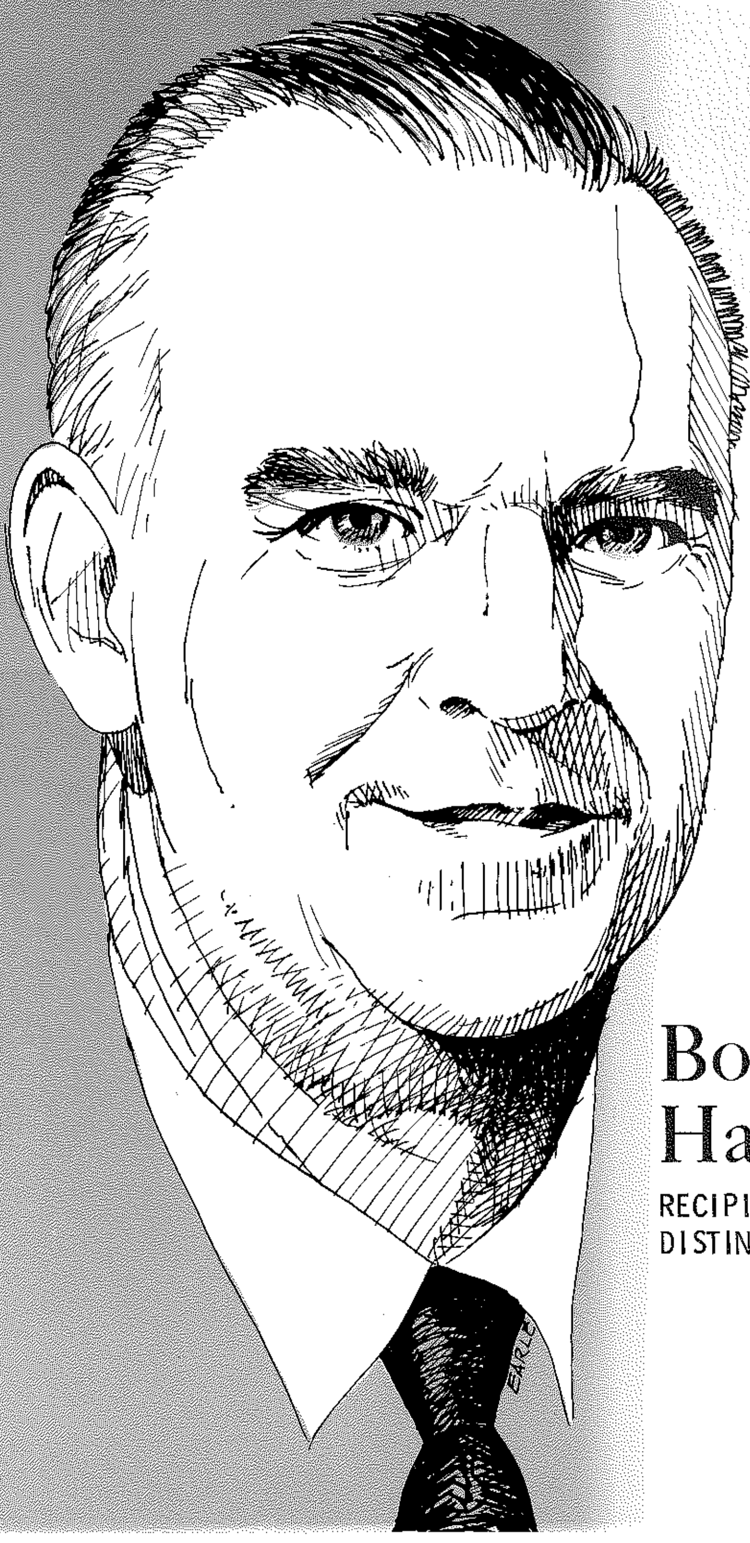
ENGINEERING DESIGN GRAPHICS JOURNAL

FALL 1975, VOLUME 39, NUMBER 3, SERIES 118



Bob Hammond

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Engineering Design Graphics Journal

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ENGINEERING DESIGN GRAPHICS JOURNAL OBJECTIVES:

The objectives of the JOURNAL are:

1. To publish articles of interest to teachers of Engineering Graphics, Computer Graphics and allied subjects.
2. To stimulate the preparation of articles and papers on the following topics (but not limited to them):
3. To encourage teachers of Graphics to innovate on, experiment with, and test appropriate techniques and topics to further improve quality of and modernize instruction and courses.

REVIEW OF ARTICLES

All articles that are submitted will be reviewed by several authorities in the field associated with the content of each paper before acceptance. Current, newsworthy items will not be reviewed in this manner, but will be accepted on the basis of the judgement of the editors.

DEADLINES FOR AUTHORS AND ADVERTISERS

The following are deadlines for the submission of articles, announcements, or advertising for the three issues of the JOURNAL:

Fall--October 1
Winter--December 1
Spring--February 1

STYLE GUIDE FOR JOURNAL AUTHORS

The Editor welcomes articles submitted for publication in the JOURNAL. The following is an author style guide for the benefit of anyone wishing to contribute material to Engineering Design Graphics Journal. In order to save time, expedite the mechanics of publication, and avoid confusion, please adhere to these guidelines.

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2. Each page of the manuscript is to be consecutively numbered.
3. Two copies of each manuscript are required.
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James H. Earle, Editor
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1976--University of Tennesee, June 14-17, 1976
1977-Fresno State College

CALENDAR OF MID-YEAR MEETING

1975-76--Arizona State University, Jan. 7-8, 1976
1976-77--Montreal, Canada

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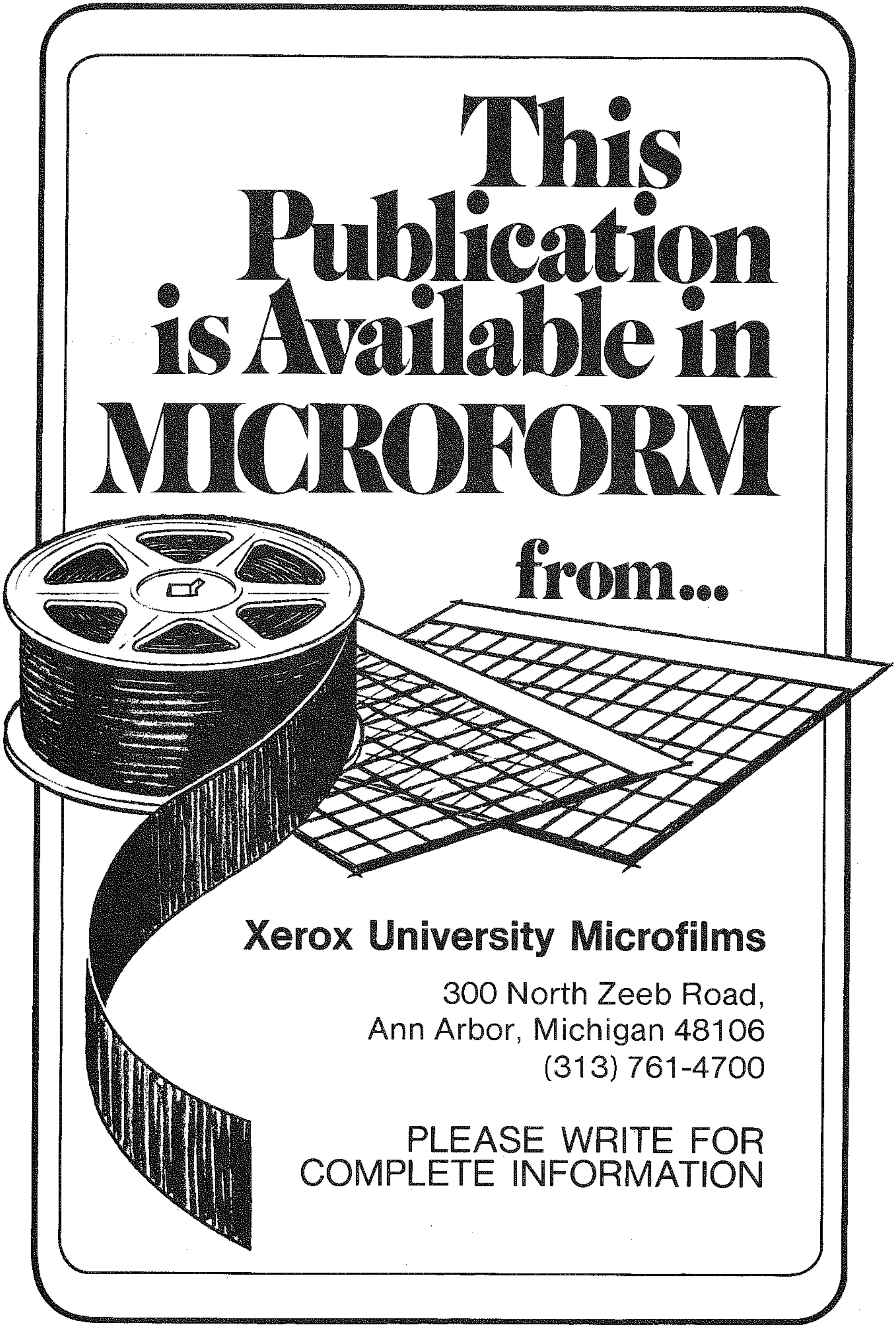
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EDITOR'S PAGE

The JOURNAL is pleased to present a review in this issue of the annual meeting held at Colorado State University last June. Again, one of the highlights of this conference was the Creative Design Display that attracted both entries and the interest of the delegates attending the annual conference. This year's display committee chairman was Tim Coppinger of Texas A&M University who effectively handled his duties with the help of his committee, judges and industrial representatives.

The Creative Design Display is an event that was as outgrowth of our Division's move from an emphasis on drafting to the creative application of graphics to real engineering problems. The Display can be looked upon with considerable pride by the Division for this is a showcase of the strength of our discipline: creativity and communication.

Design became the major thrust of the Division in the 1960's; the 1967 Design SUmmer School was held at Michigan State University to unite this movement. The result was a stronger basis on which to teach graphics in a more meaningful manner. Important graphical principles were not discarded, but instead they were strengthened by relating them to engineering problems, thereby illustrating the power of graphics in solving both technical and creative problmes.

Graphics programs that have not taken advantage of the opportunity to integrate design concepts in with their graphics courses have often seen design taught by other departments, causing yet another curriculum bind infringing upon the graphics program. The future of graphics lies with the blending of graphics content with design principles.

The name of the Division was changed to incorporate the word "design" in 1970. The ASEE executive board turned down the first choice of a new name, Engineering Graphics and Design Division, since it already had a Design Committee that was active in the Society. As a result the words were rearranged to include Engineering, design, and grpahics, the three words that best reflect the role of our division. The resulting name was approved as the Engineering Design Graphics Division.

Another name change at this point would certainly cause us to appear as the most changeable, undecided division of the Society, making it difficult to establish any form of identity or set of objectives. This apparent lack of stability would weaken our efforts and make our division vulnerable to complete absorption into another group within the Society. We should strive to organize our division to encompass the activities of our members with major emphasis on design and graphics under its present name. If a member is also involved in other aspects of engineering education, then they have access to additional committees and divisions with ASEE. For example, those teaching mechanics, and mathematics can find interest in these divisions by these names that are now in operation.

This seems to be more logical than changing the name, role and objectives of our division to correspond with the diversification of various courses taught by those who are responsible for graphics also.

The JOURNAL would like to invite more articles from its subscribers and members that are concerned with the teaching of design. Several are included in this issue, but many others of this type are needed.

Jim Earle

Creative Design Translated into Reality

By Charles Baer
University of Kansas

Introduction

Careful selection of design projects, willingness on the part of mechanical engineering students to buckle down and go to work, and encouragement by faculty have brought about the construction of a number of items from student designs that are in every day use. Figures 5 through 9 show four items that have been designed by students in course ME 328, Introduction to Mechanical design, at the University of Kansas, and are in use either at the University or somewhere nearby.

The above has been accomplished partly as the result of an evolutionary process in the course itself. This course was originally our second graphics course, scheduled for the second semester of the freshman year. Then it became a sophomore level course, mainly graphics in content. Then it became a junior level course with the design title, but still having as a major objective the teaching of graphics to mechanical engineering students.

The Course

Course ME 328, Introduction to Design, consists mainly of engineering graphics instruction, short lectures on the design process, and two design projects. The latter consists of a wire (or wire and metal) creative project and the major project upon which each student spends most of the last three or four weeks of course time. Figure 1 shows the time sequences of the major elements of the course. The reader will observe that graphics course work covers, with some interruption not indicated in the "bar", the first 12 or 13 weeks of the semester. The interruptions are, for the most part, short lectures on the design process, hour exams and brief discussions about the design projects. Two designs shown in this article have been done at the request of the Capper Foundation for Crippled Children, in Topeka. This involved a visit by the class to the foundation to observe crippled children and their problems, and a visit to the class by therapists of the foundation in which requirements and constraints for a particular project were stated and explained.

A glance at Figure 2, a PERT diagram for the course, reveals that:

(1) A number of activities are going on simultaneously at certain times.

(2) There is a lot of material presented to, and considerable work required of, students.

(3) There is a lot of slack time in the lower two paths.

To make it possible for the students to get everything done requires careful planning, especially in the selection of assignments, both graphics and design. For example, it has been necessary to assign an assembly drawing that requires no more than a week or work. A fairly simple device, such as a check valve, fills this requirement. A reduction in lettering time has been obtained by giving each student a prepared parts list--minus two items which he or she must complete--that can be taped onto the 28 cm x 43 cm (11 x 17 inch) assembly drawing sheet. Similarly the first two items, pictorial sketching and logarithmic and semilogarithmic graphs, require only a week. These are review assignments for many of our students, but at the junior level we have quite a few transfer students, and it takes a week or so to get everybody together, and for the transfer students to get their feet on the ground. We may substitute a graphical probability problem for our good students at this time. Drawings that we require in the graphics are:

1. Freehand pictorial sketch.
2. Semilogarithmic and logarithmic graphs.
3. Threaded fastener.
4. Precision dimensioning of a shaft.
5. Assembly drawing.
6. Cam layout.
7. Gear layout.
8. Simple 4-bar linkage instant center solution.

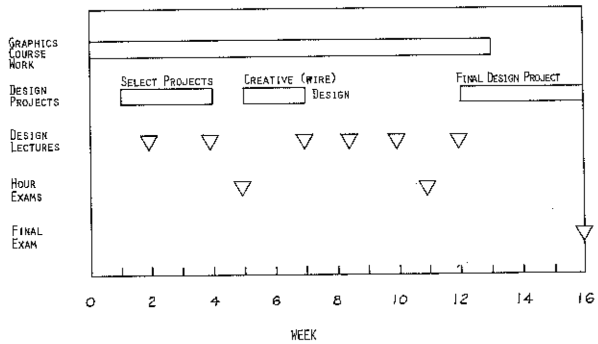
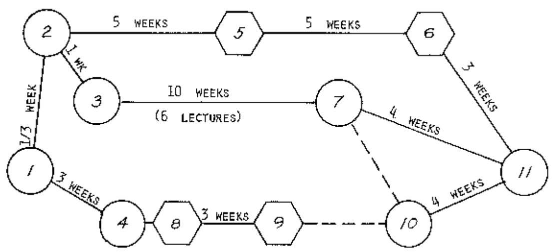


Figure 1: Gantt chart of elements of Introduction to Design course.



1. BEGIN CLASS*
2. START GRAPHICS COURSE WORK
3. BEGIN DESIGN PROCESS LECTURES
4. SELECT DESIGN PROJECTS
5. HOUR EXAM
6. HOUR EXAM
7. COMPLETE DESIGN PROCESS LECTURES
8. BEGIN CREATIVE WIRE DESIGN
9. COMPLETE WIRE DESIGN
10. START MAJOR DESIGN PROJECT
11. COMPLETE COURSE. FINAL EXAM, SUBMIT COMPLETED DESIGN DRAWINGS.

Figure 2: PERT diagram for Introduction for Introduction to Design course.

Selecting a design is a problem because it must be within the capabilities of all students. Most of the students have not had, or are co-enrolled in, such courses as strength of materials and dynamics of machinery. Selecting a meaningful design project is another problem. By meaningful, I mean a project design that can be built (usually in our own departmental shop area) and then find considerable, practical, use.

DESIGN LECTURES

A series of short (35-45 minute) lectures, roughly one a week, hopefully give the students an insight into the design process.

Topics covered are:

1. Phases of the design process.
2. The creative process.
3. Material selection.
4. Human factors.
5. Analysis.
6. Detailed design.

We have used several texts which have material in the design area. These are James Earle, Percy Hill, Henry Edel, and Thomas Woodson. All have been satisfactory, or more than that. Unfortunately, we have been adding material on mechanisms, and there is no text that covers this area as well as graphics and design. So the problem of a complete textbook for this course remains a problem.

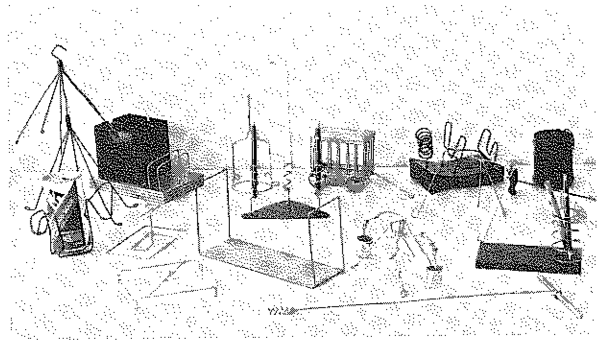


Figure 3: Some of the wire designs submitted by students of the Introduction to Design course.

The design lectures are not tightly structured. Four different instructors have taught this course in recent years, and their different backgrounds make it desirable to preserve flexibility in this area. There have been lectures on patents and product liability, for example.

THE DESIGN APPROACH

As Figure 1 shows, considerable time is spent on the design projects. Actually, not a lot of class time is given to projects until the final few weeks. Selection of projects may require no time if the instructor has already selected a project. Or it may require considerable discussion if the students are encouraged to participate in the selection of a project.

The creative wire (or wire and metal) design is an outside assignment. Following the lecture on creativity each student is given a coat hanger (or a coat hanger and strip of thin sheet metal about 3" x 14") and told to make something. This is an opportunity for each student to do a little creative thinking and to make something with his hands. He is given a deadline that is two or three weeks away, which is sufficient for him to dream a little and put his "thing" together. In order not to stifle the creative process, practically no constraints or restrictions are placed on this assignment. If a student wants to use another coathanger, or a screw or some wood, he is allowed to do so. He is also told that there will be no grade on this assignment. However a critique is usually held, and the strengths and deficiencies of each design are briefly discussed with this class. There are not many opportunities for an engineering student to do creative thinking. In this course we discuss the process, then try to encourage the student to use whatever ability he has in this area.

Figures 3 and 4 show some of the wire designs of two sections of ME 328. With the exception of three pencil holders, each design is for a different item. There is a large difference in the degree of perfection with which these students have constructed their designs. This is to be expected because some have more experience with tools than others. In order to get more uniformity of appearance, we generally spray paint all design work in the same color.

THE FINAL DESIGN PROJECT

We have been fortunate in selecting some design projects which we have been able to build, mostly with student help. We have also been fortunate in acquiring support from Dean William P. Smith for an awards program. This latter support enables us, each

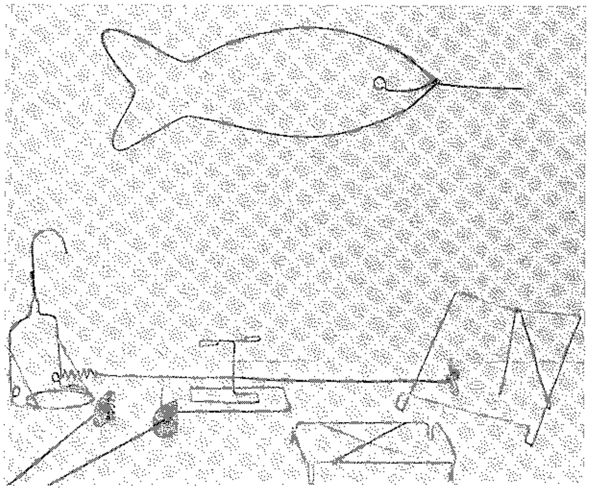


Figure 4: More wire designs resulting from the creative design mini-project.

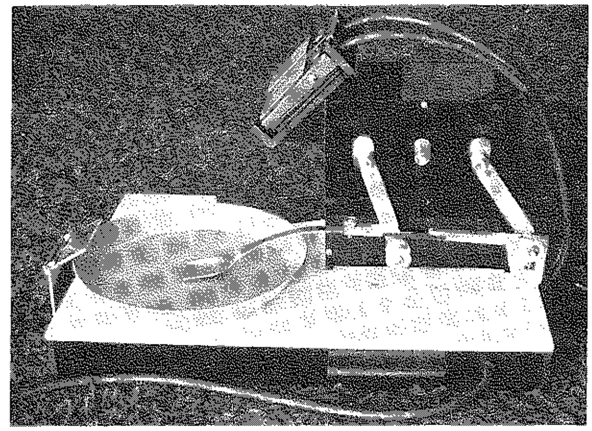


Figure 6: A device for feeding persons who cannot use their arms.

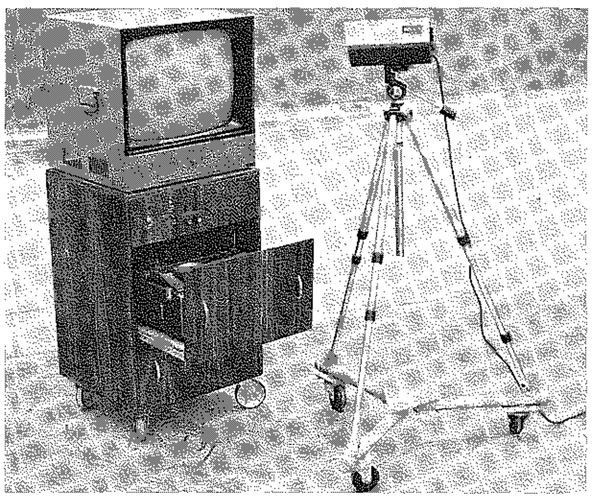


Figure 5: Audio-video package designed by a student in the course, and constructed and used by the Department of Mechanical Engineering.

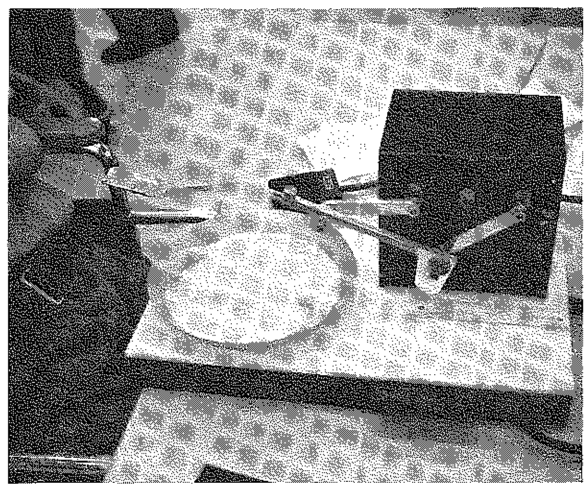


Figure 7: Another view of the prototype feeding device. This prototype has been in almost continuous use for two years.

semester, to award a $25 prize for the best design, $15 for the second best and $8 or the third best design, plus a very nice plaque for each winner. (Incidentally, we have a similar award program for the students in our engineering graphics classes).

Figures 5 through 9 show four of the designs that have been built over a three-year period. (Although the course has been taught every semester, the winning design has not always been built for several reasons). The winning designs have been picked by a committee of three faculty, not including the instructor. Then a consultation with the department chairman is held during which it is decided whether to build or not. Sometimes the second place winner is selected if Number One is too difficult to make. Usually the student designer is asked to do much of the work. This provides the student with valuable experience in translating a set of drawings into physical reality. Modifications are usually the order of the day.

A brief description of the projects shown in the photographs follows:

Video-audio package. It was desired to make it possible to take a video picture of some operation in the shop or laboratory, then show it to a class in another room. The package consists of a video camera and tripod, a video monitor, tape deck and preamplifier. Figure 5 shows this mobile arrangement which works very well.

Feeding device for physically handicapped. Figures 6 and 7 show this design which enables a person who cannot use his arms to feed himself or herself with little or no assistance. A headstick is strapped to the head of the user, who pushes on one of two

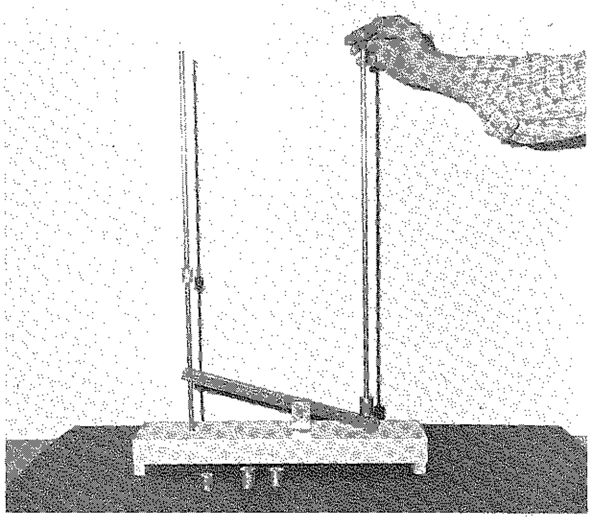


Figure 8: A device for demonstrating efficiency to junior high school students.

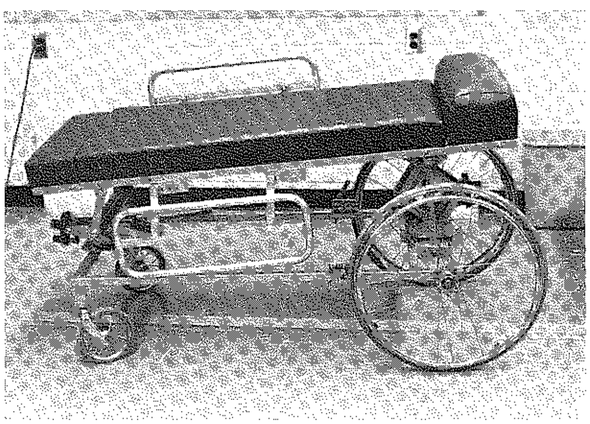


Figure 9: A bed designed and built for persons who must spend considerable time on their stomachs. The user can wheel herself or himself around in a manner similar to that of a wheel chair user.

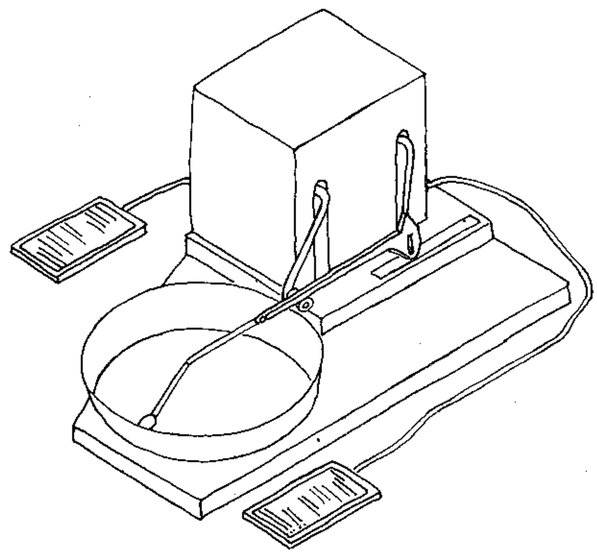


Figure 10: A conceptual sketch. Such a sketch is required for all designs submitted.

switches. One switch rotates the plate, while the other switch moves the spoon across the plate toward the user, who can stop the mechanism with the spoon at mouth level by lifting the headstick from the switch.

Efficiency demonstration device for schools. A junior high school science teacher wanted a device to demonstrate the concept of efficiency to science classes. Figure 8 shows the device that was selected for production. Federal money was available for this project, and 25 of the devices were made. There were several good, but entirely different designs for this project. Because the instructor wanted so many production items, one of the simplest designs was selected for building.

Wheel bed for handicapped. Many persons who spend their lives in wheelchairs are unable to shift their weight while sitting. One unfortunate result is the equivalent of bed sores on the derrière. Sometimes these persons must spend two months on their stomachs to allow the sores to heal. The wheel bed shown in Figure 9 is adjustable not only in width and height, but also may be angled so that the user can attend class and eat in an inclined position. There is no such item manufactured that provides these, as well as some other features not mentioned.

In order that the instructor (and later the judges for the design contest) can quickly grasp the student's intent and follow his drawings, the following design package is required:

Title page
Explanation of design (1 or 2 pages)
Conceptual pictorial sketch
Assembly drawing
Parts list
Detail drawings (at least 2 sheets)

Sometimes we have required an index and cost estimates. Ususally there is not enough time for these refinements. Besides, few undergraduate students know how to estimate the cost of making an item.

The sketches and drawings that are turned in vary greatly in their quality. Sometimes the best designs come from the poorest draftsmen. Usually, however, those who were good graphics students have been well up among the prize winners. There seems to be a relationship between paying attention to details (part of good draftsmanship) and good, workable, producible designs. Although we recommend that students who have had no production experience enroll in a for-credit manufacturing methods course, some have not been able to fit it into their schedule by the junior year. Figure 10 shows a typical conceptual sketch, a big help to design judges.

Foreign students and newly transferred students do not seem to be as able as those who matriculated as freshman engineering students at the university to get a complete design package in on time. ME 328 is, in a way, a nuts and bolts course. Most engineering students enjoy this type of course. If properly taught and led, they will respond with good designs. This has been quite evident because of numerous ties in the winner category of the design award program. Instead of having three winners in a class, there are often four or five.

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A Graphics Survey

By Clarence E. Hall
and Charles T. Sands
Louisiana State University

The Engineering Graphics Department of Louisiana State University recently conducted a survey of the graphics programs of fifty-three universities. This information was sought to complement the industrial input received from surrounding industries, and to also serve as a basis of comparison with other institutions. The results are published here.

The survey consisted of four questions, and 53 universities replied. Some gave only the required information, while others were kind enough to elaborate in detail.

In the first question, the field of engineering was divided into nine departments, including one category classified as "other". Each school was asked to check which of their departments required engineering graphics and which required descriptive geometry.

Table I shows the results of question 1, and a comparative representation of the same results is presented in the graph of Figure 1.

	Engineering Graphics	Descriptive Geometry
Aerospace	23	10
Chemical	25	4
Civil	43	20
Electrical	37	7
General	15	9
Industrial	32	12
Mechanical	44	18
Petroleum	9	3
Other	27	9

Table I: The departmental listing of the 53 colleges requiring engineering graphics and descriptive geometry.

The "other" category was intended to serve as an overflow for all engineering departments not listed in the eight major fields of engineering. Most participants filled in a breakdown of "other" departments requiring engineering graphics at their respective institutions. We felt that the vast variety of fields requiring graphics was interesting, and have illustrated this assortment in Table II.

The remaining questions were answered as follows:

Question 2) Have you changed your courses drastically within the last five years?

Engineering Graphics		Descriptive Geometry	
Yes	No	Yes	No
26	27	17	36

Question 3) Have any of your departments dropped any graphics courses in the last five years?

Engineering Graphics		Descriptive Geometry	
Yes	No	Yes	No
11	42	16	37

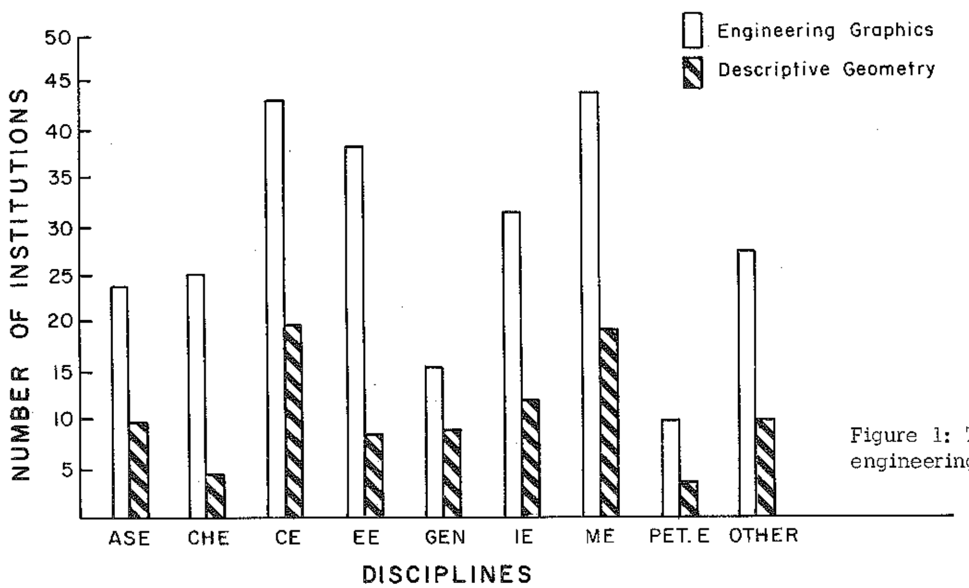


Figure 1: The disciplines requiring engineering graphics courses.

"OTHER" ENGINEERING DEPARTMENTS	TOTAL REQUIRING Engr. Graphics	Desc. Geom.	"OTHER" ENGINEERING DEPARTMENTS	TOTAL REQUIRING Engr. Graphics	Desc. Geom.
Agricultural	5	2	Industrial Tech.	2	
Biological & Biomedical	2	1	Interior Design	1	
Civil Engr.Tech.	1		Materials	2	1
Ceramic	2		Mech.Engr.Tech.	1	1
Construction	1		Metallurgical	4	
Engr. Math	1		Mining Engr.	3	
Engr. Physics	4		Nuclear	3	1
Engr. Science	2	2	Plastics	1	
Engr. Technol.	4	3	Safety	1	
Environmental	1	1	Tech. Illustration	1	
Forestry	1		Textile	1	
Geological	2		Transportation	1	1
Horticulture	1		Welding	2	1

Table II: The variety of engineering fields that require graphics as listed under the "other" category.

Question 4) Have any of your departments added any graphics courses in the last five years?

Engineering Graphics Yes	Engineering Graphics No	Descriptive Geometry Yes	Descriptive Geometry No
13	40	1	52

We hope that this information will prove as helpful to you in comparing your engineering graphics and related programs with the survey findings. We would be most interested in receiving additional comments or ideas concerning this survey. Please direct them to Dr. Clarence E. Hall, Chairman, Department of Engineering Graphics, Louisiana State University, Baton Rouge, Louisiana 70803.

Evaluation of Team Projects

By James H. Earle

Texas A&M University

The educational process is greatly improved when realism is added to the instructional techniques and classroom presentations. This is more true of practical areas such as those encountered in engineering education where emphasis is placed on the application of knowledge.

A very real aspect of engineering is the team approach. Essentially, all projects of industry, out of necessity, must be developed and solved by teams composed of specialists in different areas. It is fitting that this concept be an integral part of the engineering education process; consequently, more and more educators are assigning students to teams as an introduction to group participation.

Even though realism is added when students work as members of teams, it presents several academic problems to the teacher which must be solved before this method can be effectively employed. The teacher's first question is how can he evaluate an individual who has been working as a member of a group. This is a valid question, and one that must be satisfactorily solved before a teacher can, in good conscience, initiate a team project.

The Department of Engineering Design Graphics at Texas A&M University has been using the team project approach as a method of introducing freshmen engineering students to real engineering situations. Not only do the students work as teams on introductory systems engineering problems and product development problems, but they are also advised and guided by practicing engineers from industry who make two visits per semester to consult with student teams. The teams are required to develop a written report as a group, which must be evaluated and grades assigned to each individual member of the team. Each team also gives a group presentation to the same practicing engineers who return for the students presentations of their projects. The oral presentation portion of the project must also be evaluated and grades given to the individual members of the teams. The team project counts as approximately one-third of the students' total grade in these two freshmen courses. Consequently, it is important that the students be graded fairly by the instructor.

Several methods were experimented with early in the evolution of these two courses to determine the best method of assessing an individual's contributions to a team. It became apparent that it would be virtually impossible for the teacher to determine this grade since he would not have firsthand contact with the interworkings of a team. It was also recognized that this is a major problem in the merit system presently used in the free enterprise system where salary raises and promotions are based on contributions made by members of an organization. Much of this evaluation is made by members of a group, and the true merits of an individual are usually recognized. It was decided that it would be valuable to the students to be responsible for evaluating the work of each team member as a part of the project. This would serve as a motivational factor to encourage the team members to work together as harmoniously as possible since they would be rewarded for their participation.

Whether in the classroom or on the job, it is important that the individuals know the requirements of their jobs and the evaluation system used to assess their work. It became apparent that a detailed grading scale would be necessary to explain to the students at the beginning of the course how the merit system would be applied and how grades would be divided among the members of a team. The teacher's responsibility would be the grading of the written and oral reports, and assigning one grade for each report to the team. Each team would determine the per cent contribution made by each member of the team, and, using an evaluation chart, would determine what portion of the grade each member would receive.

<u>Construction of the Grading Scale</u>

The basis for the grading scale that was constructed is shown in Figure 1. The composite grade given the team can be read along the horizontal (X-axis). The curves radiating from the zero point on this scale intersect the Y-axis at the righthand side of the scale. Each of these curves is given a number such as 10, 20, and 30, etc., which represents the per cent contribution of a team member. A student who did 100% of his portion of a project

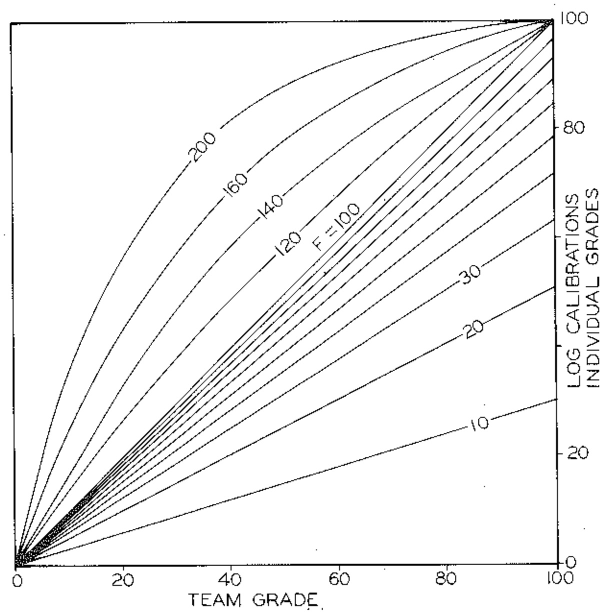


Figure 1: The geometric basis for the development of a grading scale. The F-factors 10 through 200 represent the per cent of an assignment performed by an individual team member.

would obtain his grade by projecting upward to the 100 curve, then horizontally to the right to his individual grade, which would also be the same as the grade along x axis. If he did more than his share (for example, 120%), he would project upward and horizontally to the right for his grade which would increase in accordance with this extra work. Likewise, a student who performed less than his part would receive a lower grade by the same graphical process. It can be seen that the calibrations from 100 to 0 on the y-axis are spaced logarithmetically.

This calibration of straight lines and curves on this graph are spaced emperically, using judgment and past experience. Although not based on any particular mathematical formula, this calibration seems to be adequately fair and is easy to justify; other grading systems are usually based on similar data.

Although Figure 1 illustrates the basic consturction technique used to develop this evaluation chart, in most classroom situations there is lettle need for the use of scales for evaluating students at the very low range of a project. For example, should a team earn a grade as low as 30 or 40, there is little doubt as to how grades should be divided among individual team members. For the most part, the teacher wishes to know how to divide grades among team members in the more usual range of scores, usually from 70 to 100. Also, students who did less than 60% of what they were assigned are usually easy to evaluate. Consequently, the final chart that was developed is shown in Figure 2, which allows for grades from 50 to 100 and gives per cent contribution curves from 10% to 200%. This enables the chart to be drawn at a sufficiently large scale so that it will be a more functional instrument.

Use of the Scale

Written reports: Upon completion of their written reports, each team is required to insert an evaluation sheet which shows the participation of each member of the team as part of the report. Each team lists

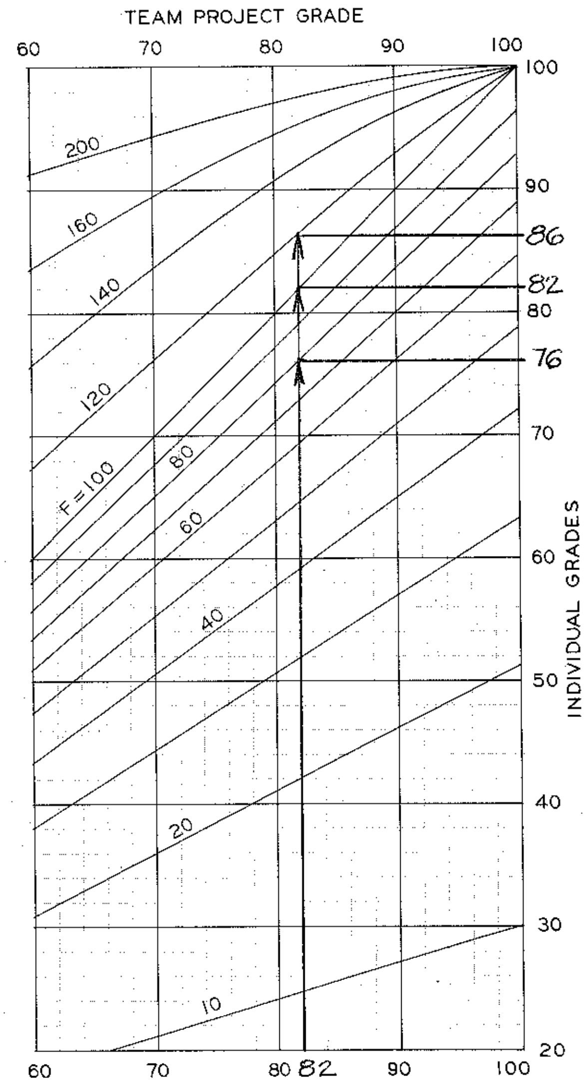


Figure 2: The final grading chart, developed from an enlarged section of the chart shown in Figure 1.

their names and their group evaluation of the members of that team (such example is shown in Figure 3). A five man team is given here, with one man doing 24% to compensate for another who did only 16% of his required 20% portion of the project. These percentages are converted into F-factors which represent the per cent performed by each member. The man who performed 24% of the total project did 120% of his part, while the man who did 16% did only 80% of his part. The other three members did only 20%, which is 100% of their share.

This sheet was used by the instructor to grade the written report. The grade of the team report was then given by the instructor, who in turn would convert this grade into individual grades for members of the team by using the chart. In this example, the team's report was given a grade of 82.

Complete columns A, B, & C jointly as a team. Per cent contribution should include all aspects of work performed on the written report: gathering data, sketches, graphics, organization, rough draft and typing.

written report

TEAM NO: 2 PROJECT: AUTOMATIC GATE

NAMES NO. (N = 5) (a)	% CONTRIBUTION (C) (b)	F=NC (c)	GRADE (G)
1. WHITE, J.O.	20	100	82
2. BROWN, R.I.	24	120	86
3. SMITH, J.C.	16	80	76
4. BLACK, N.T.	20	100	82
5. JONES, L.A.	20	100	82
6.			
7.			
8.			
	100%		

EVALUATION BY INSTRUCTOR:

		MAX. VALUE	POINTS EARNED
1.	Use of an appropriate cover	2	2
2.	Inclusion of an evaluation sheet	2	1
3.	Inclusion of a proper letter of transmittal	2	1
4.	Correct title page	2	2
5.	Proper table of contents	2	1
6.	Sufficient introduction to the report	5	4
7.	Thoroughness in identifying problem	10	8
8.	Continuity and quality of body of the report	10	8
9.	Collection and presentation of background data	5	4.5
10.	Justification of major decisions	5	4
11.	Review of costs, overhead expenses, shipping costs and similar expenses	5	3.5
12.	Arrival at strong conclusion & recommendation	5	4
13.	Sufficient number of graphs & graphics	10	8
14.	Quality of graphics	10	8
15.	Bibliography - form and content	5	4
16.	Use of footnotes	5	5
17.	Appendix - content and form	5	5
18.	Form and appearance of report (spelling, punctuation, margins, typing, neatness)	10	9
		100	

ADDITIONAL COMMENTS BY INSTRUCTOR ON BACK OF SHEET.

grade 82

Figure 3: The evaluation sheet that is inserted in the written report for the teacher's evaluation. The F-factor for each member of the team is determined by a group meeting of the team at the completion of this portion of the project.

Complete columns A, B, & C jointly as a team. Per cent contribution should include all aspects of work performed on the oral report: preparation of visuals, photography, organization, planning and the final presentation.

oral report

TEAM NO: 2 PROJECT: AUTOMATIC GATE

NAMES NO. (N = 5) (a)	% CONTRIBUTION (C) (b)	F=NC (c)	GRADE (G)
1. WHITE, J.O.	20	100	86
2. BROWN, R.I.	16	80	80
3. SMITH, J.C.	24	120	90
4. BLACK, N.T.	20	100	86
5. JONES, L.A.	20	100	86
6.			
7.			
8.			
	100%		

EVALUATION BY INSTRUCTOR.
(NOTE: Use this as a checklist for preparing for the oral presentation.)

		MAX. VALUE	POINTS EARNED
1.	Introduction of team members	2	2
2.	Statement of purpose of the presentation	5	4
3.	Use of adequate number of visuals	10	8
4.	Continuity of the presentation	3	3
5.	Quality of visuals (including model)	15	12
6.	Use of visuals--point to important points, don't block screen, don't fumble, etc.	10	8
7.	Participation of team members (perfect score if all participate)	10	9
8.	Clear presentation of recommended design	10	8
9.	Presentation of alternative solution considered	2	2
10.	Coverage of economics - manufacturing, shipping, packing, overhead, mark-up, etc.	10	8.5
11.	Consideration of human factors	5	4
12.	Presentation of an effective conclusion	5	4.5
13.	Poise and professionalism	3	3
14.	Use of allotted time	10	10
		100	

ADDITIONAL COMMENTS BY INSTRUCTOR ON BACK OF SHEET.

grade 86

Figure 4: The oral presentation evaluation sheet which shows the per cent contribution of each member on the team and his respective share of the grade.

This was the grade given to the three members who did 100% of their share. On the other hand, the man who did 120% was given a grade of 86, and the one who did 80% was given a grade of 76, as shown on the graph in Figure 2.

<u>Oral reports</u>: Another form, shown in Figure 4, was developed for the evaluation of oral reports. Since this was also a team project and was performed after the written report was graded, it was necessary to handle it in much the same manner.

The team grade given for the oral presentation was 86. The per cent contribution by each team member is shown in the first column which is converted to the F-factor in the second column. The teacher then converts the team grade of 86 into the respective grades for each individual on the team. The student doing 120% of his assignment earns a grade of 90, while the one doing 80% receives a reduced grade of 80.

<u>Uniqueness grades</u>: A separate form (Figure 5) was developed to evaluate a team's creativity that was applied to the project, called uniqueness. Many teams perform well in preparing written and oral reports, but only develop routine solutions without the application of true imagination. To encourage this, uniqueness is used as a third part of the grading process. By grading the overall report as a unit, the teacher can determine each individual's grade by using the grading scale as in the previous two examples.

<u>Homework</u>: This same evaluation graph shown in Figure 2 can be used to compute increases in grades for courses where homework and problem assignments count a portion of the grade. Such an example is shown in Figure 6, where thirty problems were assigned as regular assignments during the semester. A student who solved 36 problems instead of 30 would earn an F-factor of 120 which represents 120% of his assignment. By averaging the grades of all problems (36 problems), his grade of 82 can be converted to a score of 86.

<u>Conclusion</u>

This method of grading team projects has been found to be successful by the teachers using it as well as the students who are graded by it. The grading chart and evaluation sheet are included in the problem materials provided students at the beginning of the course; consequently, they are familiar with the system under which they will be evaluated at the outset. Prior notice of the grading system that will be used is an important part of good morale among students of a class.

Complete columns A, B, & C jointly as a team. Per cent contribution should include all aspects of developing the final design concept that was used.

project uniqueness

TEAM NO: 2 PROJECT: AUTOMATIC GATE

	a	b	c	
	NAMES NO. (N= 5)	% CONTRIBUTION (C)	F=NC	GRADE (G)
1.	WHITE, J.O.	20	100	79
2.	BROWN, R.I.	16	80	73
3.	SMITH, J.C.	24	120	84
4.	BLACK, N.T.	20	100	79
5.	JONES, L.A.	20	100	79
6.				
7.				
8.				
		100%		

EVALUATION BY INSTRUCTOR

	UNIQUENESS	MAX.* VALUE	POINTS EARNED
1.	Project serves needed function	10	7.5
2.	Functions effectively	10	8.0
3.	Would attract consumers	10	6.5
4.	Simplistic solution--minimum complication	10	8.0
5.	Reasonable cost	10	7.5
6.	Attractive for investment and marketing	10	8.0
7.	Application of imagination and ingenuity	10	9.0
8.	Aesthetically pleasing in appearance	10	7.0
9.	No existing solutions by others at present	10	9.5
10.	Fulfills problem statement	10	8.0
		100	

grade 79

ADDITIONAL COMMENTS BY INSTRUCTOR ON BACK OF SHEET.

Figure 5: The evaluation sheet for determining the uniqueness of a a team's solution.

EXAMPLE

Number assigned 30
Number extra 6
36 Total

Avg. grade for Total (36) -------------- 82

$$F = \frac{\text{No. completed} \times 100}{\text{No. assigned}} = \frac{36 \times (100)}{30} = 120$$

Final Grade = 86

Figure 6: An example illustrating how the evaluation chart can be used to assign credit for extra assignments completed by a student.

The students must carry the major burden of self evaluation and team evaluation, which serves as an excellent introduction to supervision, management, and merit ratings similar to those used in industry. The knowledge of the evaluation system that will be used serves to motivate students toward a better cooperation as a team member than when they are left unaccountable for their participation.

The development of this system of grading is one step toward reducing the problems of assigning individual grades to members of a team. Additional experimentation and evolution of this system will afford an effective grading device for engineering educators.

ENGINEERING DESIGN GRAPHICS INSTRUCTOR

The Engineering Design Graphics Department of Texas A&M University is seeking applicants for an assistant or associate professorship that must be filled by September 1976. Duties will include the teaching of engineering graphics and descriptive geometry to freshman engineering students. Also, it is desired that applicants are competent to teach speciality courses such as computer graphics, electronic draftingk, pipe and vessel drafting, nomography, etc.

It is desired that applicants

It is desired that applicants have a doctor's degree with at least one degree in an area of engineering. Salary is open based upon the qualifications of the applicant. Texas A&M is an equal opportunity employer.

Contact James H. Earle, Engineering Design Graphics Department, Texas A&M University, College Station, Texas, 77843, Phone 713-845-1633.

THE ORTHOGRAPHIC ELLIPSE

THE ELLIPSE might be considered as comprising a circle which has been either expanded or compressed in a single direction.

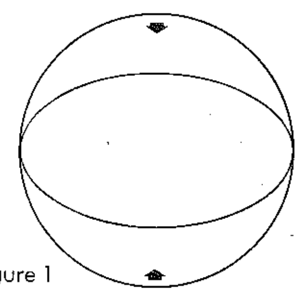


Figure 1

In Figure 1, assume that the circle was described or imprinted upon an elastic surface which had been evenly stretched in a vertical plane. Upon release of tension, the elastic would be understood as returning to its original dimension, compressing the circle's image to that of the ellipse.

In a similar manner, a circle delineated upon a relaxed elastic surface in theory would expand into an ellipse, if such elastic then were uniformly stretched in any single direction.

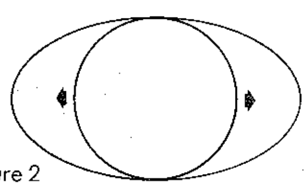
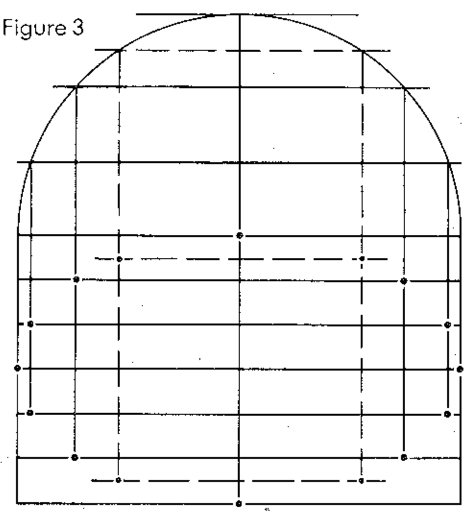


Figure 2

This concept permits rapid, efficient and accurate ellipse construction by normal projection.

As shown in Figure 3, define a rectangle whose sides and ends are equal respectively to the major and minor diameters of the required ellipse. To construct a compressed-circle ellipse, describe a semicircle upon either side. Divide the semicircle vertically into as many equal spaces as desired (three shown.)

Figure 3



Divide the ellipse rectangle vertically into *twice* the number of equal spaces (six indicated.)

Project vertically from points of division-line intersection with the semicircle, to corresponding division lines of the rectangle. Twelve ellipse definition points are thus established.

Since any number of semicircle divisions may be employed in this procedure, additional definition points can be logically effected by subdivision. Such subdivision is shown in dashed line in Figure 3, affording four supplemental ellipse points advantageously located as to a more even distribution of points throughout the ellipse circumference.

The same procedure is employed in plotting an expanded-circle ellipse, as demonstrated in Figure 4.

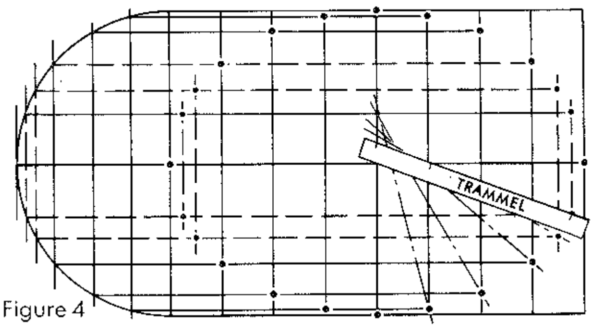


Figure 4

In this example the semicircle is described upon either end of the ellipse rectangle and, for purposes of demonstration, is shown divided laterally into four equal spaces, with the rectangle divided into eighths. *Two* strategic subdivisions are indicated in dashed line, the procedure thus providing sixteen primary and eight supplemental ellipse definition points, for a total of twenty-four.

This method of construction will be found compatible with conventional procedures. For example, please note in Figure 4 the superimposition of a typical trammel progression within the lower right-hand ellipse quadrant.

With trammel indicia spaced in accordance with the ellipse's major and minor radii, and properly engaging an ellipse point previously plotted orthographically, trammel markings will correctly coincide with the major and minor diameters.

A further advantage of orthographic ellipse projection lies in its compatibility with the techniques of three-dimensional delineation.

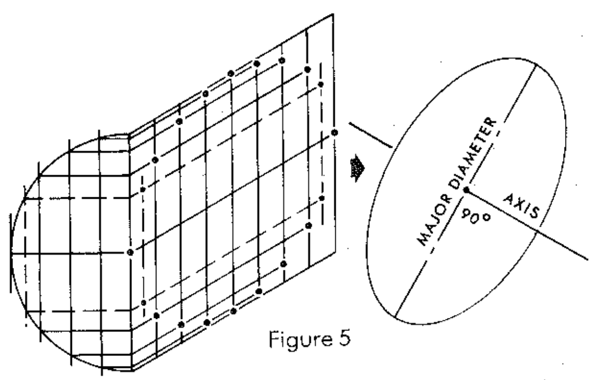


Figure 5

Figure 5 illustrates an equilateral parallelogram (rhombus) typically employed in isometric construction as indicative of a receding vertical square, with "receding" edges conventionally drafted at the consistent angle of 30° with a horizontal.

Semicircle construction is made upon either vertical side, since each of these is considered parallel with the drawing surface, and not receding. Normal projection from semicircle intersection points to the adjacent vertical, and isometric projections thence to related grid lines, locate the ellipse (isometric circle) definition points.

Proper ellipse construction through these definition points results in correct orientation of the figure. Thus the major diameter of the ellipse will be found to intersect the isometric circle's axis at a true angle of 90°. (The axis relates to the circle as the axle relates to the wheel, lying perpendicular to its surface and intersecting its center.)

A similar procedure is employed in defining an isometric circle occupying a horizontal plane. In this construction both sets of "receding" edges lie at 30° with a horizontal, and it is customary to provide a normal contiguous semicircle parallel with the picture plane or drawing surface.

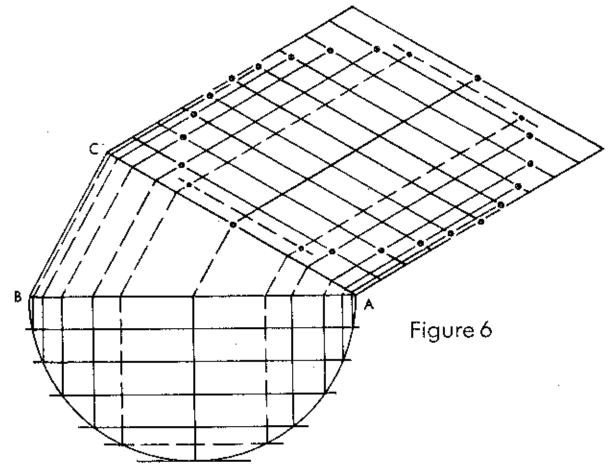


Figure 6

In Figure 6, diameter AB of the semicircle is drawn to any suitable dimension with ABC defining any angle. Projectors from AB (shown dashed) are drawn parallel with connector BC. Isometric (30°) projections from points established on AC to corresponding grid lines plot the ellipse.

An alternate method applicable to isometric views would be to delineate the semicircle upon any side of the rhombus, with semicircle division lines parallel therewith, and with subsequent projections to the side of the isometric square drafted perpendicular to the division lines (60° with a horizontal.)

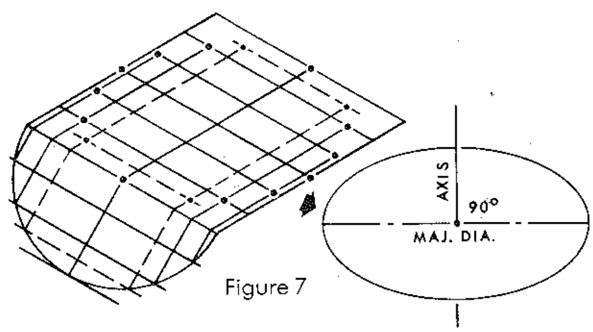


Figure 7

In the finished drawing, note the correct orientation of the isometric circle, the ellipse's major diameter forming a true angle of 90° with the circle's axis, which in this example consists of a vertical.

Much the same procedure as outlined in the foregoing is employed in true perspective delineation, the geometry involved remaining compatible throughout.

The trapezoid shown in Figure 8 is typically indicative of a vertical square occupying a perspective surface, its receding edges defining parallel planes converging toward a vanishing point.

The semicircle construction utilizes either of the vertical edges, as these are considered parallel with the drawing surface. The procedure is quite similar to that demonstrated in the previous isometric example, with the obvious provision of projectors receding toward the vanishing point common to the upper and lower edges of the perspective square.

Note in the finished drawing that the figure is a true ellipse whose major diameter is oriented at 90° with the perspective circle's axis. Intersection of the axis with the plane of the circle (piercing point) occurs at the *perspective* center (located by crossing the diagonals of the square.)

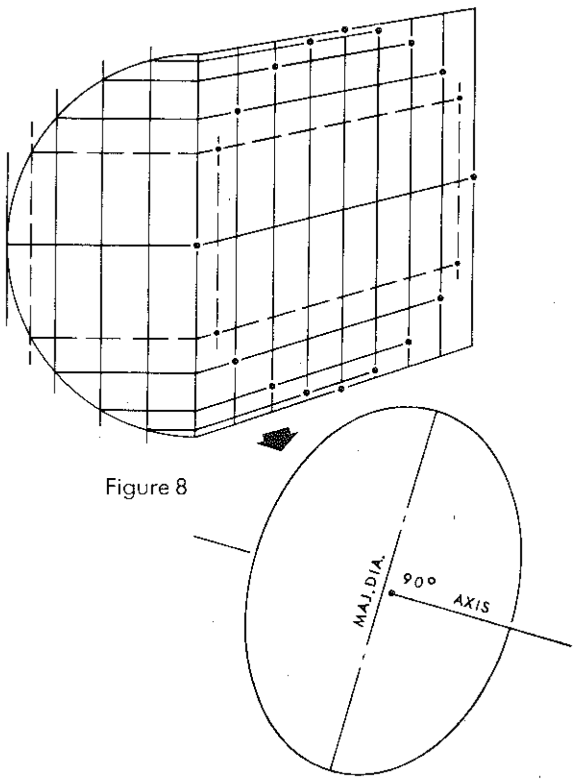


Figure 8

This occurs somewhat behind the ellipse's major diameter (a centerline of symmetry) and correctly reflects the diminishment of receding dimensions characteristic of perspective drawings.

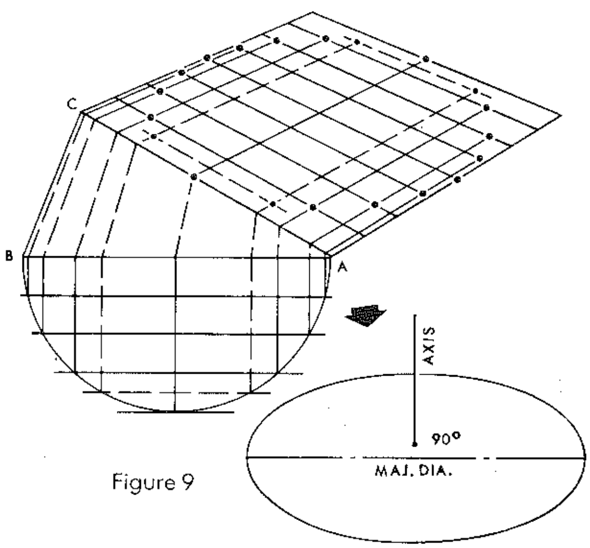


Figure 9

The irregular quadrilateral shown in Figure 9 indicates a horizontal square drawn in two-point perspective, each pair of receding edges convergent upon a vanishing point, both such points occupying a common horizontal (Horizon Line.) Horizontal semicircle diameter AB is drawn to any suitable length, and connector BC extended to the Horizon Line to establish an auxiliary vanishing point. Projectors from points on AB (shown dashed) converge toward the auxiliary vanishing point.

The resulting figure again is a true ellipse (assuming a non-distorted perspective arrangement)—its major diameter lying at right-angles to the circle's axis, which in this example comprises a vertical.

Projectors from a single semicircle grid can be extended in compatible perspective planes to define a series of any number of ellipses (perspective circles), either adjacent to each other or separated in space. Accurate scaling and subdivision of each enclosing square will provide an ellipse of proper proportion (thinness or fatness) and with its major diameter correctly inclined.

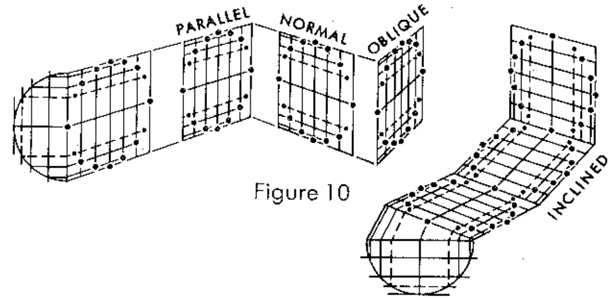


Figure 10

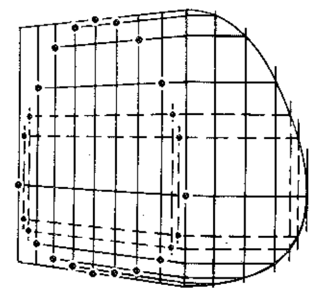


Figure 11

A modified circle such as the vertically symmetrical oval often employed in aircraft and submarine design is capable of correct perspective resolution by the same geometric process.

The ultimate application of the procedure submitted thus far is the boxing of a sphere within a true perspective cube, and the circumscription of the sphere with a true ellipse *correctly* indicative of a perspective great circle (equator) in a manner compatible with systematic drafting procedure and the optics governing image configuration in true perspective projection as well as photography.

A cube is constructed to scale at any perspective attitude, crossed diagonals in the lower square locating the sphere's point of ground or base-plane contact (south pole.) A similar construction in the upper square defines the north pole and, within the central square, the sphere's perspective center.

By the procedure previously explained, the equator is delineated which, in non-distorted perspective, will consist of a true ellipse, its major diameter lying somewhat forward of the perspective center.

The perspective center is utilized for compass placement in describing the true circle representing the sphere, the radius of this circle being adjusted to enclose the central ellipse tangentially, the points of tangency lying slightly forward of the major diameter. The circle thus resolved correctly encompasses both poles with, in a downward view as indicated, the north pole visible and forward of the upper contour, and with the south pole hidden behind the lower sphere horizon.

Both poles, their axis and the perspective center can be utilized as elements of origin of accurate dimensions in a further development of detail compatible with the perspective orientation of the original cube.

As long as the draftsman avoids the occurrence of noticeable optical distortion, which can result in those portions of a drawing which are allowed to extend beyond a reasonably restricted range of vision, the procedure herein disclosed remains unlimited in its scope and variety of application.

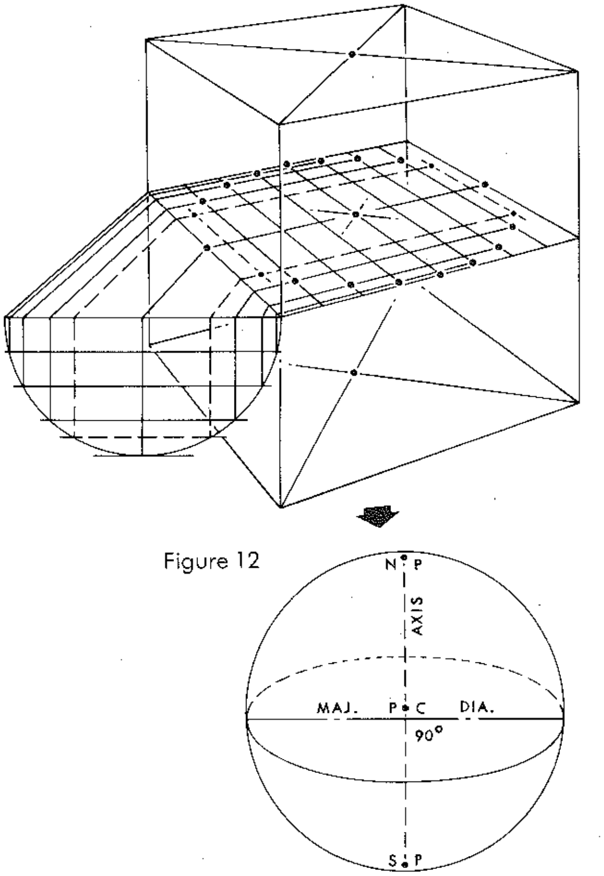


Figure 12

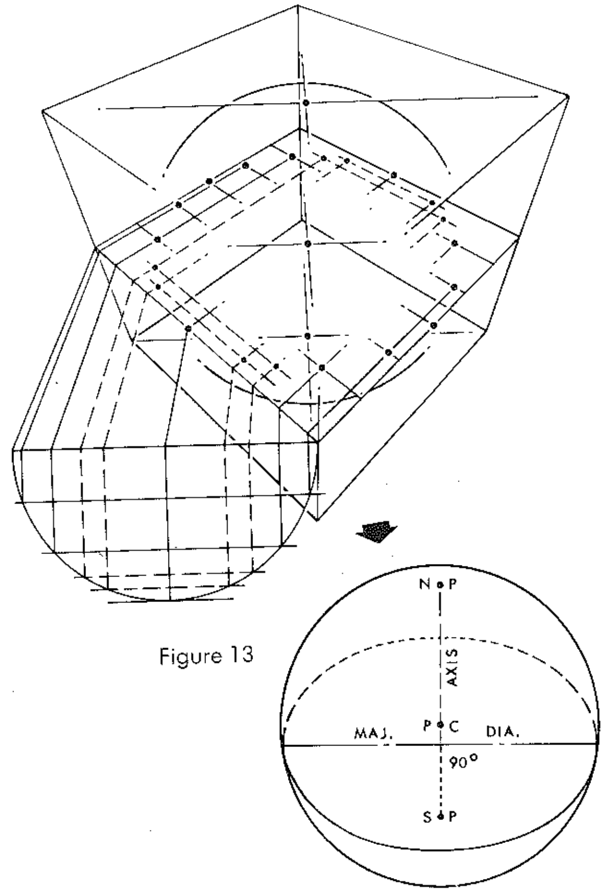


Figure 13

Figure 13 is an accurate perspective projection of a cube arranged in a 3-point 45,45-45° attitude, which properly contains a sphere circumscribed by an equator, all of whose elements retain the characteristics previously demonstrated. That is, the great circle is a true ellipse; its major diameter is truly perpendicular to the sphere's (and circle's) axis; the perspective center serves as that of the true circle representing the sphere. Such circle properly encloses both poles which, since vertical planes of the subject also recede from the drawing surface, lie at different actual distances from the perspective center, thus correctly demonstrating the diminishment of dimensions which occurs in *all* planes of a triconjugate perspective.

An important feature of the general concept herewith submitted, with respect to perspective delineation, lies in the relationship of the center point of the sphere to the major diameter of the ellipse. Although both comprise elements of symmetry, they are not, as might be initially surmised, coexistent in space. Perhaps the most salient aspect of the procedure is that the sphere's center coincides with the equator's *perspective* center, and that the actual picture-plane (drawing surface) radius of the true circle thus employed equals the distance from this point to that of tangential enclosure of the ellipse.

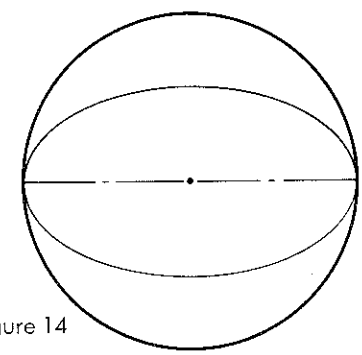


Figure 14

PLANE ELLIPSE IN A CIRCLE

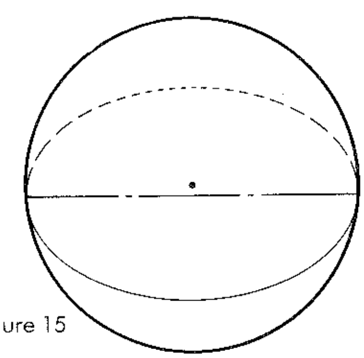


Figure 15

PERSPECTIVE GREAT CIRCLE ON A SPHERE

(Portions of the foregoing have been excerpted from the book, ACCURATE PERSPECTIVE SIMPLIFIED, Abak Press, 1974.)

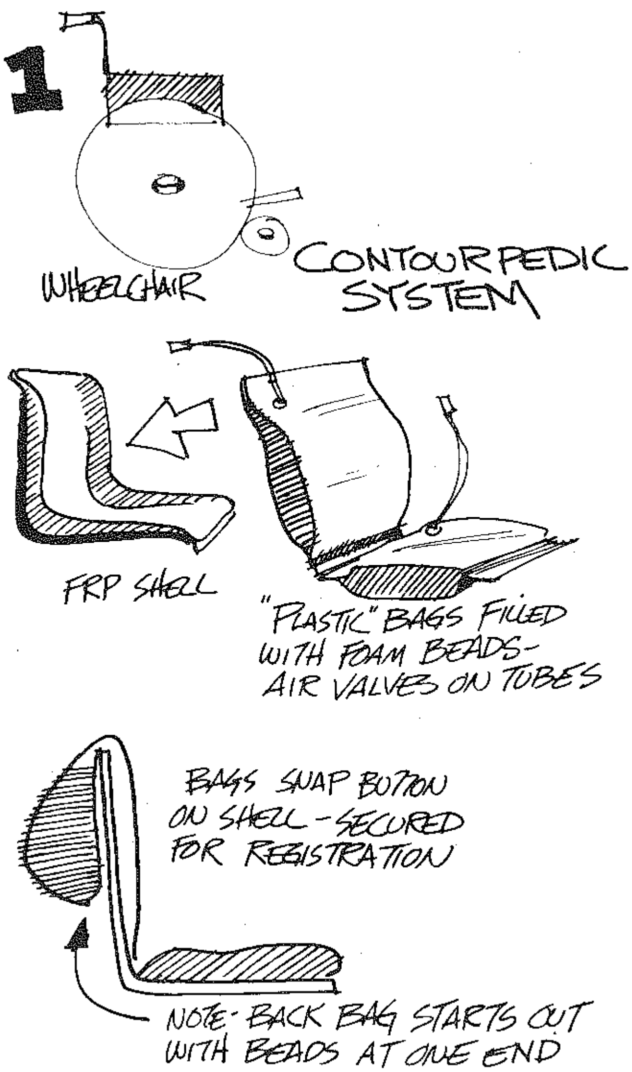
Getting to the problem of the bottom

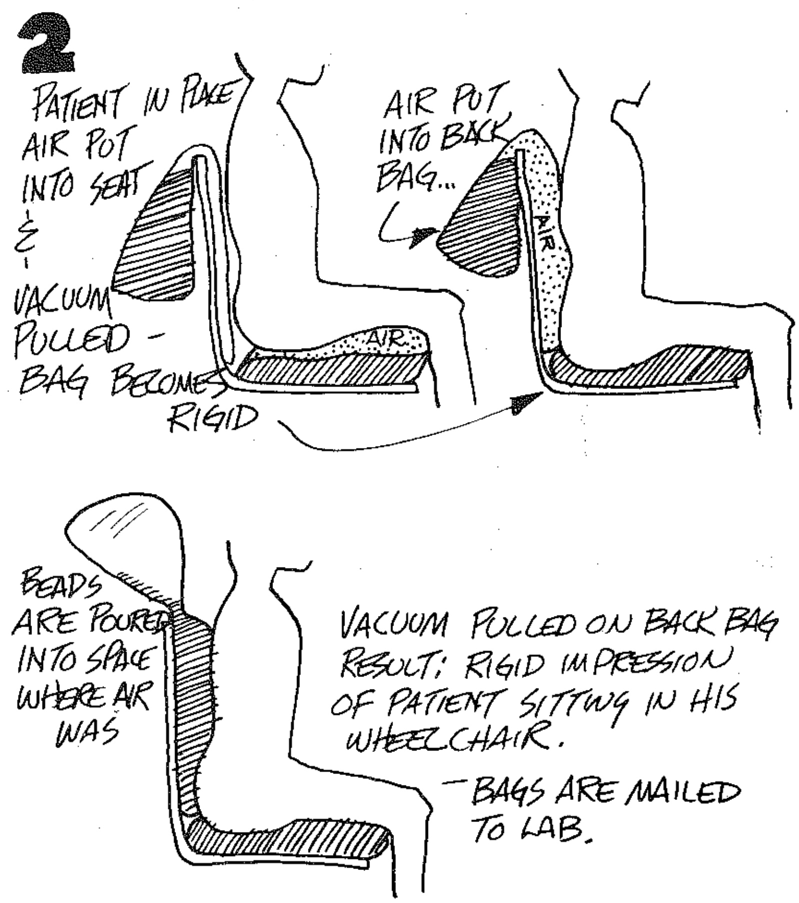
A patented process for custom manufacturing a portable wheelchair seat to the exact anatomical contours of a patient greatly increases comfort and support, and reflects the in-depth involvement of the industrial designer.

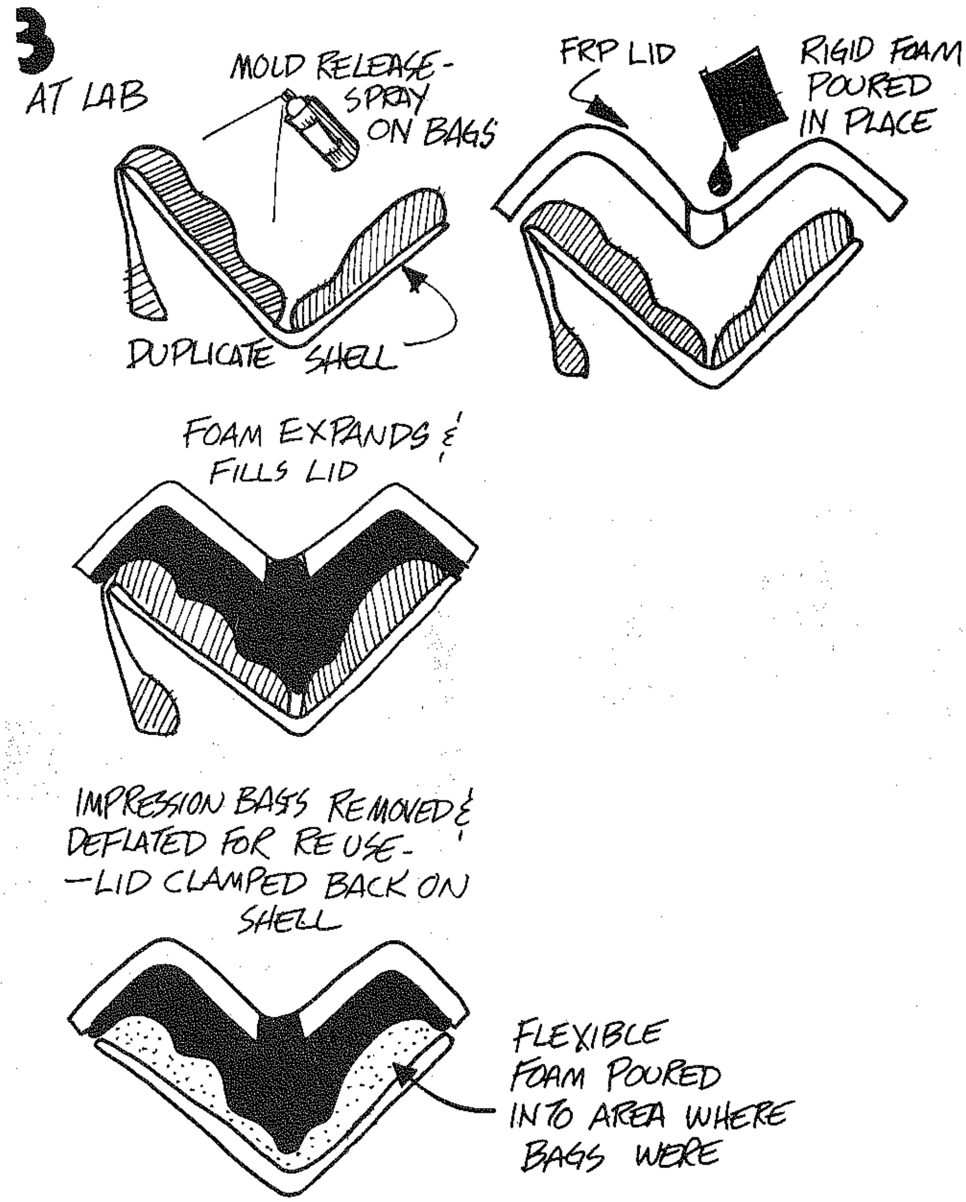
While the kinds of disabilities that have placed about 500,000 people in wheelchairs in this country vary greatly, all chronic wheelchair patients face two major problems stemming from wheelchair use—maintaining a balanced and comfortable posture, and preventing pressure sores. And it is these two aggravating conditions that Contourpedic Corporation's contoured wheelchair seat, which uses a patented process for custom manufacturing, is designed to alleviate.

The problem with the typical wheelchair is that, like a folding camp chair, it has a sling seat which makes it difficult for seating pressure to be evenly distributed over the largest possible area. This is critical because any pointed seating pressure can lead to a skin ulcer, $10-15,000 in additional medical care costs, possible amputation and even death. Although foam, water and gel cushions have been used, they have met with only varying degrees of success; and pads do not provide the kind of torso support needed to prevent exaggeration of any existing anatomical deformity a wheelchair patient might have.

The key to the Contourpedic system developed by inventor Frank Low and industrial designer Robert Burridge of Contourpedic with assistance from New York University Medical Center's Institute for Rehabilitation Medicine and the Goldwater Memorial Hospital, is a patented process for custom molding each seat to the precise anatomical requirements of the wheelchair user. First, a reusable, flexible bag filled with dry molding agent is placed on the seat and back of the patient's own wheelchair







in the convenience of his own home. With the aid of a trained assistant, the patient is positioned in the prepared wheelchair so that his posture is both comfortable, balanced and anatomically correct.

At this point, the assistant shapes the bag under the patient to allow for any potential problems, such as skin ulcers, and to provide multi-directional support for the patient's thighs, and lower and middle back. A vacuum pump then removes the air from the bag, causing the molding agent, and the patient's impression, to harden in just minutes. This impression is then used to mold the final seat.

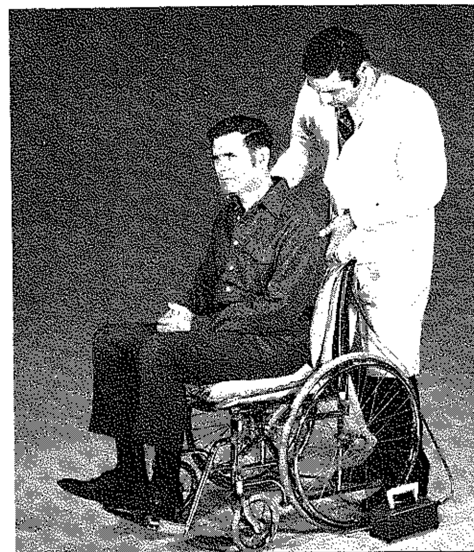
The idea for the Contourpedic system developed out of a home-made seat made by Frank Low in 1972 before he became a principal of the corporation. Low had carved a contoured seat out of a block of foam for his wife, a polio victim confined to a wheelchair. Low found that because of the contoured seat, his wife was able to sit comfortably for substantially longer periods of time. He was so impressed with his wife's increased endurance and her improved balance that he decided to approach Health Advancement—Contourpedic's parent company whose principals have industrial design backgrounds in the medical field—to see if it might be interested in his concept. It was, and gave the job of developing a technique for producing the custom-made seat to staff industrial designer Robert Burridge.

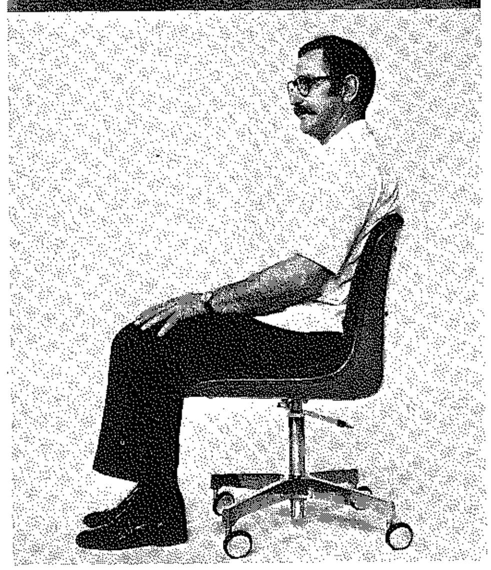
"This wasn't a magic marker and air brush design program," says Burridge. "For example, hours of shirt-sleeve sessions were spent with the foam industries trying to find or develop a foam that would meet some of our criteria." The foam Burridge was looking for had to be resilient yet firm for the required support, and had to have a slow rebound, be shock absorbent, and have memory. It also had to be flame retardant and have antibacteriostatic and antifungal properties.

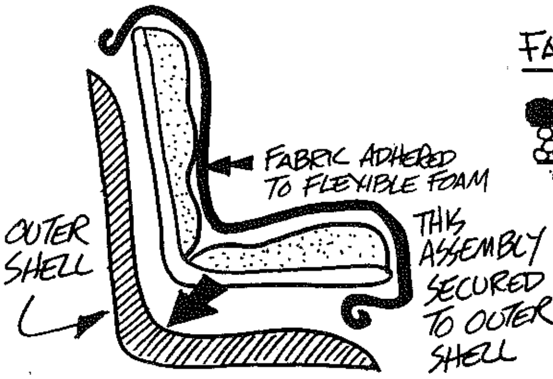
Below, top to bottom
After placing the flexible bag containing the molding agent on wheelchair, patient (volunteer in photo), is positioned by assistant. A vacuum pump removes air from bag, thereby hardening impression, which is used to make the mold for the contoured seat.

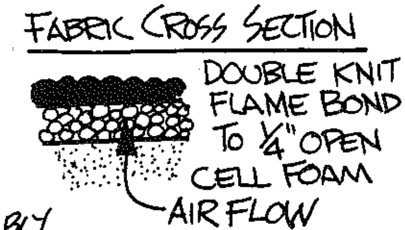
In portable wheelchair seat form, the seat can be easily carried, via a carry handle, from the wheelchair to cars, airplanes, or the theater providing continuous use for the patient.

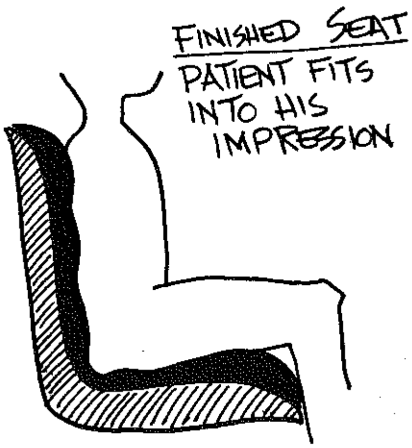
The same process that is used to manufacture the wheelchair seat can be used for institutional seating, such as this dentist chair, also being manufactured complete with base, by Contourpedic Corporation.







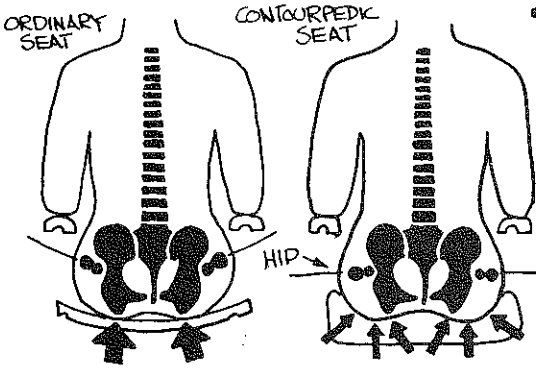




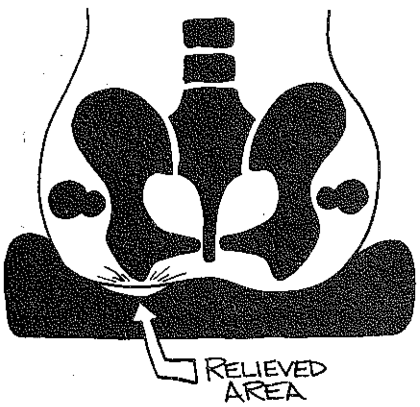
"After months of receiving quart samples from various foam industries with instructions stating 'try this,' " says Burridge, "we finally arrived at a formula that gave us what we wanted. I'm no chemist, but it's amazing what you can get accomplished by conducting an orchestra of foam specialists."

The material Contourpedic selected is a resilient Uniroyal polyurethane foam specially formulated to provide the desired characteristics. Contourpedic carried out pressure studies of the material at various Veterans Administration institutes with good results, according to Burridge.

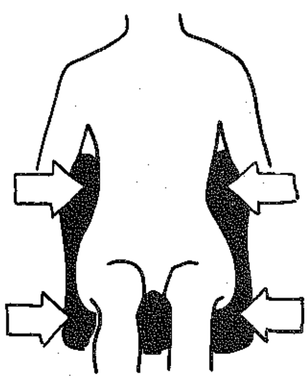
HOW INDIVIDUAL FITTING PROVIDES GREATER COMFORT & SAFETY



1. UNLIKE ORDINARY SEAT THE CONTOURPEDIC SEAT DISTRIBUTES WEIGHT EVENLY OVER LARGEST AVAILABLE AREA. THIS HELPS AVOID SKIN BREAKDOWNS AND PREVENTS HIP ROTATION

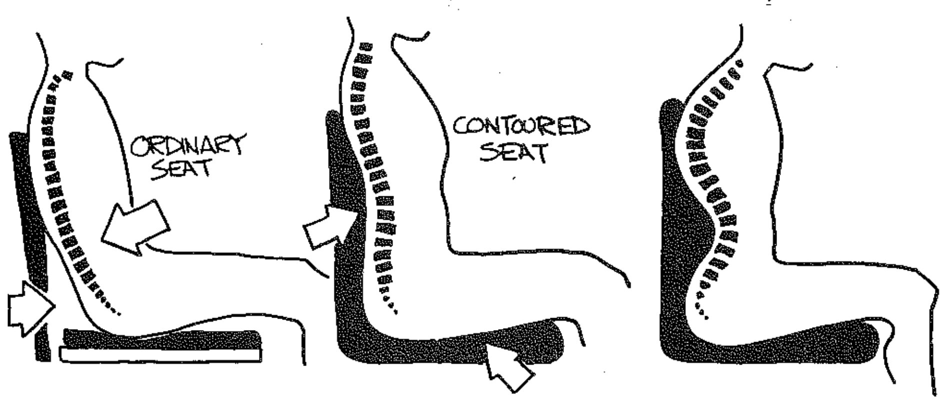


2. ADJUSTMENTS CAN BE MADE TO AVOID PRESSURE ON POTENTIAL PROBLEM AREAS INCLUDING EXISTING SKIN ULCERS



3. INDIVIDUAL CONTOUR OF BOTH SEAT & BACK REDUCES ANY TENDENCY TO SLIP FORWARD OR LEAN TO ONE SIDE

4. IMPROVED POSTURE RESULTING FROM PROPER BACK SUPPORT CAN REDUCE MUSCULAR FATIGUE IN NECK & BACK



5. MOLDED BACK HELPS MAINTAIN BALANCE AND CAN BE MADE TO ACCOMMODATE VARIOUS ANATOMICAL CONDITIONS

The designer's next step was to find a suitable material to cover the foam. The requirements dictated that the upholstery be flame resistant, breathable and washable. In addition, the fabric had to resist heat build-up, be water- and stain-resistant and be capable of stretching over various other materials. Burridge selected a double-knit, nylon fabric which is flame bonded to ¼ in. open-cell Scott foam and then treated in a water-repellant solution. Finally, both upholstery and foam cushion are placed onto a ⅛-in. thick FRP shell with a non-skid undersurface.

Concurrent with his materials-hunt, Burridge was responsible for evaluating various reusable impression-casting techniques and foam-pouring systems. In fact, most of the program was developed under one roof. "We felt that since this was all new territory," says Burridge, "we had best encounter all the problems at the outset. It's cheaper to make your mistake at the beginning than halfway through production."

"We designed and built our own plastic bags filled with tiny styrofoam beads. We even had to design and build our own foot-activated vacuum pumps." But by handling nearly every phase of the system's development personally, Burridge developed what he describes as an inventor's belief in the product. "The learning curve for me was tremendous. Not only did I have the opportunity to develop and design from concept through to production, but also build all patterns for the seats, foam molds, pump housings, etc. It was like materials and techniques class at Philadelphia College of Art all over again."

Throughout the two-year development program, Contourpedic was assisted by the New York University Medical Center in particular, by being allowed to use their facilities for weeks-on-end testing of impression techniques, foam pouring systems, production feasibility, and product acceptibility. The result is a portable, 12-lb. seat (available in two sizes) that fits most wheelchair, car, theater and airplane seats. Each seat is provided with a carry handle, and will accept accessories such as an adjustable head support and removable side supports that can also swing away for patients who transfer laterally.

Contourpedic has established a staff trained in both creative production techniques and medical procedures for evaluating and building the seats, at a rate of 180 per month, from the incoming impressions. Based on the success of the wheelchair seat, Contourpedic is now also manufacturing a custom-molded dentist's chair, complete with a permanent base, because of the high incidence of back fatigue encountered in the dentistry profession. However, in either case, "the product does what Frank Low had hoped it would," says Burridge. "It allows people to sit more comfortably longer without adverse effects."—*D.M.*

EDITOR'S NOTE

The preceeding article was made available through the courtesy of DESIGN NEWS, a magazine devoted primarily to industrial design and its impact on our daily lives. The problem presented is one that deals with human engineering and the basic design process of developing a product to fit a particular need. Graphics is the major medium used to develop and to present the design concepts. The examples of design sketches are of the type that most graphics teachers encourage their students to use as a means of originating solutions to a creative problem.

This real-life situation is one that can be easily adapted to a classroom assignment to develop a student's knowledge of designing to fill a need. Not only will his ability to use graphics be increased but he will be applying the principles of the total design process that is so important to engineering students.

Can you see applications of this problem to your classroom?

CREATIVE ENGINEERING DESIGN DISPLAY

WINNERS

The Creative Engineering Design Display was initiated by the Engineering Design Graphics Division to encourage students and professors to display the fruits of their labors and to offer them the recognition they rightly deserve. This year at the Annual ASEE Conference held at Colorado State University there was a total of 72 outstanding entries: 47 Freshman, 3 Sophomore, 7 Junior, 12 Senior and 3 graduate. There were no entries in the co-op division. The outstanding industrial support received by the committee allowed cash rewards to be given to the winners of the following catagories:

FRESHMEN DESIGNS

1st Place

Arizona State University

Multi-Purpose Camping Equipment

2nd Place

Northeastern University

Pin-Ball for Quadraplegic Wizards

3rd Place

Iowa State University

International Cooling Equipment, Inc.

4th Place

Iowa State University

Clear Visibility Company

SOPHOMORE DESIGNS

1st Place

University of Wisconsin - Milwaukee

Blood Sucker

JUNIOR DESIGNS

1st Place

Milwaukee School of Engineering

The Cardiac Quadra Monitor

2nd Place

University of Detroit

Urban Vehicle: An Alternative Design

SENIOR DESIGNS

1st Place

Southeastern Massachusetts University

Gym Pathway Footbridge

2nd Place

University of Akron

Video Output on a Hybrid Computer

GRADUATE DESIGNS

1st Place

Drexel University

Edu-Cette

BUDGET

The committee's budget of $2,025 for 1975 was the largest ever. The major areas of expense included printing and mailing, judges' luncheon and banquet tickets, awards (certificate, cash, and plaques for the schools), and the expenses involved with the bringing of the 1974 Freshman winner to CSU.

The committee wishes to gratefully acknowledge the following companies and individuals for their financial support:

Celanese Corporation
Frank Oppenheimer
E. I. duPont de Nemours & Company
Boeing Company
Monsanto Company
General Electric Corporation
McDonnel-Douglass Corporation
Scott-Engineering Sciences
Union Carbide Corporation
Bell Laboratories
Bill Whitworth
Marion Power Shovel Company
Xerox Corporation
CH_2M Hill
John Wiley & Sons, Inc.
Honeywell
ASEE National Headquarters

The Memorial Award by the family of James S. Rising

JUDGING

The committee also wishes to acknowledge the twenty-nine judges that gave of their time and expertise to evaluate the displays.

Professor Donald D. Anderson
Michigan State University

Professor Daniel L. Babcock
University of Missouri-Rolla

Dr. Maurice H. Carlson
Lafayette College

EVALUATION SHEET FOR
CREATIVE DESIGN PROJECTS

Project Number________________ Academic level________

ITEM	VALUE	SCORE
Problem Statement (a) Need (Practicality) (b) Goal (c) Design Parameters	5	
Conceptualization Development of system physically, and/or mathematically, and/or graphically.	5	
Creativity Evidence of creative thinking on the part of the designer.	5	
Analysis The conciseness and professional approach followed in arriving at a final concept.	5	
Final Design Feasibility of the final result.	5	
Presentation Clear explanation of professional quality, conforming to contemporary engineering standards, reducing the concept of practice. Explanation may be verbal and/or graphical, including, as applicable, but not limited to: (a) Drawings/sketches. (orthographic pictorial, or schematic, as applicable) (b) Mathematical models or graphs. (c) Computer printouts. (d) Photographs. (e) Scale model.	10	
TOTAL	(35 max.)	

Judge________________
Signature

Scoring: 5 = Outstanding (Approaching professional standards)
4 = Above average (Showing extra effort and interest)
3 = Satisfactory (What one would expect with reasonable effort)
2 = Minimal (Poor work)
1 = Unacceptable

Figure 1: The form used to judge the projects.

Mr. Paul Doigan
General Electric Company

Mr. Carl H. Hough
Boeing Company

Professor Lawrence A. Jehn
University of Dayton

Dr. Ivon Lowsley
University of Missouri-Rolla

Mr. C. E. Johnson
Monsanto Company

Mr. H. L. Douglas
LTV Aerospace Corporation

Professor Samy E. G. Elias
West Virginia University

Professor David W. Fowler
University of Texas at Austin

Professor Herman L. Henry, Jr.
Louisiana Polytechnic Institute

Professor A. R. Holowenko
Purdue University

Dr. David R. Reyes-Guerra
Engineers Council for Professional Development

Professor James F. McDonough
University of Cincinnati

Dr. Carl Zorowski
North Carolina State University

Dr. E. P. Segner, Jr.
University of Alabama

Norman F. Forster
Bell Laboratories

Ken White
IBM

Dr. J. A. Jordan
Ohio State University

Professor Israel Katz
Northeastern University

Mr. Frederick H. Roever
McDonnell Douglas Corporation

Dean George P. Schmaling
Southern Methodist University

Dr. A. H. Soni
Oklahoma State University

Dean John A. Weese
Old Dominion University

Mr. N. L. Snowden
Caterpillar Tractor Company

Dr. Herman Cember
Northwestern University

Professor Lawrence Henschen
Northwestern University

Professor James O. Morgan
Southern University

Mr. Ernest Brown
Union Carbide Corporation

This year's judging took place in two rounds. The displays were set up in random order and just before the judging began, each project was assigned a number. This number appeared on the evaluation form, Figure 1, used by the judges. Only the freshman and senior projects were evaluated during the first round of judging. Each display was evaluated by three different judges and each judge was assigned six displays by giving him six evaluation forms with the display numbers on them. The judges were allowed four hours after which the committee tallied the evaluation forms. A logical break in the scores yielded the top 11 freshmen entries and the top four senior entries.

The second round of judging was carried on in much the same fashion with the exception that each entry was evaluated by five different judges and each judge was assigned two freshman entries and three upper division displays to evaluate. The judges were again given four hours to complete their work. The winners were announced at the Engineering Design Graphics Division Banquet on Tuesday night.

DUTIES OF THE COMMITTEE

Figure 2 is an attempt to show the duties of the committee as interpreted by this years chairman. The committee functioned very well with four members this past year.

The judges were obtained by Professor Leon Billow of the Naval System Engineering Department, U.S. Naval Academy.

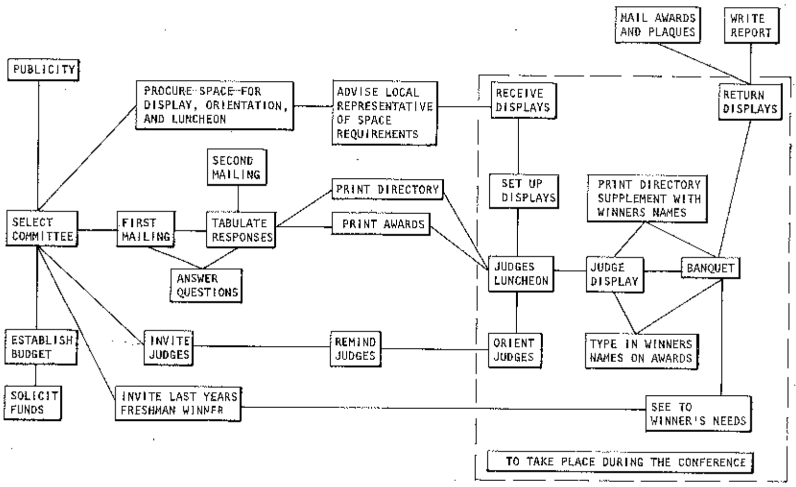


Figure 2: The activities performed by the Creative Design Project Committee in organizing and producing the exhibit at Colorado State University.

The awards and the judging at CSU were handled by the chairman of Division's Awards Committee, Professor Ron Pare', of Cogswell College.

Local arrangements which included finding space for the displays, judges orientation, and judges luncheon, receiving displays that were shipped, and printing the Directory Supplement were handled by Professor Paul Wilburn of the Mechanical Engineering Department at Colorado State University.

The chairman of the committee, Tim Coppinger, Engineering Design Graphics Department, Texas A&M University, was in charge of publicity, raising funds, and cooordinating the other functions of the committee.

THE FUTURE

There are many questions for future committees and the ASEE membership to answer concerning the Creative Engineering Design Display Committee. A few of the questions that occurred to this year's committee are listed below:

Should the display be limited to freshmen participation in view of the limited number of entries in the upper division?

Is there a way to discourage late entries?

Should the displays adhere to a major theme established by the committee?

Should students be allowed or encouraged to demonstrate their displays to the judges?

Should there be a committee established to raise funds for all division activities?

Should an invitation be issued to one of the freshmen winners to be the guest of the committee and the division at the 1976 annual meeting be continued?

Any comments or discussion of these or other questions about the future of the display should be addressed to the committee chairman.

It is with deepest regret that the committee has to announce that one of the winning projects was removed from the display area by someone other than the owner. Since maximum visibility is not consistant with maximum security it is recommended that only copies of written reports and drawings be submitted to future competitions.

Again the committee wishes to thank all of those involved for making the 1975 Creative Engineering Design Display a success.

Respectfully submitted,

J. Tim Coppinger
Engineering Design Graphics
Texas A&M University

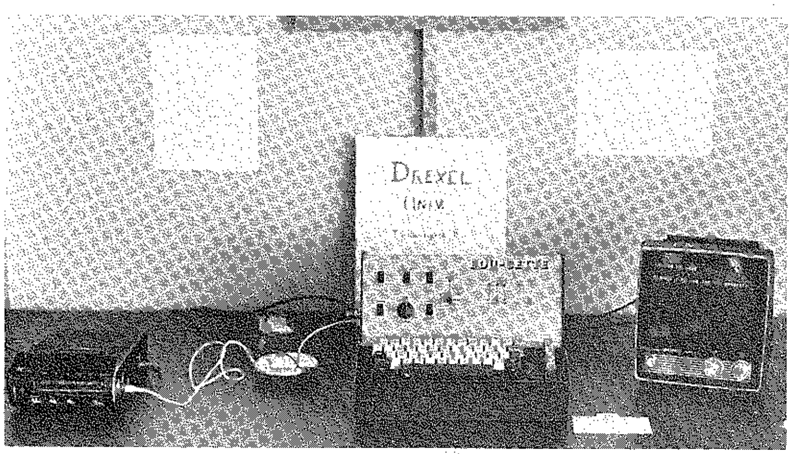


Figure 3: First place winner of the Graduate Division. EDV-CETTE, a low cost educational terminal, by John Finke. Sponsoring professor: Umesh Saxena of Drexel University.

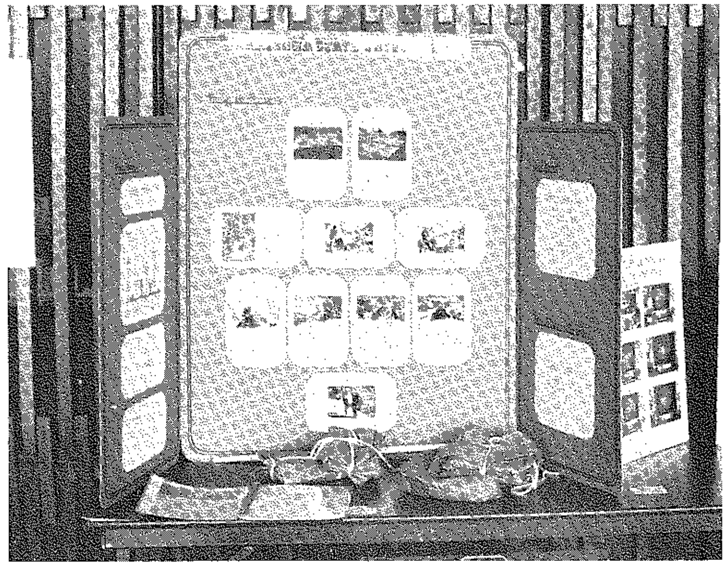


Figure 4: First place winner of the Freshman Division. A multi-purpose camping equipment, by students M. Cannon, L. Cannon, T. Peterson, D. Shaw, J. Severance, and J. Robbins. Sponsoring professor: Charles E. Downs of Arizona State University.

Figure 5: First place winner of the Junior Division. A cardiac quadra monitor, by M. Annachino. Sponsoring professor: Vincent Canino of the Milwaukee School of Engineering.

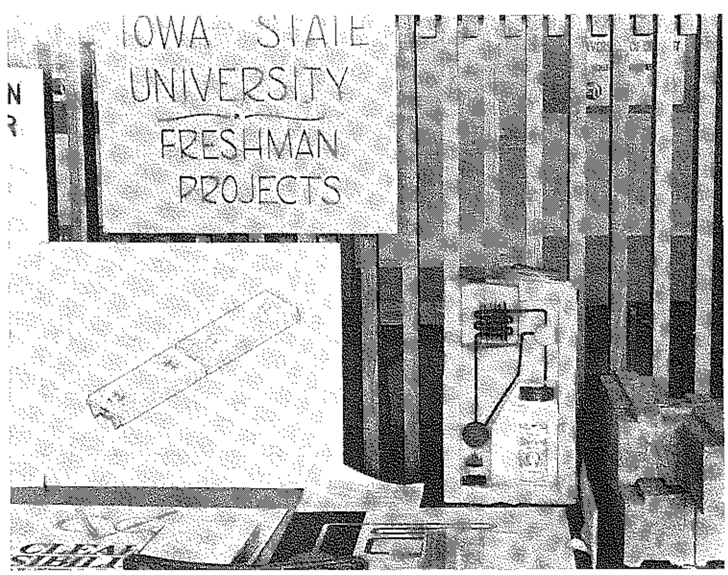
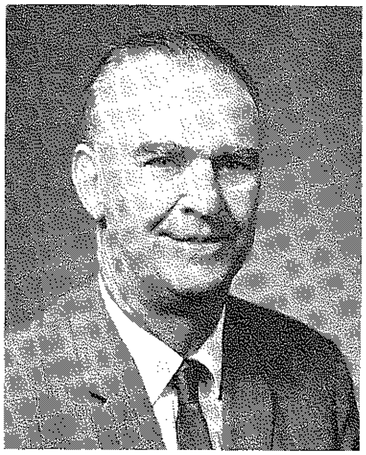


Figure 6: Third place winner of the Freshman Division. An international cooling system, by students R. M. Dougherty, R. B. Carter, J. D. Hoeman, A. G. Beard, J. A. Haas, and J. E. Van Houten. Sponsoring professor: Carl Sayre of Iowa State University.



DISTINGUISHED SERVICE AWARD

Robert H. Hammond

For twenty-eight years I have attended these annual banquets and watched the giving of the Distinguished Service Award to some real giants in our field. I can hardly believe that I am now here to accept that award. I can not place myself as their equal.

I was fortunate to have known and worked with some of those greats who have stood here before me. I learned much from them and have tried to pass that on to others. When I first joined this Division in 1947 I wondered, "How does one get to be a leader in the Division?" My mentor replied, "Get active in its committees." Since being in my present position I have tried to pass that attitude among my men. As I tried to activate their interest, I remembered something else my mentor said to me; "When you've got a good man moving, get out of his way and get behind him." This also I have tried to do. Two of the results you have heard from at this Conference: Garland Hilliard and Byard Houck. There will be others in the near future.

The greatest things I have gained from these years with the Division are friends. Many of my closest friends are in this room tonight. I look forward, from the conclusion of one Conference to the beginning of the next, to the opportunity to renew the fellowship that these meetings make possible. And some of the most enjoyable times in between Conferences are spent in the company of some of those here tonight.

Work is defined as sustained physical or mental effort to overcome obstacles. Work therefore has somewhat of an unpleasant connotation. But I have enjoyed everything that has led me to this moment. So I must conclude that I am here through grace. I have received a lot of undeserved help throughout my career.

Right after I returned from overseas activities I met and married my number one helper, Shirley. She has always been my strongest booster; never complaining about the nights spent at the office in writing and in preparing new course material. Then when I started teaching at Purdue, a real giant took me under his wing and gave me his love for Engineering Graphics and his outlook on the teaching profession. That was Warren Luzadder, a former Chairman of this Division and recipient of the Distinguished Service Award. Also there was Howard Porsch who also was a Chairman of the Division and who received the Distinguished Service Award. Then when I returned to the United States Military Academy to continue my career there, my boss was Jack Jacunski, another former Chairman and recipient of the Distinguished Service Award. I also was privileged to work with Bill Rogers at West Point, another former Chairman of this Division, and with Paul Reinhard of the University of Detroit who was another recipient of the Distinguished Service Award. Think of it; I was privileged to work for and with four Chairmen and four Distinguished Service Award winners. So you can see that I was, by fortuitous circumstances, given a lot of help during the formative years of my career.

But the greatest help came in the latter third of my career when I found that when tasks seemed too great to solve; when I didn't know what to do next; that I could turn to my Lord and Savior and lay everything on Him and He would give me the necessary decisions. So in reality and truth, tonight you are honoring, not me, but through me, my Lord and all those He used to direct and shape my career. In their names, I thank you for this honor.

ENGINEERING DESIGN GRAPHICS DIVISION

THE AMERICAN SOCIETY FOR ENGINEERING EDUCATION

THE DIVISION OF ENGINEERING DESIGN GRAPHICS

American Society for Engineering Education

has bestowed upon

Robert H. Hammond

its highest honor

THE DISTINGUISHED SERVICE AWARD

for his invaluable contributions to the Division and to Engineering Education, and as an expression of the high esteem of his professional colleagues.

Scholar, soldier, teacher, leader; Robert H. Hammond has served the engineering profession, its students and practitioners, for over thirty years. His credentials as an engineering educator include lecturer, author, director of innovative and successful instructional programs, teacher, counselor, friend and confidant of both students and staff. In his quiet efficient manner, Bob has significantly influenced the direction of introductory engineering curricula over the past decade.

Bob joined the Society and our Division in 1946. Following yeoman service on many committees and able leadership in both appointive and elective offices, he was elected Vice-Chairman and Chairman-Elect in 1964. He served with distinction as Division Chairman for 1965-66. As a Past-Chairman, Bob has continued his active and energetic service to the Division as Chairman of the Policy Committee and advisor to succeeding administrations. He has represented our Division with dignity and acumen, and has consistently personified the noble ideals to which we aspire.

In appreciation for his leadership, inspiration, and hard work in our behalf, and as a token of our friendship and esteem, we, his colleagues, present to Robert H. Hammond our Distinguished Service Award for 1975.

Presented this day June 18, 1975
at the Annual Conference, Colorado State University

Claude Z. Westfall
Chairman

Paul S. DeJong
Secretary-Treasurer

Robert D. LaRue
Ohio State University

Chairman's Message

While many individuals made significant contributions to the Division during the past year, I should like to recognize four individuals whose efforts were truly outstanding. First, Claude Westfall for his performance as Chairman and, especially, for keeping me informed as to what was going on in the Division. Second, Byard Houck for the excellent program presented at the 1976 Annual Conference. Third, Tim Coppinger for the Creative Engineering Design Displays at the Annual Conference. Last, but certainly not least, Bob Hammond who, as chairman of the Policy Committee, was largely responsible for the latest revision of the Division Bylaws.

In the not too distant past the main function of a Director of the Graphics Division was to attend the two meetings of the executive committee held each year. The current Bylaws (approved at the Fort Collins meeting) clearly delineate the functions and responsibilities of five Directors. This much needed change should increase the potential of the Division as an effective part of ASEE.

Unexpected resignations this summer have reduced the number of functioning Directors to three. The appointments of two new Directors will be announced in the near future. Transition from old to revised Bylaws appears to be progressing smoothly. Jim Earle, Director Publications, and Gordon Sanders, Director Programs, have been carrying out excellent operations. Klaus Kroner, Director Liaison, has made recommendations which should produce good results from the committees assigned to his supervision.

Another result of the Bylaw revisions was to define function and responsibilities of committee chairmen. It is expected that committees will now justify their existence by the production of some tangible results. This statement does not indicate blanket condemnation of all Division committees. Many have done outstanding work. On the other hand, an equal or greater number have remained static during recent years. Recommendations as to retention or dissolution of existing committees will be presented to the incoming chairman and executive committee prior to the 1976 Annual Conference. One committee activity, especially from committees assigned to the Director, Technical and Professional, would be the sponsorship of papers for presentation at Division meetings and/or publication in the ENGINEERING DESIGN GRAPHICS JOURNAL.

ASEE Headquarters indicates that this Division has approximately 800 members. Subscriptions to the EDGJ by Division members total only 270. Only 207 ballots were returned for the 1975 Divisional election. Since each ASEE member is permitted to affiliate with three divisions or committees within the Society, it would appear that less than one-third of those who have indicated an interest in the Division made it their first choice. A survey will be conducted this year to attempt to determine order of divisional choice by our "members" as well as interest choices for activities within the Division.

If you have suggestions, comments, or criticism as to the operation of the Division, please let me hear from you. Communication is one of the primary interests of this Division, but unfortunately - it seems to go only one way.

Robert D. LaRue
Ohio State University
1975-76 Chairman
Engineering Design Graphics Division
ASEE

Annual Executive Meeting

Colorado State University, June 16, 1975

Following dinner, the Executive Committee of the Engineering design Graphics Division held their annual meeting.

Chairman Claude Westfall opened the meeting at 6:50 P.M. by having the minutes of the last meeting presented by Secretary Paul DeJong of Iowa State University. DeJong also presented the Treasurer's report that was accepted as read by the committee; this report was followed by a discussion of various financial matters affecting various operations within the Division. Funds for the Rising Award were transferred to the treasurer by Gordon Sanders.

Gordon Sanders, the program director for the mid-year conference that will be held at Arizona State, announced the theme as being "New Frontiers" and reviewed the program that had been prepared for the conference. The program will begin Wednesday, January 7, 1976, at Tempe, Arizona. The annual conference will be held at the University of Tennessee in 1976; Jack Brown will be program chairman and Charles Brown will be Division host. The 1977 mid-year conference is tentatively scheduled for Montreal, Canada with Claude DeGuise serving as program chairman and host.

The publications staff was represented by Jim Earle and Clarence Hall who discussed the past year's operation and aspirations for the future of the Journal.

Bill Rogers reported the nominations for officers for the next Division election. The slate of nominees that were accepted by the committee are:

Vice-Chairman 76-77: Amogene DeVaney and George Devens

Director of Publications 76-79: Paul DeJong and Ed Knoblock

Secretary-Treasurer 76-79: Robert Foster and Frank Marvin

Bob Hammond of the policy committee discussed the proposal that the Chairman and Vice-chairman serve two year terms instead of one year terms. Several sides of the question were presented with no strong consensus of opinion. It was concluded that the policy committee will study the problem and report to the Executive committee at a later date.

Tim Coppinger to Texas A&M reported on the Design Display as having 47 freshman entries, 3 sophomores, 5 juniors, 12 seniors and 3 graduate entries. A total of $800 of prise money was collected to award to the winners.

In-coming Chairman, Bob LaRue of Ohio State University, expressed interest in maintaining an effective Division; he recognized Claude Westfall for his assistance during the year.

Chairman Westfall suggested that thought be given to some plans to recognize the Golden Anniversary of the Division at the Annual Meeting at Fresno State College in 1977. 1978 is the anniversary year of the Division.

Five past chairmen, Leighton Wellman, Ivan Hill, Bob Hammond, Bill Rogers and Jim Earle gave brief statements summarizing their tenures as chairmen of the Division.

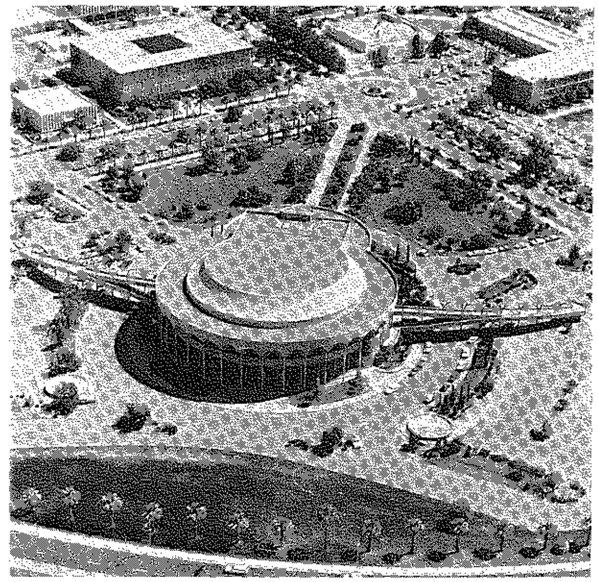
The meeting concluded with a discussion of the possibilities of conducting a summer workshop in conjunction with the annual meeting sometime in the future. Clarence Hall suggested a descriptive geometry workshop; another mentioned was a study session dealing with the major applications of True Position Dimensioning with Webster Christman as the coordinator for such a course.

The meeting adjourned at 9:45 P.M.

Mid Year Conference

By Robert Foster
Pennsylvania State University

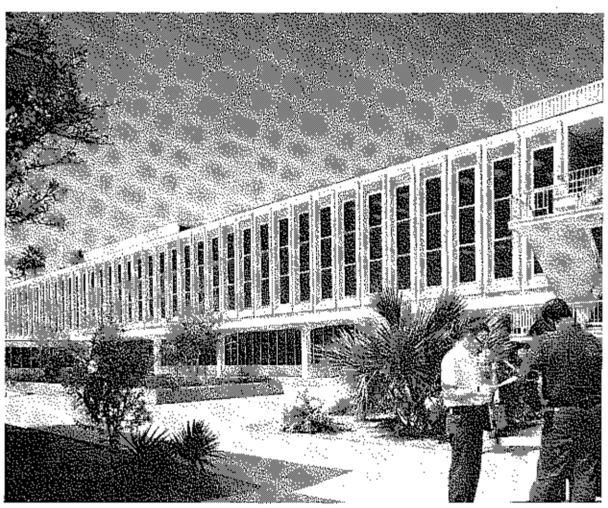
ARIZONA STATE UNIVERSITY
Tempe, Arizona



Arizona State University will host the annual mid-year meeting of the Engineering Design Graphics Division this coming January 7-10, 1976. Dr. George Beakley and Prof. Don Autore will coordinate facilities while Bob Foster of Penn State will expedite the technical sessions.

Arizona in January is a welcome relief from northern winter. The attractive climate coupled with a most interesting campus promises a rewarding experience. The ASU campus is just twenty minutes from Sky Harbor International Airport and is within easy walking distance of a Howard Johnson's and a Holiday Inn.

The 420 acres of ASU feature an abundance of desert-type plants and exciting architecture. Frank Lloyd Wright, in one of his last designs, created the Grady Gammage Memorial Auditorium. Most buildings are quite new and well suited to the comfort and convenience of conference participants.



Tempe adjoins Phoenix with its extensive shopping centers and Civic Center. A popular attraction is the Heard Museum with its famous display of Indian art. North of Tempe lies Scottsdale where winter vacationers find numerous art galleries and craft shops.

Technical sessions will be held on campus and will offer a unique opportunity to interact with speakers and attendees. A study of the program shows that each half-day session includes ample time for reactions and discussion. With the theme "New Frontiers" we will probe how engineering graphics relates to industry, and industry to us.

A social highlight will be the Thursday evening gathering at Rawhide, a reconstructed 1880 town north of Tempe. Much of the time will be spent enjoying a superb western meal, but opportunity will be given to sample the various shops operating in an authentic environment.

You should be receiving soon a packet in the mail describing registration details. Be on the lookout for it! Be in on a great combination of technical sessions and western hospitality!

Program

WEDNESDAY AFTERNOON, JANUARY 7

3:00 - 5:00 REGISTRATION AND CONVERSATION

6:00 EXECUTIVE COMMITTEE DINNER
(For Executive Committee Members, Wives, and Invited Guests)

8:00 SOCIAL HOUR
(All Members, Wives, and Guests)

THURSDAY MORNING, JANUARY 8

8:00 - 9:00 REGISTRATION PLUS TABLE EXHIBITS

9:00 -11:40 GENERAL SESSION

Presiding: Arvid R. Eide
Iowa State University

GREETINGS FROM ARIZONA STATE

Lee P. Thompson, Dean, College of Engineering and Applied Sciences
Arizona State University

9:10 "What Industry Needs in Design Engineers"
Anthony T. Turner, Fellow Engineer
Westinghouse Electric
Phoenix, Arizona

9:50 "What Engineering Design Graphics Teachers Need from Industry"

10:30 COFFEE BREAK

10:50 Reactions and discussion from the audience with the first two speakers

12:00 BUSINESS LUNCHEON

Presiding: Robert LaRue
Chairman EDGD, Ohio State University

THURSDAY AFTERNOON, JANUARY 8

2:00 - 4:15 GENERAL SESSION

Presiding: Robert D. Harvey
College of DuPage

2:00 "How Can I Help Thee? - Let Me Count the Ways"
Herbert H. Gernandt
Jet Propulsion Laboratory
Pasadena, California

2:40 "Human Factors Education as a Part of the General Engineering Design Graphics Philosophy"
John G. Kreifeldt, Tufts University

3:20 QUICK COFFEE

3:30 Dialogue between audience and the panel of afternoon speakers and moderator with the theme, "New Frontiers in Graphics: Fact or Fancy?"

4:15 ADJOURNMENT TO COMMITTEE MEETINGS

THURSDAY EVENING, JANUARY 8

6:00 Leave Tempe for "An Evening at Rawhide" - steak dinner and western atmosphere in a reconstructed 1880 village. Open to all.

FRIDAY MORNING, JANUARY 9

8:00 - 9:10 TABLE EXHIBITS

9:10 -11:40 GENERAL SESSION

Presiding: Garland K. Hilliard
North Carolina State University

9:10 "Geometry and Interactive Computer Graphics"
Steve M. Slaby, Princeton University
Speaking on recent innovations in teaching

9:50 "The Blackboard Re-visited"
Melvin L. Betterley
University of Iowa
Relating to 'old' teaching methods that are still great

10:30 COFFEE BREAK

10:50 Group discussion: "Where does this conference leave EDGD?" - a probing analysis of our mission. To be moderated by the Executive Committee Members.

FRIDAY AFTERNOON, JANUARY 9

12:00 LUNCHEON AND SPEAKER

Tom Ryan, Vice-President
Del E. Webb Development Co.
Mr. Ryan will illustrate the engineering planning behind this world-famous retirement city.

2:00 Leave for tour of Sun City

FRIDAY EVENING, JANUARY 9

Various entertainment opportunities listed

SATURDAY, JANUARY 10

Opportunity to visit the greater Phoenix area

book reviews

by Robert Foster
Pennsylvania State University

DESIGN: SERVING THE NEEDS OF MAN, by George C. Beakley and Ernest G. Chilton, Macmillan Publishing Co., Inc. New York 1974, Cost: about $12.00

Many persons may be familiar with the Beakley & Chilton text, Introduction to Engineering Design and Graphics, first published in 1973. The book under review is largely a subsection of the 1973 text, but it offers design needs and techniques for a somewhat different clientele.

The volume is well named. Its emphasis is on design and how it relates to man. Herein lies the strength of this book. The link between man's needs and the role of design is well developed. The authors strive to motivate the student to identify design as an exciting approach to solving societal problems.

The first major section of the book sets forth the challange to solve problems effecting man. The role of creative thinking is interestingly developed. Case studies of design in nature are thoroughly engrossing. The chapter on aesthetics is less stimulating, however, in that it is difficult to give guidance in this nebulous area.

The second section deals with the design process. Motivation of the reader is still a strong theme, but efforts are made to be more technical. Usually, these efforts succeed.

The chapter on the design process itself is thorough and excellent as is the chapter on human factors. The portion on materials and processes is conventional in content but is presented in a refreshing layout. The chapters on design economics and design decisions are weaker, due largely to their brevity.

The appendices encompass much beyond the ordinary, including anthropometric tables, PERT, and case studies. The usual inclusion of measurements, units, and standard parts specifications are thorough.

The layout of the text is lavish, as is the parent volume from which it has been extracted. Much imagination has gone into page format, and use of color tones and illustrations. One could comment that several dollars could have been saved the buyer if margins were tighter and superfluous photographs were omitted. However, much of the zest of the volume would be lost. For a book which seeks to motivate and stimulate, zest is an intangible but necessary ingredient.

The book is recommended for those situations which seek to introduce noncommitted persons to the vital, dynamic elements of design. A deeply technical treatment must be found in subsequent courses and books. However, as a volume to encourage a student to take that first step toward understanding and using design to serve man, the book is among the best available.

BOOK REVIEW by Robert Foster, Pennsylvania State University

THE THEORY OF DESIGN by Peter C. Gasson, Barnes & Noble Books, New York, 1973. about $19.00

This text was written and printed in Great Britain. Therefore, its use in American engineering classes might be considered unique, but useful if an international prespective in design theory is desired.

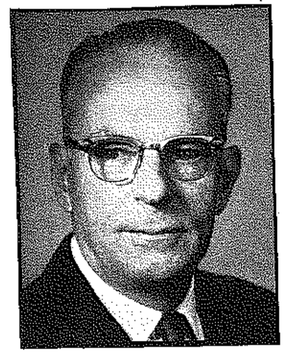
Operationally, the 230 pages are divided into three parts. The first deals with the interaction of human beings and the constraints of design. The second is a large section of some 130 pages concerned with a fairly classical treatment of materials (i.e. relationship of physical laws to design). The last section covers the basic method of solving design problems, from problem recognition to synthesis and implementation.

The text is an honest, reasonably thorough survey of design theory. The author appears to know his subject well. His background in mechanical engineering is evident in that most examples are from that field.

To Americans who may be used to imaginative layouts in a text, the present book may appear to be conservative in terms of illustrations, margin control, and lack of color plates. Still, the text costs about 8 cents per page, a figure which migh imply a wider use of more costly printing techniques than is evident.

The technical matter is above the level of entering freshmen, especially in regard to equations from engineering mechanics and machine design. Late freshman year or sophomore year would seem a better fit to student capabilities.

The book is not one whose chief focus is to motivate the student to embrace design. However, if the text is supplemented with other input, such as case studies, films, or field trips, it can be successfully used as an entry text into the exciting world of design.



Cleland Retires

Professor Samuel M. Cleland of the Engineering Design Graphics Department of Texas A&M University retired from active teaching on May 31, 1975 after completing 34 years of continuous service at that institution.

Professor Cleland was awarded the title of Professor Emeritous upon his retirement. He will continue to offer counsel and assistance to the department although he will not be actively engaged in teaching.

Professor Cleland began his career as a teacher in Texas public schools prior to college-level teaching and later attended graduate school at the University of Mexico in 1934. He completed graduate work at Texas A&M University in 1941.

In 1965, he was honored as the recipient of the General Dynamics Award as the outstanding engineering faculty member at Texas A&M, one of the highest honors given to a faculty member. Professor Cleland has been active as an illustrator, author and designer, having co-authored fourteen problem books and illustrated many others.

Professor and Mrs. Cleland reside at 708 Pershing, College Station, Texas.

EDWARD HOYLE STINSON

Stinson Retires

Edward Hoyle Stinson, Professor of Engineering Graphics at North Carolina State University, retired at the end of the spring semester in 1975 after 34 years of devoted service to the University community and a varied career in the fields of education and communications.

A graduate of North Carolina State University, Prof. Stinson began his career in the high schools of North Carolina. In 1941 he accepted a position as Instructor of Engineering Graphics at North Carolina State University where he taught Descriptive Geometry and Machine Components Design. During World War II, in addition to his teaching responsibilities, Prof. Stinson served as an announcer and commentator for two radio stations in the Raleigh area and taught Graphics at several major military institutions through the North Carolina State Extension Service.

Prof. Stinson later became one of the leading pioneers in developing innovative methods and techniques for teaching Engineering Graphics on Educational Television and taught a very successful and popular television course in Graphics for several years to a vast audience of students across the state of North Carolina. In addition to teaching Graphics at various other colleges, he conducted numerous in-plant industrial education courses concerned with Structural Steel Design and Graphic Communications in Virginia, North and South Carolina. During his career at NCSU, Prof. Stinson also developed and directed the teaching of Engineering Graphics through correspondence.

An author of numerous workbooks in Engineering Graphics and Descriptive Geometry, Prof. Stinson also participated in the development and revision of courses in the Freshman Engineering and Student Services Division at NCSU. In addition to the above accomplishments, Prof. Stinson served as an advisor to not only engineering students but to faculty members and alumni as well during his 34 years of service.

With a deep sense of gratitude, the students and friends of Edward Hoyle Stinson wish to express their appreciation to him for his contributions to the field of Engineering Graphics and his untiring efforts as an educator to promote better understanding and communications among his fellowmen.

Call for Papers

Get involved! We need good papers, panels or other types of presentations for the upcoming meetings at the University of Tennessee June 1976 meeting and for the Mid-year meeting at Ecole Polytechnic, Montreal in late 1976 or early 1977.

Almost any topic related to work commonly done by the E.D.G. Division will be considered.

People from Industry, Technical Schools or A.S.E.E. members are encouraged to participate.

Write a concise but meaningful abstract and an accompanying letter of explanation. Please enclose three carbon or Xerox copies of both abstract and letter. These are needed for the program committee deliberations.

Mail all materials to:

C. Gordon Sanders
403 Marston Hall
Iowa State University
Ames, Iowa 50010

Limerick Laureates

The Latterday Limerick Laureates Laboratory launched by Gordon Sanders exactly a year ago has not fallen like a lead balloon but has been in the air and still climbing. The continued interest is reflected in this issue of the Journal. Below, in limerick form, is the winner of that judged to be the best 5-line limerick submitted, followed by the winning limerick itself.

The limerick judging committee of one
Announces the coveted award has been won
By McFarlin, Andrew U.
Of 2100 Moorpark Avenue
From San Jose City College where he is
Chairman

The Winning Limerick

There was a young draftsman from Yale
Who drew a design of a nail
The result was most rank
All head and no shank
For the drawing he'd forgotten to scale

Andrew U. McFarlin

In response to the award bestowed upon Irwin Wladaver, winner of the last issue's limerick contest, Dr. Wladaver writes:

<u>A Limerick in Praise of Limericks</u>

I'm pleased that my limerick's admired.
By contests I'm always inspired.
The five dollars you paid
Is five more than I've made
All the years since the day I retired!

Why don't you try your hand at limericks? Webster defines a limerick as "a light or humorous verse form of 5 chiefly anapestic verses of which lines 1, 2, and 5 are of 3 feet and lines 3 and 4 are of 2 feet with a rhyme scheme of aabba."

If you submit a 5-line limerick and it is selected to be printed in the <u>Journal</u>, we will make you a <u>Limerick Laureate</u> and send you <u>5 dollars</u>.

<u>Or</u>, if you submit the best last line to complete the following limericks submitted by Gordon Sanders we will also make you a <u>Limerick Laureate</u>. The cash award for the best last line is <u>one dollar</u>.

<u>Show Off?</u>

Wound tight at the top of his swing
Great power he intended to bring...
But he loosened his grip
When he felt something rip
______________________________.

<u>Design: Form and Function</u>

They admired her form, you could see -
The address and the rest, obviously...
Her waggle — follow through
Was too good to be true
But ____________________________.

<u>Clawed His Way to the Top</u>

An EDG Division Chairman called Claude
With a middle name "Zest" is no fraud -
For the job that he's done
And a year that's been fun -
We ____________________________.

Gordon Sanders

Send all limericks and/or missing lines to limericks to:

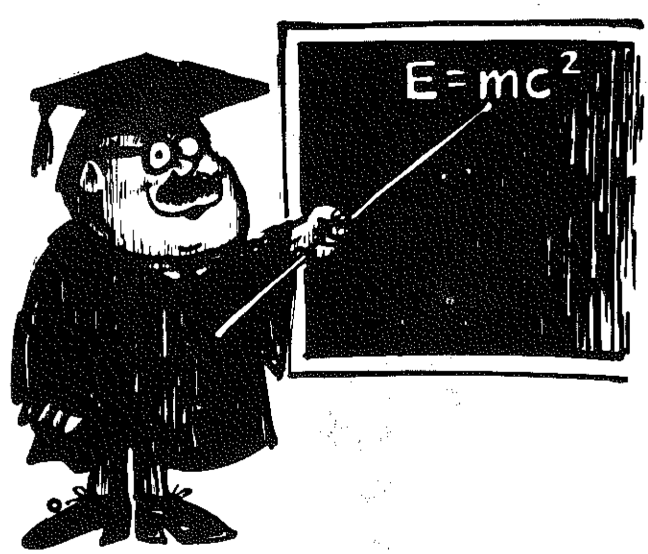
Garland K. Hilliard, Associate Editor
239 Riddick Hall
North Carolina State University
Raleigh, North Carolina 27607

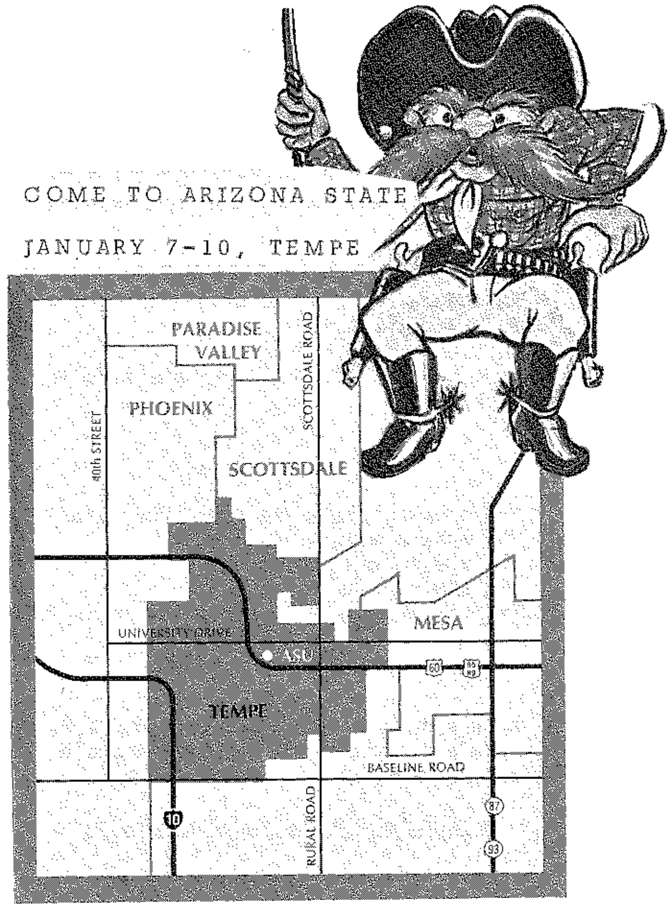
LIMERICK BY KEEDY

Here's my verse
Though not too terse
If it pleases
Or maybe teases
Print it for better or worse.

There was a professor from Vandy
Who with juggling of words was handy
When the chance for a fiver
Made his hope come aliver
He dashed off a limerick thought dandy.

Hugh F. Keedy
Professor of Engr. Science
Vanderbilt University





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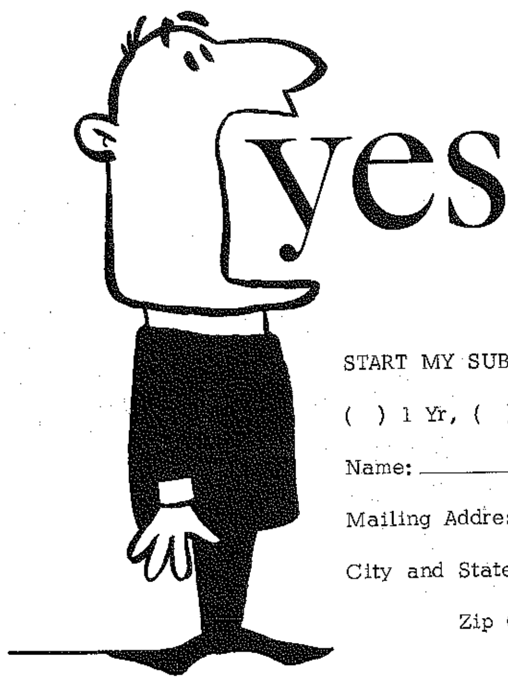

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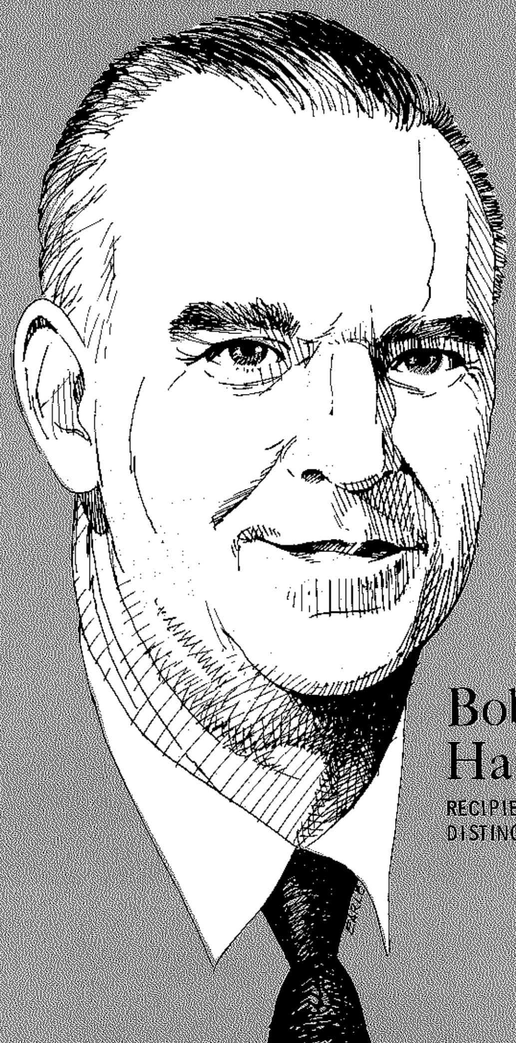

Bob
Hammond

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