

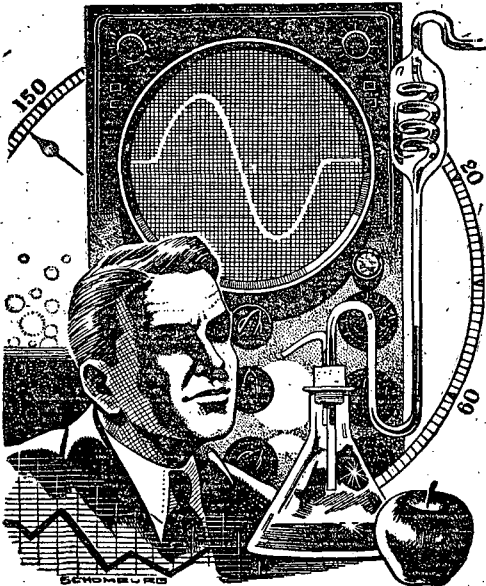
TRIGGER THOUGHTS

A Report on the Future

by
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WANTED:

*Men with ideas about
ideas—to hold our
scattered sciences together!*



ISAAC NEWTON received a lot of well-earned credit for determining and stating the laws of motion. So far as I have been able to learn, the apple which supposedly dropped on or near his startled head has never been seriously proposed for the Hall of Fame, yet that apple certainly triggered his chain of thought.

No, I'm not trying to give equal credit to the apple—else the first Macintosh to drop on a Neanderthaler would have resulted in the Third Law of motion. What I wish to examine is the possibility of deliberately stimulating the creative thought of our scientists.

An example immediately springs to mind—the Institute for Advanced Study at Princeton. But consideration reveals two facts which do not fit our purpose. The Institute aims at providing a quiet *environment* for thought which is already under way. Stimulation from interchange of the ideas of great thinkers is left largely to accident. Finally, the fact that only the greatest theorists are invited there creates a special case. The man in the field benefits only after results have been published, thus the effects of the Institute are *limited*.

The type of stimulus resulting from an interplay of minds is to some extent recognized and put into practice every time a group of engineers working on a common project get together for a "progress conference." They bring each other up to date on the results of their individual researches to see whether someone else may get an idea to speed the project along.

Quite frequently, somebody does. In any event, these bull sessions are relaxing and undoubtedly have a therapeutic effect.

On the other hand the limiting factor in these conferences, primarily psychological, is seldom seen. It can be simply stated: being experts in one particular field, their common ideas tend toward specialization along a fairly narrow line. In the words of the old saw, they may

not see the woods for the trees.

Let's look at an example. Astronomers are eager to prove or disprove the theory of finite space. They have explored a billion light-years into the cosmos (or metagalaxy) without finding any indication of an edge. The 200-inch mirror at Mt. Palomar is expected to reach much further.

Suppose, in a few years, study of the newest plates reveals a stopping place, beyond which there are no dim traces of more distant galaxies? Will there be a furious checking and at last a tremendous announcement?

"We have reached the edge of space. It appears that the universe is finite."

Or will there be someone present with a broader background, to apply the sponge of caution, to say, "Wait! How do we know this is the edge of space? Some geologists estimate that all matter was created about two billion years ago, so maybe our photographs have only reached an area from which light hasn't yet had time to travel to us."

MANY are the traps for the specialist! As we push deeper into the various fields of science, his range of vision becomes ever narrower.

In fact, right now, at our present level of development, a need is definitely beginning to exist for men with broad general scientific knowledge to stand at the elbows of the specialists, viewing each discovery with a wider outlook than its originators. These men may pluck a fact from the electronics man and hand it to the astronomer. They may derive from the geologist an idea that helps the rocket expert push another mile toward space.

Logically enough, scientists themselves will probably be the last to recognize such a necessity. "If a man is the foremost authority in his field, what can he learn from a dilettante?" will be a common gripe.

(Incidentally, in the advertising profession, hard-headed experts will go to much trouble to obtain a "fresh view-

point"—knowing from dollars and cents experience that it may benefit them vastly.)

The answer to the expert's gripe is that this general scientist will be a very special type of "dilettante."

Any line of investigation inevitably runs into snags. The whole frontier of science is a maze of interesting side-tracks, frustrating dead-ends and roads leading nowhere, through which the researchers must attempt to pick their way to new knowledge. Clearly, the man on the hill, who has an unobstructed view of the entire frontier, is in a position to call down helpful advice to the searcher with his nose on a particular rabbit-track. The track may look good to the investigator, and he may know a lot about it, but the man with the more general view may be able to suggest that he cut across country and thus get to the rabbit sooner.

This fellow on the hill need have only a general idea of the appearance and smell of that particular rabbit-track. More important to his function is that he know the general terrain, the main problems and present whereabouts of all researchers and what each rabbit looks like.

Like any analogy, this is somewhat oversimplified. Also, it looks like a job that anyone could do—sit on a hill and shout directions.

Actually, only a very special type of man could climb this hill. It might be much more difficult to find men capable of making themselves valuable in this category than it is to find good specialists. Let's look at the requisites:

- vast scientific interest
- an actively-inquiring mind
- encyclopedic knowledge of the sciences
- swift comprehension of new advances
- tremendous correlative ability
- creative, pioneering imagination
- ability to avoid side issues
- self-discipline
- unquestioned integrity
- complete unselfishness

Such a scientist might be twice as long in training as a specialist, but once pre-

pared he can serve as mental trigger to not one, but many groups of engineers and researchers. Indeed, if he serves only one such group his value lessens, for automatically he begins to specialize. And he must never allow himself to become too interested in a particular field, however fascinating, unless he is ready to give up his larger function.

He must have the tireless tact of the diplomat (let's not delude ourselves that there are no prima donnas among scientists). He must have a total disregard for being found wrong—his duty is definitely *not* that of a consulting expert or adviser. He simply sees each problem through a wider objective lens and uses his own trained imagination to stimulate new ideas in the mind of the specialist.

His job might be defined as the creative application of general experience to a specific problem.

I don't feel I'm going out on a limb in predicting that within the next thirty years we will see this type of scientist—call him idea man, correlator, or what you will—taking his place at the engineering and research conferences.

RESearch—applied or pure—is a costly proposition and those expenses are rising every year. The great industrial corporations who must foot the bill (or perish under competition) try desperately to keep costs within a reasonable percentage of expected future profits.

Any measure which effectively shortens the time of a particular piece of research is an economy measure. The idea man can do exactly this, by suggesting short-cuts cribbed from other fields, by avoiding expensive dead-ends unnoticed by those who are too close to the job, chiefly by throwing off contagious sparks from an active, informed mind.

When the corporations begin to realize these possibilities, a search will begin for men capable of performing the function. At first, probably, engineers

who are widely read and have personal experience in several fields will be the men chosen. They will pioneer in the vocation (and many will fail for one simple reason: after a few successes, corporations will bid high for their exclusive services; if they succumb, the variety of their work will be restricted and their worth lessened.)

Eventually, young men interested in science but not wishing to specialize will train specifically as scientific idea men.

As mentioned earlier in this article, their need is beginning to be felt right now. Knowledge has become so extensive that the specialist in any given field is not ready to strike out on original work until after many years of study. Either economic necessity or eagerness to get at his own specialty precludes his delving into other sciences, hence his outlook is deliberately narrow, the better to focus upon his objective. Since this is the very bogey feared by those who write of the perils of specialization, what better alternatives have we than to create at the same time men trained to the broad view?

Manifestly, it would be impossible for our sciences to progress further without specialization.

Today, after some thirty years of swiftly increasing emphasis upon training men for a particular job, results are obvious. I contact a great many engineers in my work and the *average* has slight knowledge and few interests outside his own field. Speak—as I have deliberately done—of rockets, spherical galaxies and the continental-drift hypothesis and his attention soon wanders.

Very occasionally I met the exception and he is the true idea man of tomorrow, bubbling with speculation about other fields, wondering why the jet men don't try this, or what would happen if you did thus-and-so with a certain plastic.

This is the "fresh viewpoint" considered so valuable by advertising men. It seems a shame that ideas which might rejuvenate the thinking of a tired and

baffled researcher will probably never be put before him. It seems equally unhappy that the type of man who sparks provocative questions and intelligent ideas should not have the satisfaction of seeing them considered.

So important was the gathering of ideas in wartime that our government set up a Washington agency to act as clearing house. In peace it is obviously difficult to operate this way, due to conflicting commercial interests and the high expense of weeding out useless and crackpot ideas. The trained scientist, selling his services to a number of corporations whose interests do not conflict, seems the logical answer for the not-distant future.

Many of you reading this article are scientific workers, engineers and technicians. Certainly you are imaginative, or you would not be reading this magazine. Some of you may be among the first of these scientific idea men. There may be a science-fiction author or two.

At our present stage of knowledge, trigger thoughts do not have to be orig-

inated by a superman. Anyone with a really solid grounding in science and the type of mind that examines, analyzes and comes up with ideas, might push science ahead. The engineer whose work is electronics, but who makes astronomy a hobby . . . the radio ham (read a list of the contributions hams have made!) . . . the observant amateur chemist . . . the man who just likes to study the sciences . . . you and you. . .

Ideas.

They are needed, desperately. We have the specialist and his number is steadily increasing. He is basic to our systematic advance of knowledge; but the day is fast coming when we will need again the general scientist—or find research traveling in endless circles.

He will be no timid knocker at the door of natural mysteries, this general scientist of tomorrow. He may not even be distinguished by the name of scientist, at first, but they will come to respect him. He will study, correlate, suggest. He will point the way.

And we'd better find him soon.



What strange forces moved human beings like puppets, robbed their brains of thought, sent them into strange catatonic trances? One man and one girl suspected a vast conspiracy against humanity—and at the risk of more than life came to grips with an adversary more fearful than the human mind could devise!

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