

THE CREATIVE APPROACH

56-21

Creativeness - lots said - little done

Born with it

Children

Education) Destroy it
Experience)

Let's use it 10 times as well

Whole new fields of ideas

join wires together

mechanically

chemically

electrically

Light

Heat

cold

etc.

Imagination to conceive

Wisdom to judge

Courage to act

To get good results - need

Active and inquisitive mind

Fluorescent starter - 15

Pencil - \$.29

Constructive Discontent

Buy deflector

Colt 6-shooter

Inner Drive

Fail intelligently forward

Ideas alone - a dime a dozen

Background of Fundamental Knowledge

Law

Materials

Processes

Approach

Define Problem

Electric spring compressor \$90.00

Get off Route 25

Search for Method

Get idea

No negative

Chivaree

Pearl Diver

\$37.

Evaluate ideas - select ideas

1st 10 no good

Evaluate Chivaree

\$ sign

SET UP ACTION PLAN

FOLLOW THRU ACTION PLAN

Now for Creative Sessions

Ridicule

Suggest ridiculous

THE IMPORTANCE OF CREATIVE THINKING

CREATIVE THINKING OVERCOMES ALL OBSTACLES

Many of us, when trying to develop ideas, immediately find difficulty because of all of the factors to which these ideas must conform. For example, every change must be interchangeable. It must meet specifications. It must conform to past experience or it must agree with the text books. All of these stipulations have a purpose but they also throttle our thinking.

IMAGINATION WORKS BEST UNRESTRAINED

When you get in your car to go somewhere in a hurry, you do not start the engine, shift gears and then simultaneously apply the brakes and step on the gas. If you did this you would get nowhere. Yet effectively this is what we are doing when we let such stoppers as interchangeability, specifications, etc. stop our thinking. The imagination works best when unrestrained. You cannot be creative and be faced with a multitude of don'ts.

CREATIVE THINKING CAN GIVE THE SIMPLE SOLUTION

Many times we associate creative thinking with the highly ingenious or complex design. Creative thinking can be applied just as well to even the simplest problems. In one of our plants it was necessary to have a standard 3" pipe plug. It was designed, drawn up and then manufactured for a cost of \$15.00. A little creative thought would have prevented this waste and permitted it to be purchased at the local plumbing store for \$3.00.

CREATIVE THINKING MEANS DOING IT DIFFERENTLY

Creative thinking will take you into new ground. It will enable you to solve a problem when it seems unsurmountable. For example, during the war when stainless steel was scarce it was decided to make refrigerator trays out of aluminum. We had been welding the stainless steel trays but ran into difficulty welding the aluminum trays and getting suitable welds every time. A group of engineers were assigned to the project and they worked on it for 3 months. At the end of that time they still did not have the solution so spent another 3 months on it. Finally, the project was called off but one of the other engineers said, "Why drop it. Why don't you try to make these trays like an Indian would do it." The Manager of Engineering said, "What do you mean by that statement 'Making it like an Indian would'." The young engineer replied, "Oh, I don't know. I had nothing in mind except that I know an Indian wouldn't weld it." The Manager of Engineering said, "What are you doing" and after they reviewed his job he was assigned to the problem.

He first visited companies who made wire fence and wire forms and within two months he had the problem solved. It was rugged -- it was crimped and twisted -- not welded. For making it like an Indian would, he saved the Company three million dollars and won the Management Award.

ANYTHING NEW IS WRONG

Because creative thinking takes you into new ground you will find lots of people who will scoff at your ideas. This is frequently a sign that the idea is new. Kettering has said, "The consensus of studied opinion on anything new is always wrong".

CREATIVE THINKING WILL BRING YOU OPPORTUNITY

Creative ability is something that we all have and something that can be developed with use. It opens the door to tremendous opportunities for all of us. To learn how to think creatively and to practice it is our real problem.

**Creative thinking means new thinking which means breaking old habits and attitudes
and establishing new thought patterns.**

THE CREATIVE APPROACH

Have you ever considered what man has that has made him superior to other mammals. His body is faulty, and often supplemented by tools and by the servitude of other animals. His mind is untrustworthy, for it has to be backed by memo pads, reports, calculating machines, and mechanized brains. It is his imagination that makes him remarkable. It is this imagination that sets you and me off from the rest of the animal kingdom.

Picture for a minute a dog, he can be trained to make friends, recognize people, and even to associate cause and effect, but he can't exercise any kind of imagination or judgment. For if a dog had to choose between grade A or B eggs in a super market, all he could do is sit down and scratch his head, and with his back foot at that. A human has no trouble in picking out what he wants by exercising imagination and judgment.

Every child is born with unlimited imagination, and the ability to create untold numbers of fanciful illusions. He can make a stick his trusty rifle, or in the next minute a prancing stallion. Later you may find him probing the kitchen closet with it in an attempt to satisfy his quest for knowledge of the world about him. If we were to plot the child's creative development with time we would find the curve might look like this:

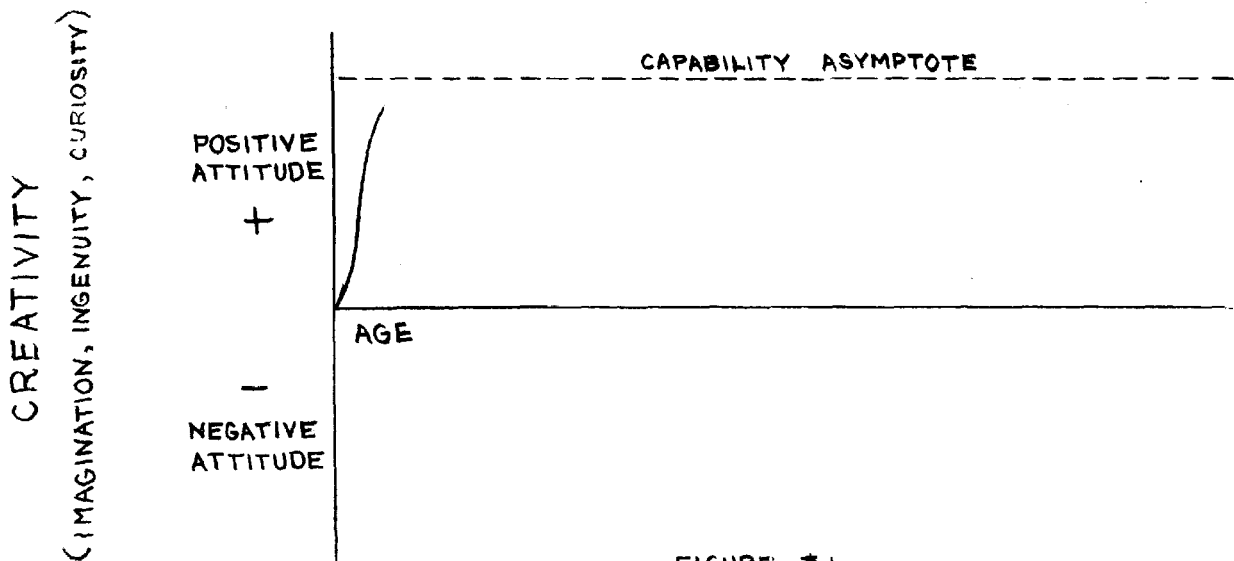


FIGURE * 1

From birth where he is a damp bundle of protoplasm, until he enters our educational system, his creative ability (as measured in terms of imagination, ingenuity and curiosity) is constantly on the increase. The proud parents of toddlers will testify to this.

In order that we can better understand our own present creative capability, I wish to continue this analysis of childhood development further. It is sometimes very discouraging when you look at the effect of our outstanding American educational system on creative development. Educators have found through testing that college graduates who presumably should be outstanding creatively are not at all. Why?

Well, a look at the system will lead to some clues. The education of a child starts with the dos and don'ts of social behavior. Individual differences are squelched in an effort to reach a median of conformity. You are well used to hearing "Johnny go over there and sit in the corner. I don't want you getting dirty," or maybe "The stove is hot, you will get burned." In school the exercises in science, arithmetic and English all lead to the feeling of the existence of one solution, one way, and the inelasticity of the scientific storehouse of knowledge. This tempering influence gives our children the ability to make sound judgments, and view negative ideas that don't conform. Thus, the curve shows a downward slope indicating creativity is being tempered by judgment or a judicial mind.

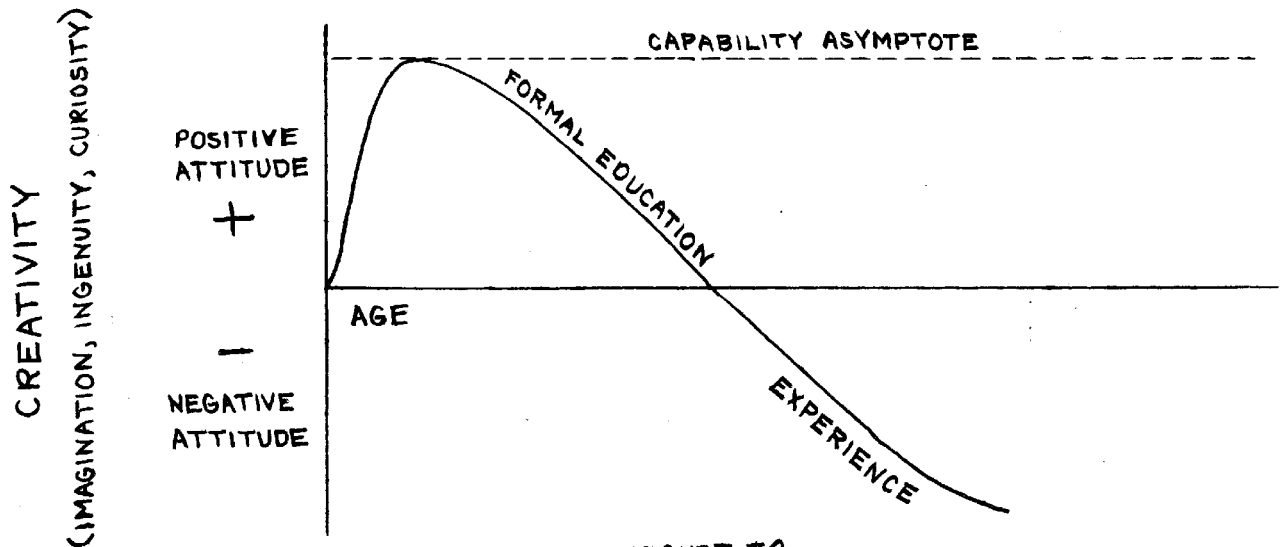
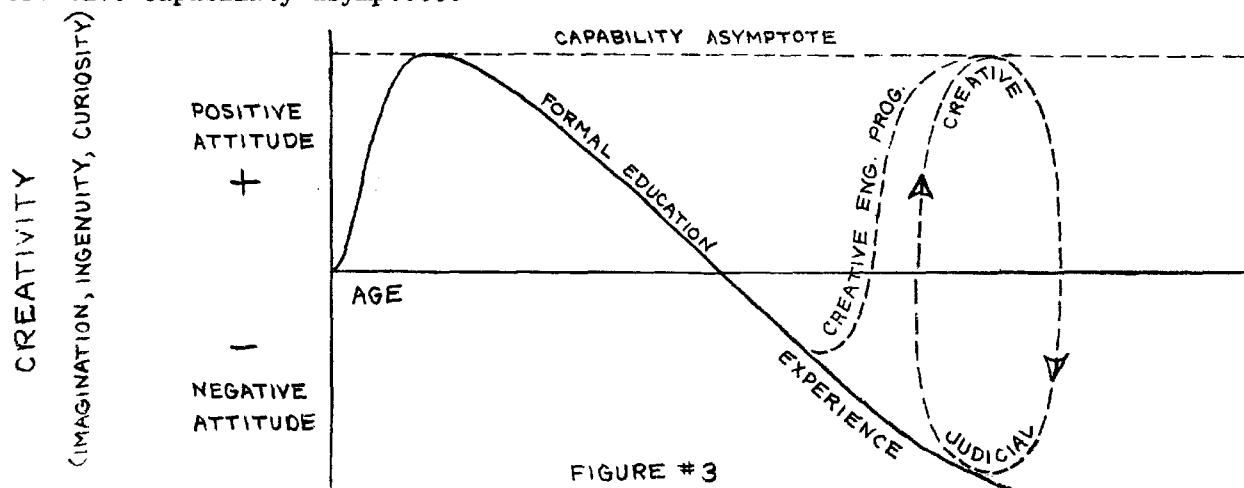


FIGURE #2

I'll leave it to your memory of college work to fill in those examples of college profs putting a premium on techniques to solve a problem. In fact, you will recall most problems are worked backward in college, as compared to later engineering experience. The text books always gave you the machine specifications and wanted its performance. How many times have you been faced with that kind of problem since?

Even engineering experience plays a harmful role in our analysis of what has been happening to your and my creative ability. You all have heard the remark "The poor fool, he'll learn by experience it won't work." Failures stunt our initiative to strive forward. Even this might not be too bad, except for our raised eyebrows to another's idea. We jump in and say, "Jim, that won't do the job -- because bla - bla - bla - !" Next time Jim stops and thinks twice before he even opens his mouth. Another idea thus may be lost for lack of a benevolent father. Thus the curve goes on down until we find ourselves saying no to every idea that comes along.

This, then, is the state of most of us. What can we do about it? The Creative Engineering Program has taken a page from Mr. Kettering's book of inventive philosophy (by the way, he's the noted inventor of the General Motors Co.). He says "Creative people are those who don't take their education seriously." This suggests the possibility of a person's recouping his losses and returning to his creative capability asymptote.



You will note a dotted loop between the asymptote and the judicial ability created as a result of education and experience. This indicates to us the possibility that a person's mind can, if he chooses, be as imaginative as he was in childhood, and yet later return to the every day world by applying his judicial mind.

The Creative Engineering Program has quite a goal set for itself then, if it is properly to develop creative talent in the General Electric Company. We believe that anyone can develop his creative approach by first of all recognizing what is the creative trait, and secondly, by organizing an approach to the problem he tackles.

Let's first take the word, "creative." It is a controversial word among the psychologists, administrators of engineering talent, and authors on the subject as a whole. On one point there is agreement. A person has to be born with creative ability, but apparently there are varying degrees. (By the way, women are credited with being more creative than their counterparts, not because of their childbearing role, but probably by a lack of an educational background or for psychological reasons). We know this trait applies to all walks of life, and is recognized mostly in music, painting, writing, and acting.

If a person is to be successful in creative work, the individual must possess a number of qualities. The first is an active and inquisitive mind. Curiosity, powers of observation, and the mental organization all tend to make the mind active and inquisitive. This quality is most often exhibited by the desire, when seeing something new, to take off the lid and find out what's inside. Can you identify the principle in a steam radiator check valve and how it differentiates between water, steam, and air? Likewise, do you know how a fluorescent lamp starter works, what makes the turn signal flasher operate on an automobile, and have you stopped to think as you pull up that zipper and flip the handle, what makes that flush valve flush?

Inquisitiveness leads to creativeness because of a simple question you can ask yourself. Can't we do it better than that? Then you immediately say what if _____ and suppose we do that _____. Then you are on the road.

Coupled with the Active and Inquisitive mind, we should find a constructive discontent. Simply stated, this is seeing the need by oneself. To illustrate --- you probably have had difficulty in traveling when a new baby was in the family because it had to be fed, and it was impossible to keep warm milk on hand. Someone saw a need and made a baby bottle warmer that plugged into the cigarette lighter receptacle. How many times have you scraped your white side-wall tires on the curb? Two fellows saw the need, one made a wire feeler to make noise as your car approached the curb. The other put buffer rings in the side-walls and marketed it under General Tire's name. The windshield washer, the hill holder, and the bug deflector, also Monowatt's line of plugs and receptacles all resulted from the obvious discontent on someone's part with the status quo.

Often necessity is the mother of invention (just as imagination is the father). The Indians soon learned that a white man's weapon could only kick once. Thus, he and his buddies circled the house, wagon, or fort, until the shot was fired, then by superior fire power, pumped arrows into the helpless white man. The need was for a multi-shot gun. Thus, the six shooter was born. The lack of trees on the western plains, spurred on by the desire to separate the homesteads with fences obviated the split rail fence and created a new barbed wire fence.

The lack of lakes and streams in Kansas, Nebraska, Iowa, and other states put water at a premium in the early days. Wells could be dug, but the drudgery of pumping water stimulated some soul to harness the energy of the wind.

When necessity presents itself, we can usually do something about it. Recently a chemical plant found one of its process control floats was sinking. It was an especially prepared stainless steel bulb, and performed a very important function in the plant's operation. Obviously it had a leak in it,

and upon examination, over a quart of water was found to be sloshing about on the inside of the all-welded sphere. However, this examination revealed no leak. Since the shut-down of the plant was very costly, and no new float was available, it was necessary to find and repair this leak with existing equipment. How would you have done it?

The welder had a solution, for he applied his torch until the water boiled. This created a pressure. The ball was rolled about until the leak came below the water line, and a stream of water squirted out a foot long. Soon the repair was made and the plant was back in operation.

Constructive discontent, therefore, means recognizing the need. Don't wait for necessity. But if necessity does present itself, do something about it. This brings us to the third quality: an inner drive to get something done.

Once something is started, finish it. Because you meet obstacles, it does not mean that the problem can't be solved. To quote Mr. Kettering again, "One of my most difficult things to do when I get a new man is to teach him to fail intelligently". When something fails, analyze it. Why did it fail? What is wrong with it? How else can I do it? What is it trying to tell me? Mr. Kettering also said another difficulty he has with young fellows, particularly the educated ones, is that they have a natural tendency when they get a problem to run for the textbook. They hasten to prove that it says right here on page 284 that it can't be done. It is this attitude that we try to discourage in the Creative Engineering Program. Most likely the problem is new and a different way is needed to solve it. If it is written in textbooks, the solution is obvious or too old.

The fourth quality necessary to be successful, is a good background in fundamental knowledge. This you get in college, and through experience on the job. It includes mathematics, the physical laws and effects, and the new and unusual devices, as well as new materials and processes. You have the knowledge of how devices work, their limitations, and the problems associated with them.

The fifth quality you need is an approach to any problem. This can be nothing more than a deliberate and organized approach. More often than not, we find people taking what you might call the indirect approach, getting all snarled up in their own doing, missing the heart of the problem, and taking months then years to find an answer. With deliberate and organized thinking, you can develop a direct approach to any problem. Just as people differ, problems, too, are not alike, facilities not the same, every one will have his own individual approach. All the Creative Engineering Program asks is that its members develop an approach of their own by practice on rotating engineering assignments, by working actual design problems from within the Company, and by studying the approach of successful inventors and engineers. The rotating assignments give the student experience with the execution of his approach.

Let us take a direct approach and see what constitutes a typical attack on a problem. The first step is to Define the Problem. Some will say this is obvious, some will take offense to it. It is both amazing and even appalling the number of times people don't define their problem. We must look at the specifications, see that they are written down, and more important, know the reasons for each one. We must know what the outside disturbances are, what the over-all system looks like, and what the standards are. A good test of your understanding of the problem is in your ability to explain it to someone who is not familiar with it. You will be surprised at the number of questions he will ask that you can't answer, that need further investigation.

Let me outline one problem to illustrate what can be involved. The people who make hot water heaters can make a sizeable cost reduction if they could reduce the wall thickness of the hot water tank. This seems to dictate a water pressure reduction in the supply main. How would you define the problem? Would you write specs. around a pressure reducer to attach on the side of the tank, or a pressure reducer inside the tank, or around a change in tank construction, or for a new location of the tank to take advantage of Bernouilli's theorem, or for a campaign to get utilities

to reduce water pressure supplied to the customer, or for a new product to eliminate the need for hot water tanks, or even the doing away with hot water? When would the dollar sign come in, what effect would your position as design engineer make ---- as development engineer, as director of research, as manager of Range & Water Heater Department, or as a Value Analyst?

Assuming enough questions have been asked and the problem defined, the next step can be taken. Many have said that by this time a problem is 9/10 solved when it is clearly defined. Sometimes the problem disappears altogether.

Now the stage is set to search for methods of solution. This is the portion of the approach that is so important to a successful conclusion of the problem. There are many techniques which can help you in this search for a method phase, but the most popular ones are those outlined in a book used by the Creative Engineering Program, written by Alex F. Osborn, entitled "YOUR CREATIVE POWER" or his most recent book "APPLIED IMAGINATION". The most versatile technique is the Brainstorm Session. Here we take full advantage of those two extremes of the loop on the creativity curve. What we want is to let that portion of our mind, termed the creative mind, function unobstructed by that old judicial mind that judges and squelches the embryonic ideas before they're born. We must not let it say, it can't be done, that's ridiculous, or impossible, or I've seen it before. The creative part of the mind is the part that allows you to wander off into the far blue yonder; lets you build castles in the sky. It's the part that works while you are relaxing. Mr. Osborn is in the advertising business. When he needs a new advertising gimmick, or a new line, he goes into his office, closes the door, puts his feet on the desk, takes pencil and paper and writes down everything that comes to mind, with his judicial mind shut off. Regardless of how ridiculous or fantastic the idea may be, he still writes it down. Mr. Osborn says that invariably one line "Ten men on a dead man's chest" comes to mind. He writes it down just to clear his mind. He says, "Some day I will find a use for that line and it will not bother me any more."

The brainstorm session, bull session, or whatever you may wish to call it, is becoming very popular. More and more divisions in the Company are using it to great advantage. To give you an example, some time ago we received a problem from the Transformer Division in Pittsfield. One of the tests their transformers must pass is to withstand a certain density of rainfall without flashing over. They have set up a sprinkler system over the transformer and they then adjust valves to regulate the flow of water. To measure the density of rainfall, they note the time it takes to fill a cup of water held under the spray. This is a time-consuming operation and they wanted ideas on faster methods of measurement.

A number of us in the office were discussing the problem and were standing near the secretary's desk. Suddenly the secretary chimed in and said, "Why don't you count the drops?" The rest of us looked at each other and choked down a snicker. All sorts of fantastic things could be imagined. Suddenly, one of the fellows said, "Well now, that's not such a bad idea. How about taking a piece of blotter paper and impregnating it with an electrolyte. When it is wet we can measure resistance. We could put a small heating coil under the paper to dry it out. Then by holding a constant resistance, we could measure the power supplied and calibrate the meter". From that one statement by the secretary, we launched off on a whole new train of thought. Some of the ideas were impractical, certainly, but they were possibilities. Sometimes one innocent remark, possibly of no value by itself, will spark off a good idea from somebody else.

It is sometimes advantageous to call people into your brainstorm sessions who know very little about your problem. A fellow who isn't too closely connected with your work doesn't know what he can't do and may come up with ideas that have good possibilities. I understand this happened one time in Pittsfield where the problem had to do with mounting brackets. They called in people who knew nothing about brackets on transformers. A draftsman suggested an idea that was obvious and this was the one adopted. The resulting remark was, "Why didn't we think of this a long time ago?"

The Creative Engineering Program has conducted sessions where we have gotten 109 ideas for detecting when someone is at the front door and would like to come in. A Value Analysis group got over 140 different ideas on how to join two electrical conductors together.

Another valuable technique in searching for ideas is to turn to the back of a good physics book and look for all the laws and effects such as the Curie effect, Thomson effect, Hall effect, etc. These are all extremely fertile grounds for new ideas since many of them have never been put to good use. Many people in the various development sections of the Company use this technique. Mr. A. Hanson of the Meter and Instrument Department in West Lynn has some 300 cards which contain every law and effect he has heard of. When he gets a problem he considers each one to determine if it is a possibility to solve his problem.

Often times a complicated problem can be broken down into several parts. In so doing, each part may be considered to have a separate input and output. For instance, we will say you wish to measure amplitude of displacement. You could use a wire strain gage to get a resistance signal, or an inductance strain gage to get an electrical signal, or possibly, a mechanical arrangement to change direction of motion. With these as an output, and the input to the next part, you might use the various signals to operate oscilloscopes, electrical meters, produce a change in hydraulic pressure or air pressure, or operate a shutter to expose a photographic plate, etc. In other words, you are multiplying all your possible ideas. The Refrigerator Department in Erie plots all ideas along both axes of a chart and then tries to combine them into new combinations. They can pretty well prove to anyone who has an idea after production was started that the idea was considered.

While you are searching for ideas for your problem and you find your solutions are falling into a mechanical vein, say to yourself, "Why don't I do this electrically,

electro-mechanically, or even chemically? How about using permanent magnets, rubber, silicone putty? There again you have alunched off into new fields.

The second year homework in our Program is a group effort of three or four men working together on the same problem. On one recent problem from A. & O. S., it was necessary to furnish a means of detecting whether or not a shaft was rotating. One of the men in the group that was working on this problem said he would do it an electro-mechanical way. The second man said he could do it in an electrical way. The third fellow said that he would do it a chemical way. The first reaction of the group was that this seemed rather far-fetched as a means of indicating rotation. However, he brainstormed the idea and was faced with the question of what would happen if he mixed some conducting particles in a liquid. He eventually came up with a mixture of graphite and silicone oil. When the mixture is agitated or stirred, the electrical resistance is very high, but when the mixture is at rest, the resistance is very low. A number of people are still trying to figure out how it works.

In the Creative Engineering Program, we say that there are at least eight ways to solve a problem. Granted, this is just a number that is picked out of thin air. When you are looking for ideas, the first one is easy, the second is easy, the third is a little more difficult, the fourth idea is tough to find, and from there on you have to start doing some concentrated thinking. It is these first three or four obvious ideas that everybody else has thought of. Get these out of the way. It is the fifth, sixth, seventh, eighth idea, and so on, that starts to pay off.

You can find the number of ideas you want, depending on the amount of time you want to spend looking for them. Our own Mr. C. I. Hall recently retired from the Control Department, who is one of the outstanding inventors in the General Electric Company, uses this technique and introduced it in the Creative Engineering Program. Mr. Hall had a problem recently to build an appliance timer for which he had more than 70 ways to do it. It may take me as long to find seven ways as it took Mr. Hall to find the 70. The time available and economics involved will determine how many possible solutions you should strive for.

To give you an example that proves there are many ways to solve a problem, each of the Creative Engineering Program members works individually for a solution: they will search, dream, have nightmares, and eventually get a number of ideas. They will settle on one idea as being the best possible solution and as far as they are concerned, their way is the only practical way to solve the problem. The mechanical fellow will have a mechanical solution. The electrical fellow has an electrical solution. The electronic fellow (the one with tubes sticking out of his ears) will come up with an electronic solution. During the class period, the members are asked to give a five minute description of their solution to the class members. With 20 members in the class, there will be 20 different solutions to the same problem, which proves there are many ways to do a job.

The important thing to remember in this search for methods phase is that you don't use judicial thinking. You are searching for ideas. You are not selecting ideas.

The next step in our suggested approach is Evaluation and Selection of ideas. Here the most important thing is that you look back to the problem as you defined it and be certain that you have a solution. This is where you use the judicial part of your mind. Here is where you factor in the time element, economics, and the degree of perfection you need. Is the device going to be mass produced or are you building just one? You determine the consequences of operation, such as - if it fails does somebody get killed, or does it merely mean that the housewife may have to do without toast some morning? This is where you make sample calculations to determine if the idea is feasible. You're only checking magnitude. For instance, in evaluating the idea for the chemical way of indicating rotation, the fellow didn't make up special cups and electrodes, but he probably used a glass beaker, dumped stuff in it, and started stirring with an iron rod. Be certain to look at some of the ideas that appear to be fantastic and prove whether or not they will work.

The fourth step in the approach is the Solution. Here again you apply feedback to be certain that you are solving the problem. Often times when you are detailing a particular design you may be prone to become so involved in the fasteners, whether it should be a punched or die-cast part, and many other little details, that you forget what the problem is. When you find yourself bogged down in details, force yourself to back away and take a look at the whole solution. Ask yourself, "Is this what we want?" Of course, further calculations are necessary and tests must be made. Read the results the tests tell you. If you have difficulty, but rationalize that, "I didn't make this quite right, but it will be changed when we get into production", you may be in for trouble. Consider, too, that the factory may not be able to maintain the tolerance you have built into your test sample. It must be stressed that anybody can develop a complicated device which is extremely ingenious, but it may not be practical. Usually it requires much more ingenuity to design a simple device. It is the simple device that costs less and is trouble free.

All this is a guide to establish your own approach. People are individuals and all possess their own techniques. We suggest that you combine the Creative Imagination with a direct approach, and you will have your own creative approach.

As my last thought, I wish to recall John Masefield's quotation: "A man's body is faulty, his mind untrustworthy, but his imagination has made him truly remarkable."

F. Hix, Supervisor-Creative Engineering Program

October 10, 1953

/f

THE CREATIVE APPROACH

Creativeness-lots said-little done

Born with it
 Children
 Education)
 Experience) Destroy it

Let's use it 10 times as well

Whole new fields of ideas

Join wires together
 mechanically
 chemically
 electrically
 light
 heat
 cold
 etc.

Imagination to conceive
 Wisdom to judge
 Courage to act

To get good results-need

Active & inquisitive mind
 Fluorescent starter - 15
 Pencil - .29

Constructive Discontent
 Ray deflector
 Colt 6 shooter

Inner Drive

Push intelligently forward
 Ideas alone-adime a dozen

Background of Fundamental Knowledge

Laws
 Mat'ls
 Processes

Approach

Define Problem

Electric spring compressor \$90.00
 Get off Route 25

Search for Method

Get idea
 No negative
 Chivaree
 Pearl Diver
 37.

Evaluate ideas-select ideas
1st 10 no good
Evaluate Chivaree
sign

SET UP ACTION PLAN

FOLLOW THRU ACTION PLAN

How for Creative Sessions

Ridicule
Suggest ridiculous

MEANING OF THE CREATIVE APPROACH

September, 1956 Seminar

Not science fiction -- logical approach to new thought

Essential - progress rate Man's history 24 hours - more changes last sec.

Creative program, Costly consulting companies, colleges - books - Symposiums
Conformity belief in one answer

Obstacles - Fear of making mistake
Fear of being different
Desire to be right.

Separate positive from negative thought
Judicial very necessary - but later.
First 10 ideas no good - probably the first 25.

Brakes vs. accelerators.

Faucet -- open-close -- let it splatter.

Airplane propellor.
Train with brakes on

Pearl diver.

Evolution as technique -

*not end in itself
view-operation - each out is end in itself*

Do we want our thoughts to get somewhere?

TAKE THE BRAKES OFF

OPEN THE FAUCET -- let it splatter.

Looking for a new clustering point.

We'll use the ideas in two to five years.

After we see fragments of them in our competition.

Uninhibited creative approach will bring them to us now.

All start creative - education stifles it

The killer of creativity is ridicule.

Not a horse -- broomstick -- dummy!!

Huh? Now stupid can we get!

"I can't be so childish"

Keep uninhibited unridiculed freedom -- is real important.

Engineering Manager \$34 -- \$17

It does reach us way out front.
We will certainly it here.

Approach to problem solving.

Buzz session.

Brainstorm session.

Several problem handling techniques.

No business can survive unless it is continuously and vigorously trying to obsolete its own products.

Creative thinking is solid, real and we're going to use it.

Meaning

IMPORTANCE OF THE CREATIVE APPROACH

October 1955 Seminar
Sept 1956

Not Science Fiction - logical approach to new thought
~~Everyone doing it.~~
Essential - Progress - Man's History 24 hours - more changes fast

Creative program, mostly consulting cos. Colleges - books - symposiums
obstacles - Conformity belief in one answer

Symposiums, colleges, etc. fear of making mistakes
" " being difficult
Desire to be right

Separate positive from negative thought.
Judicial very necessary - but later
1st 10 ideas no good - probably the best 25

Brakes vs. accelerators

Faucet -- open-close -- let it splatter.

Air plane propellers
rain water propulsion
~~All start with creativity -- then trained out.~~

Do we want our thoughts to get somewhere?
Pearl diver
~~Like a train with air brakes on.~~

TAKE THE BRAKES OFF"

OPEN THE FAUCET -- let it splatter
Looking for a new existing point

We'll use the ideas in two to five years
After we see fragments of them in our competition.

Uninhibited creative approach will bring them to us now.

It starts creative - education stifles it

The killer of creativity is ridicule.

Not a horse -- broomstick -- dummy!

Huh" How stupid can we get!

~~"Throw it out of the window"~~ "I can't be so childish"

Keep uninhibited unridiculed freedom -- is real important.

Engineering Manager \$34 -- \$17

It does reach us way out front
we will utilize it here
certainly

L. D. Miles/M
approach to problem solving

Buzzy session
Brainstorm session

Several problem handling techniques,
No business can survive if it is continuously and vigorously trying to obtain products.

Walter Clute
#2-20-204

3600
4000
28,000

C.

Lets visit in time ...

What's

... ..

Director

Trust

... ..
 - 15
 - 298

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Background of ...

Law

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Appendix

Political ...

... of ... # ...

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Setup Action Plan

INTRODUCTION TO A CREATIVE SESSION PROBLEM

Usually we don't do this overnight, usually it takes a lot of practice before we can free our minds sufficiently to completely suppress our judicial thinking and entirely free ourselves to come up with all these ideas. So, during the conference we will hold three practice creative sessions, the first one right now, and to start things off - it's a very easy one - Mr. White out in the Research Lab is very intrigued with the problem of Mrs. Housewife coming up to her front door completely loaded with packages. She doesn't want to lay the packages down or go to other inconveniences to fumble with the lock and turn the handle and open the door. What she'd like to have or be able to do is to come up to her house with her arms full of packages and have the door miraculously open and close behind her without any other exertion on her part. Yet, she'd also like to have the thing burglar-proof so it would open for her and the family and no one else.

Well, there is a wide-open field for ideas. What things happen when somebody stands in front of your door that you can take advantage of to open the door? We'll let it go wild from there; whatever your ideas are. So, we'll break up into three groups now. When we've finished, let's shout out how many ideas we had at each location; see which group has the best idea-men.

Remember, we're just looking for oysters now - no pearls; we'll find them later.

CREATIVE SESSIONS

by E. K. Von Fange

Creative or brainstorm sessions are nothing new; in fact, I'm sure all of you have had innumerable creative sessions yourself. You might recall an incident where three or four of you were sitting around a table in an office and a beautiful secretary walks by. Boy, the ideas that pop forth then are sheer genius! Similarly, when you're at wedding parties, and so on, half a dozen heads will get together figuring out ways to decorate the car and otherwise pull tricks on the bride and groom. Some of the ideas that come out of those get-togethers are really creative. The best one I heard recently was one fellow in such a gathering hopped up and down and said, "Boys, I've got the idea to end all ideas! We'll take a big balloon and tie a thin wire to the bottom end, fill the balloon with water and tie another wire to the other end, lay this on top of the car and then tie these wires to the door on either side. Then when the bride and groom hurry out it's be dark and they won't see the balloon. They'll quick open the door, the balloon will break and water will go flying all over the place." And so on!!

I think we can see where these little get-togethers, on occasion, are really productive of new ideas. So, we might look at these sessions in the light of "How can we be similarly creative in our engineering search for ideas?" First of all, what is there about these sessions that makes us feel so free to come up with ideas? I can think of about four things that enter into the picture. First of all, you don't too often make use of the ideas you get, so nobody really stops to evaluate the worth of the ideas as you get them. Rather, you just form a mental picture of what would happen if it were to be used, enjoy the thoughts, and leave it go at that. Secondly, since nobody evaluates the soundness of the ideas, you feel completely free to roam all over the place in search of an idea; you don't let any of your judicial thinking hinder you.

Thirdly, the chuckles and comments gotten from the rest of the people in the group are a stimulus for you to come up with ideas so that the chuckles will be aimed at you and your contribution. Fourthly, you feel a competitive spirit to outdo the other fellow and come up with the biggest and best idea.

So, just use this same technique to obtain your engineering ideas. First of all, at the time you're getting ideas, don't evaluate them; wait until later. Secondly, roam anywhere in search for an idea - don't put any limitations on your search. Thirdly, instill a competitive atmosphere in your group. Fourthly, let all sense a spirit of mutual praise and encouragement so that you'll feel stimulated to come up with the ideas.

Now, in this business of coming up with new ideas: one might liken it to looking for pearls. What you're actually doing is trying to find that gem of an idea. That pearl of an idea, that'll put you on easy street for the rest of the project. Well, if that's the case, let's look at the pearl fisherman to see how he gathers his pearls, and maybe we can get something from him that we can use in looking for ideas. Does a pearl fisherman take off his clothes, put on his swimming trunks, don his goggles, dive into the ocean until he finds one oyster, come back on deck, dress, take off his goggles, get out his knife, open up the oyster, look for a pearl, throw the remnants away, take off his clothes, put on swimming trunks, don his goggles, dive back in until he finds another oyster? Gosh, no; he takes off his clothes, puts on his swimming trunks, his goggles, dives in and cleans the entire area of oysters and throws them in his bag. Finally, when he's exhausted the field; then he comes back on the ship and breaks open the oysters to see how many pearls he may have.

So, similarly, when we are looking for ideas, let's do it the same way; let's not bother about the worth of the idea when looking for them, but instead use all our energy just in searching for ideas. When we have them all listed down and we're tired from searching and looking then, put back on our judicial clothes and evaluate the soundness of the ideas; break them apart; search into them and try to find the pearls that are maybe hidden under the surface.