help from teachers can be very useful, but can be dangerous, also. They must realize the building isn't for them. The architect must watch out for recommendations of specific sizes and kinds of materials.

   d. The time element might be drastically affected by the architect's familiarity with the community. A "permanent" architect for a district would be imbued with the district philosophy.

   Summary: the time element is quite variable; it is dependent on the architect's familiarity with the system. The grade level of a new building, and other factors, all affect the time element.

2. Educational specifications: school systems need a guide of some sort to aid them in preparing educational specifications. What kind of specs are needed?

   a. They should be "team-developed": staff, administration, school board, architect, community, state department.

   b. What about "rush" jobs?

   c. Should all educational specifications be developed before levies and bond issues are proposed?

   d. There needs to be an understanding between administrator and architect on the method of proceeding to do preliminary planning. Even if time is short this procedural process needs to be defined.

   e. Minutes of board meetings, staff meetings, citizens' meetings, newspaper articles: all of these become the basis for educational specifications.

   f. Eventually the document--Educational Specifications--should be formally written up and presented to the architect.

   g. The ideal situation would involve all people so the maximum amount of time is available for development of specs before funds are voted. All too often there doesn't seem to be sufficient time for this.

   h. The architect is sometimes needed in developing long-range plans. The architect can aid in developing the over-all program, especially in gathering facts.

3. From the time of proposal for a new school to the actual moving in usually takes about five years, for individual buildings. Long-range site development plans and enrollment projections should be developed at least ten years in advance.

4. After construction has begun, what procedures should be used for change orders?

   a. No change orders should be issued to the contractor without formal written orders.

   b. The state doesn't match on change orders, so in Washington they generally are kept to a minimum.

   c. Change orders are costly; the client loses on each change order.

   d. Change orders generally are minor, but can create friction between the school board, the administration, the architect, and the contractor.

   e. Change orders should not be personal, but should specifically be to better the building. They should not be for minor design changes.

Group G:

Discussion centered largely on how to cover the element of FLEXIBILITY in the educational program for the school plant. It was felt that FLEXIBILITY broke down into three main parts, with possibly a fourth:

1. Rearranging spaces within a building by means of movable partitions and provision for installing additional partitions. (Some areas need not have accent on flexibility).

2. Additions to buildings: involves site selection and site space.

3. Remodelling special purpose areas, e.g., science rooms.

4. Remodelling and rearranging cabinets and equipment.

Emphasis may vary on these different phases of flexibility, and a number of questions may be asked and specific points must be considered.

1. How long should building be used?

   a. Materials will last far longer than the time planned for use.

   b. Older buildings have been remodelled by adding more classrooms. An over-all plan is needed.

   c. People may object to older buildings being razed because of sentimental value.

2. Flexibility may be affected by tunnels, plumbing in partitions, and bearing walls.

3. High schools may need more flexibility in the future.

4. Junior high schools need more physical education space than high schools.

5. For television, coaxial cable is more flexible than conduit.

6. Costs: will a district be willing to go above the ceiling?

   a. Most architects have added incentive to keep below the ceiling.

7. Local districts should develop their own programs, based on community interest.

8. Relative values of movable partitions versus heating or other items must be studied; good, workable flexibility costs more.

9. Unit panel needed for public schools.

10. How do we know how emphasis will be maintained?

9. THE BRAINSTORM

The argument has been advanced that creativity cannot be taught. Perhaps it is true that creativity cannot be injected into someone who has little or none to start with. But most people have far more creative potential than they ever use, and this potential very definitely can be developed.

In recent years, the principles and techniques of teaching and using creative imagination have been advanced considerably. There are no rules as such, but there are logical methods of procedure.

The climax of the 1959 A.A. Cleveland Conference was the mass attack on a specific problem by all those attending the conference. The particular technique used was "brainstorming." This is one of the techniques most talked about in recent years and perhaps least understood. To put it into proper context, the whole group was briefed on a particular method of creative imagination and the part which brainstorming plays in that method.

The particular sequence of activities was developed by Alex Osborn, President of the Creative Education Foundation in Buffalo, New York, and formed the basis for Mr. Osborn's book, APPLIED IMAGINATION.

Seven steps form the framework of the process of creative imagination, and all play an important part. None can easily be left out without endangering the possibility of successful problem-solving.

1. Orientation: pointing up the problem; it must be known and understood before it can be solved.

2. Preparation: gathering pertinent data; all facts must be in hand before proceeding toward a solution.

3. Analysis: breaking down the relevant material into the logical facets of the problem.

4. Ideation: piling up alternatives by way of ideas; "brainstorming."

5. Incubation: letting up to invite illumination.

6. Synthesis: putting the pieces together; the real hard, concentrated, analytical attack on the ideas which came from the non-critical ideation phase.

7. Evaluation: Judging the resultant ideas.

The idea here is obvious. Once a problem is thoroughly understood, the best chance of solving it can come from piling up all possible solutions, no matter how remote they may seem. Because of the interaction of ideas, this can best be done by a reasonably small group of people making suggestions rapidly until they run dry. This turning out of a multitude of ideas is commonly called "brainstorming." It is often misunderstood because the need for prior orientation, preparation, and understanding of the problem is not stressed.

Also, brainstorming often fails because a basic rule is not enforced during the process. This rule states that no criticism, analysis, or discussion of any

idea put forth may take place during the brainstorming session. A spontaneous free flow of ideas must be accomplished. Fear of criticism of an unusual idea will often keep it from being put forth. And analysis or discussion of an idea will interfere with the process of suggestion of new ideas.

Brainstorming, therefore, is the process of turning out a multitude of ideas bearing on possible solution of a problem, with critical analysis and discussion reserved for the later phase of synthesis after a period of incubation has allowed the ideas advanced to jell in the subconscious with some automatic sorting out of the feasible from the non-feasible.

Too large a group cannot brainstorm successfully because of the impossibility of allowing everyone to participate freely and put forth all of the ideas which occur to him. Suggested maximum size is 12 to 15 people. For this reason, the discussion groups of 12 to 18 people already established at the beginning of the Cleveland Conference were kept intact for the brainstorming session.

The lectures, panel discussions, and group discussions preceding the brainstorming session served the purpose of the orientation, preparation, and analysis phases of the creative imagination process. Then the participants were given 45 minutes and charged with brainstorming the question: "How Can Better Communication and Understanding Between Architect, Educator and Public Be Achieved on a Continuing Basis?"

Over 170 answers testify to the interest in the problem and to the fertility of the brainstorming process.

The suggestions:

1. Outline for building program.
2. Enlarged use of workshop conferences with reports.
3. Select the architect early.
4. Participation by lay groups in workshops.
5. Local conferences.
6. A. I. A. to work with School Directors Association for programs.
7. Publicize the extent of architectural services.
8. Stimulate positive criticism of good schools.
9. Bring in known conservatives on lay committees for positive orientation.
10. Publicize comparative construction costs.
11. Repeat that a well-designed school doesn't cost any more than a poorly-designed school.
12. Evaluate newly-completed schools and maintenance requirements of schools.

13. Take the offensive.

14. Develop pride of ownership.

15. Solicit interest of community groups.

16. Get people into the schools.

17. Grandfather's and grandmother's teas.

18. Architects evaluate completed schools.

19. Involve education committees with Chamber of Commerce.

20. Display drawings.

21. Have a state A. I. A. outline for educational specifications.

22. Involve students in needs, plans, etc.

23. Involve principal in planning.

24. Show plans to service clubs.

25. More participation by community members.

26. Paid public relations director in school budget.

27. Critical press discussions of community problems.

28. Wider distribution of professional information to the lay public.

29. Statement of the problem as well as the solution for a particular building project.

30. Opinion polls.

31. Rotating membership on advisory groups: friends, critics, and all.

32. Chain letter technique to stimulate lay citizen groups.

33. Each party explain the problems of the other.

34. Use the power structure of the community.

35. Start a fight.

36. Analysis of a building project to the public at its conclusion.

37. Letters of appreciation from the school board to all people participating in a building program; also letters from the architect.

38. Students put on a play dramatizing their view of school building problems.

39. Press reports of school board and architect's activities.

40. Superintendent reports to public at conclusion of a project.

41. Periodic construction report of a project, month by month, by the superintendent; perhaps in letters-to-the-editor in the local paper.

42. Early information to public to stimulate the public to demand a bond issue for a needed project.

43. Publicize long-range community planning.

44. Stimulate local pride in quality of its schools.

45. Encourage adult use of facilities.

46. School board--not custodian--establish control of the schools.

47. Cost of a school should be pro-rated to:

    a. Student use.

    b. Public use--to show amount going to student education.

48. Financial accounting of a building project: amortization, etc.

49. Building cost: per unit of time; per student.

50. School budget compared to family costs: classroom cost per student versus family car.

51. Better architect's public relations group.

52. Architects should attend public meetings.

53. Architects should come in at early date and this should be put before public eye.

54. Have "clearing house" of ideas, and a depository.

55. Must have reason to get together; possibly central place for state (WSU Architectural Engineering Department?)

56. Free and easy exchange of professional objectives.

57. Educational problems should be brought into curriculum.

58. Need to have simple-termed agreement of what services are contributed by architect.

59. Might employ newspapers--feature articles written by three groups--to attract attention of public. TV, too, well prepared.

60. Architect should explain to the board what he is doing by visitations to schools he has built.

61. Architect should compile brochures and bulletins.

62. Suggest architect be given opportunity in the area to appear with his staff before P.T.A. groups and public; if public participates, they will be prepared for design.

63. Break down P.T.A. into groups to take responsibility.

64. A.I.A. should make films available on school design; "School for Johnny" is good public relations film: selection of site and other problems discussed. A.A.S.A. has similar film.

65. Have school board sit down in architect's office and "chew the fat" with the whole architectural staff. Reverse process: let architect watch the principal try to solve some of his problems.

66. Public should visit new schools with architect present.

67. As soon as building is finished, let teachers confront architect with their problems and objections.

68. Citizens committee should sit down with the architect and principal. Public does not now know the problems.

69. There should be a scheduled series of case studies in which architect, educator, and public participate. This should be a continuing thing, with continuing educational problems. Seminar type, with large cities breaking into small groups.

70. Many fine materials are available: bulletins from many organizations; in many communities, this is done by the Chamber of Commerce on "Business Education Day", etc.

71. Gap in continuing program--elementary to junior high to high, then big gap to college. Maybe colleges should tell the others what they expect; tie higher learning closer to primary.

72. Meet with many community groups on long-range plans.

73. Go to community first to resolve some problems with public aid. Community to give guide lines. Bring the public along afterward, too.

74. More visual public relations; perhaps sets of slides carefully selected and put together with superintendent and architect.

75. Some architects take slides of buildings in growth to show public.

76. Have to take terminology of architecture and put it in layman's terms.

77. Public should be invited to meetings like the Cleveland Conference.

78. Have good feature writer attend these meetings.

79. Have school board members attend these meetings.

80. Permanent planning committee locally in each district involving architect, educator, and public.

81. Cleveland Conference for school building each year.

82. Alternate school building conference each year between University of Washington and Washington State University.

83. A.I.A. get out publications to inform school administration on new ideas in architecture.

84. Olympia should insist that local groups have cooperated prior to going ahead with each job.

85. Use WSU and U of W specialists for information.

86. Educators provide new concepts in school organization and procedures for architects.

87. School boards express their general idea on type of program.

88. Public information on ideas adopted by board.

89. State could outline a program of prior communication to help district and all concerned with continuing participation.

90. TV programs--to bring schools and educators to public.

91. Each district organize groups of 10-12 for conducted tours to schools; 2 or 3 groups a month; eat lunch at school.

92. File list of school programs available with Chamber of Commerce.

93. One newspaper article each week in a regular spot from architects and educators.

94. Space for public answer in letter form just under each article.

95. Urge broader attendance at these meetings; board members, high school superintendents, and heads of departments should come.

96. Two or three page summary of this meeting to be sent out shortly before next year's meeting so we can start from there.

97. Planned program of public education through papers and TV.

98. Get to public through magazines.

99. Get story into Reader's Digest written by some good author.

100. Get public to attend board meetings.

101. Shock treatment to get public aware of how schools have developed.

102. Taxpayers go to school one day a year.

103. Continuing information column in weekly paper; perhaps minutes of board meetings.

104. Displays of a traveling exhibit to supplement local information.

105. Get public better informed on architect's role.

106. Have a public relations officer appointed for a school district that is contemplating a building program.

107. Include salary of public relations officer in budget of construction.

108. Have reports of meetings, such as the present one, made by participants to school boards and local service clubs.

109. Have short TV films of comic nature sponsored by A.I.A. and superintendents' association.

110. Use citizens' committees and P.T.A.'s to get information to public.

111. Superintendents' letters distributed to public.

112. Have panel discussion programs conducted over local TV stations, using local officials to conduct meetings.

113. Hold more meetings like the present to get architects and school administrators together.

114. Have local meetings of architects and school administrators.

115. Bring other participants, such as school board members or staff members, to meetings, e.g., principals and building supervisors.

116. Have more members from architects' firms.

117. Have various state institutions take up this program and continue it.

118. Better explanation to public on architect's fees.

119. Recordings of conversations between architects, school boards, and educators.

120. More participation by architect in bond campaign and relations with public.

121. Involve more lay people in building planning.

122. Employ specialists by school people to do public relations.

123. Use television when issues are to be brought to public.

124. Have a specific materials discussion by architect to public.

125. Have architect live in community for a period to get feeling.

126. Meet with various groups to get feeling of community.

127. Use graphs, etc., for various meetings.

128. Film strip for community clubs.

129. Joint meeting of architect and educator and lay public.

130. Start in school system to educate children about the architectural profession.

131. Repeat material--tell your story over and over.

132. Continuing program of educating people as to why stock plans are not workable.

133. Get legislators into architects' offices to show them what an architect does.

134. Get articles in national magazines on the value of the architect and what he does.

135. Get legislators to conferences.

136. Get to legislators before legislative sessions.

137. Timing of bond issues should not be during legislative sessions.

138. Be honest about cost figures when trying to get bond issues.

139. Have the press in on your bond campaigns.

140. Give all cost figures when showing costs.

141. Develop a uniform method of presenting costs of school construction.

142. Discourage manufacturers who quote cost figures which are not applicable.

143. Use a positive approach in discussing costs.

144. Bring board members to meetings such as this conference.

145. Bring lay leaders.

146. More time should be spent together before lines are drawn.

147. Get architects on P.T.A. programs.

148. Use co-sponsored TV programs.

149. Joint speeches to service clubs.

150. Go hunting and fishing together.

151. Discussion through newspapers, between educators and architects.

152. Joint committee of architects' association, superintendents' association and directors' association; draw up a handbook to define terms.

153. Educate children on relation of architecture to other art forms.

154. Work out guide lines for role of each group in over-all problems.

155. Short course in college to orient teachers to architectural problems encountered in school facilities.

156. Architects bring engineers into planning session.

157. Better public understanding of architect's costs: site survey, engineering consultant service, drafting, inspection of construction.

158. Boards should do a better job of planning, selecting architect.

159. Better use of various government planning and building regulatory agencies in the planning stage.

160. Quit thinking of the architects, educators, and public as separate entities, instead of members of an entire team.

161. School district not to change architect with every school building.

162. School district evaluate architect after every building.

163. A.I.A. chapters should utilize their public relations committees to explain the need of good architectural planning for schools.

164. Courses in college training architects and educators toward understanding of each others' problems.

165. More conferences with qualified teachers and board members.

166. Clear presentation to the public of analysis the architects and educators have made.

167. Use of consultants in the district to explain the architect's services (State Department of Education).

168. Presentation of the teaching objective to the architect and let the architect evaluate in relation to space.

169. Information and philosophies about school's program and constant dissemination of information to public.

170. Educate the public prior to bond levy.

171. The teachers do have a role in this problem.

172. Have architects and educators visit the offices of the other to understand better their working processes.

173. A presentation to the public for clarification of ideas and analysis of the problem.

10. AGAIN THE SUMMARY

William W. Caudill, A. I. A.

We opened this report of the A.A. Cleveland Conference with a section titled PEOPLE AND CONCEPTS. In summing up the conference, Bill Caudill said:

> "For me, this has been a most profitable conference. I was introduced to both new people and new concepts, and also became reacquainted with old friends--people and concepts. I'm taking back with me some thoughts I'll remember for a long time."

These thoughts concerning people and concepts were given in that opening section as a hint of things to come. It seems appropriate to close with the same people and concepts as reminders of the discussions and ideas that lie between.

Arnold Tjomsland said:

> "School buildings teach--good or bad, but they teach. It is our opportunity to make sure that they teach the kinds of values and appreciations that free men need."

Ralph Burkhard said:

> "There's real danger in thinking a school has to last 50 years. I know none that has weathered the educational evolution."

Ken Brooks said:

> "Beauty for schools is a good investment. Its dividend will be improved morality for the whole community. And, after all, isn't this what we are seeking?"

Zeno Katterle said:

> "The fundamental process of education is concerned with individuals. We have known this for 50 years, but no one has developed a school plant with this as a primary objective."

Jack Morse said:

> "The ability of people to adapt themselves to their environment is good and desirable. Such adaptations, however, should not tax the physical and emotional limitations of people. Therefore, our concept of flexibility should be people-centered as well as building-centered."

Bob Darlington said:

> "We have demonstrated a real belief in the need and value of a progressive, problem-solving approach to the years ahead."

Bob Price said:

> "The architect should re-evaluate his service and rededicate himself to the task ahead. At this time, the bottom drawer in the drafting room should be locked."

And finally, Ray Schneider said, with challenging insight:

> "What would John Dewey and Louis Sullivan have to say to challenge this group?"

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