

Article

Rowe, Britta

TN#: 1618549



C

User ID:



Article

Article

Call #:

Location:

Book/Journal Title:

Science Digest

Book Author:

Other Info:

Volume: 69

Issue: 4

Month April

Year: 1971

Pages: 44-50 & 56

Article Author: **GH Estabrooks (And)
Arthur J. Snider**

Article Title: **Hypnosis Comes of Age
(44-50) (And) The Genetic
Control of Man (p. 56)**

Preferred Delivery:	
Dept.: English	
Address:	
Pick up Library: Alderman	

Status: **Graduate**

Email Address: **bbr9a@virginia.edu**

VIRGO:

Copyright Information:

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted material. Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One of the specified conditions is that the photocopy or reproduction is not to be "used for any purpose other than private study, scholarship, or research." If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement. This institution reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of copyright law.

Policy:

**Britta Rowe, ENWR 1510, Fall 2016
bbr9a**

Date Needed: 10/17/2016

Email Address: **bbr9a@virginia.edu**

Britta Rowe

Pick up Library: Alderman

University of Virginia
Alderman Library
Interlibrary Services
PO Box 400109
160 N. McCormick Road
Charlottesville, VA 22904-4109

UVA Library – Interlibrary Services

Document Delivery - Collab - Article

HYPNOSIS

comes of age

This psychologist reminisces about his long career as a hypnotist: how he "programmed" American spies with hypnosis, how he helped businessmen and students with his skills.

by G. H. Estabrooks, Ph.D.

CLINICAL HYPNOTISTS have been exploring some startling frontiers lately. A medical doctor acquaintance of mine, David M. Cheek, maintains that every operating room door should carry an engraved sign reading: "BE CAREFUL, THE PATIENT IS LISTENING."

Dr. Cheek is an attending staff obstetrician and clinical hypnotist at Childrens' Hospital in San Francisco. He first jolted medical circles ten years ago with a report that patients under anesthesia for radical surgery could remember—under hypnosis later—much of what happened and was said during their operations.

Since then, Cheek has studied at random more than 800 postoperative patients to test his contention. Almost ten percent, he reports, were sufficiently traumatized by what happened under the knife to recall specific events and chatter—many with uncanny accuracy.

At Tara Hospital in Johannesburg, South Africa, Dr. Bernard Levinson, an anesthetist and clinical hypnotist,

recently carried out a daring tape-recorded experiment in line with this program. In the operating room, alarming comments were made deliberately after the patient was deeply anesthetized.

"Hold up the operation; more oxygen; the lips are blue," Levinson would say on signal from the surgeon. An instant later, he would assure the surgeon that all was well and surgery would proceed.

Following recovery from their operations, eight of the ten patients subjected to the test exhibited great distress while re-living their surgical experience under hypnosis. Four repeated verbatim what the anesthetist had said. Four others were greatly agitated but couldn't vocalize. Even the remaining two, who failed to respond visibly or orally, showed a striking brain wave reaction on the electroencephalograph.

These developments, Cheek believes, are charged with the strong possibility that distressing talk in surgery may account for hitherto "inexplicable" postoperative depression, and sometimes total defeat in a patient's attitude. It might explain, for instance, the case of a famous professor who died recently after an exploratory abdominal operation. What the surgeon found looked malignant.

Dr. Estabrooks is a Rhodes Scholar. He took his doctorate at Harvard ('26), and has authored many articles and books on clinical hypnosis and human behavior.

"Poor old John," he said loudly to his student spectators, and closed the wound without operating. The professor expired a few hours later of a massive gastric hemorrhage. No cancer was found at autopsy.

Understandably, many surgeons don't warm up readily to the insinuation that they may be demoralizing patients via some mental mystique. In spite of this, more than a dozen large hospitals throughout the country already have established a policy of "operating room silence" during surgery, due to the findings of Cheek and his colleagues. Many more, hopefully, will follow suit soon.

Today, hypnosis in practical clinical applications is expanding on all fronts. Great impetus was provided by the nod it received recently from both the British and American Medical Associations, giving it "... a recognized place in the medical armamentarium [as] a useful technique in the treatment of certain illnesses when employed by qualified medical and dental personnel."

Hypnosis has been used as a muscle-relaxer in obstetrics for 150 years, though viewed somewhat askance by the medical establishment for much of that time. Today, however, it is in

standard use by hundreds of hospitals for expectant mothers all over the world. As an anesthetic and pain reliever for surgery and dental patients allergic to chemical anesthetics, it is gaining acceptance at an increasing number of hospitals (more than ten on the West Coast.) At the University of Minnesota, blood pressure control through post-hypnotic suggestion is being used with notable results in the treatment of hemophiliacs who might otherwise bleed to death from a small cut or bruise. In New Jersey, a physician named Howard B. Miller (See "Your Emotions and Disease," July 1970, page 61) has achieved what appears to be significant results with hypnosis in tumor regression in a dozen cancer patients who are inoperable for one reason or another. At universities such as Johns Hopkins, Pennsylvania, and Stanford, scholars are performing dramatic experimental work in medical and psychological applications of hypnosis. At the University of Michigan, scientists are probing our psychodynamics. Subjects are revealing new insights to pathways of the mind in the area of anxiety neurosis, how it works and how hypnosis can control it. The men doing this work are

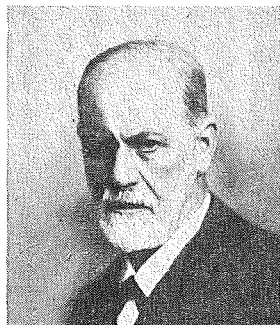
Franz Mesmer



James Braid



Sigmund Freud



helping to remove the fog of mysticism that has plagued the phenomenon ever since Dr. Franz A. Mesmer, an 18th-century Viennese physician, started it all by recognizing in the power of suggestion a potent therapeutic force for medicine.

All this is gratifying to long-timers in hypnosis research, like myself, but not surprising. I have been using hypnosis in clinical psychology for half a century, in private practice and at universities such as Colgate, where I chaired the department of psychology for more than 20 years. My colleagues and I know what hypnosis can do, and have lived through frustrating years of public misconception.

What is hypnosis, anyway? Part of the problem is that, to this day, no one really is sure. In the mid-1800s, an English physician named James Braid became interested in the phenomenon and was the first real authority to recognize its psychological nature. He believed that it was a state of "nervous sleep," and it was considered that until the 1920s, when devices like the electroencephalograph revealed that brain wave patterns of people in a hypnotic state are more like those of people awake than in sleep. There are other differences as well. "Knee Jerk" (what your lower leg does when the doctor hits your knee with his rubber hammer) disappears when a person is sleeping, but the leg continues to bounce vigorously in hypnotized patients—just as though they were wide awake.

Clinical hypnotists have known for a long time that subjects in the deepest state of hypnosis—somnambulism—always act and respond as though wide awake. The measurable difference is a pain test. A deeply hypnotized person can take an 80-volt elec-

trical shock without experiencing pain (anyone in a normal state will suffer under 35 volts), and heartbeat may be slower in deep hypnosis.

Then there is a curious state known as "waking hypnosis," induced by a series of steps in a subject capable of deep hypnosis. One in five adults can manage it. I have put a good subject into this state, used him as a bridge partner and—on pre-arranged cue—had him play one hand in hypnosis, one hand out. No one could tell when he was in or out. Dr. Milton H. Erickson, Aldous Huxley's physician, and one of the founders of the American Society of Clinical Hypnotists, tells about having a subject deliver a lecture to a group of psychiatrists, all familiar with hypnosis. Not one realized their speaker was hypnotized. To all intents he was wide awake, responding to events around him like a normal person.

If hypnosis is not induced sleep, what can it be? There are some clues. Brain wave patterns of subjects in hypnosis are similar to those of people under deep anesthesia prior to surgery. Many clinical hypnotists believe there is a correlation, and Dr. Cheek's work tends to bear it out.

Most modern applications of hypnosis still employ one or more of the three basic tools that clinical hypnotists have used for years: *post-hypnotic suggestion*, in which the hypnotized subject is told that he will pursue a particular course of action at a given time in the future; *auto-hypnosis*, in which the hypnotized patient is told that in the future he will be able to hypnotize himself with a particular word, phrase or other symbol, and thereby carry out his goals by auto-suggestion; *regression*, in which the hypnotized patient is sent back in

Time distortion is one of the strangest new discoveries in modern hypnosis research.

time to recall long "forgotten" events (some subjects have recalled events in their first year of life).

With these techniques, newer, broader and sometimes startling horizons have been revealed. One of the weirdest is time distortion.

Almost everyone has experienced event-crowded dreams that seem to last forever. You voyage to Europe, visit Canada, Washington. You chat with a cousin in London, attend a bull fight, play a whole evening of bridge. You'd swear that you dreamed for hours. If you had clocked it, you might find some dreams like this took about 15 or 20 seconds.

A few years ago, Dr. Erickson and a Phoenix, Arizona psychiatrist, L. F. Cooper, set up a cooperative program to study this mental time-squeezing phenomenon. They were able to stimulate similar dreams in a hypnotized subject through hypnotic suggestion. What's more, they discovered that they could use that cerebral speed by having the subject dream on a specific topic with a definite task in mind. Recently I used this technique on a patient who was troubled by his inability to find the time to devise a sales program for his company.

Once hypnotized, he was told to dream of meeting with his supervisors, and to work out with them a complete program. I assured him that he would remember every detail when he awakened. This he did, and his prospectus filled an hour of tape.

How long would he say the dream took? He was not rushed, he reported. He remembered looking through files and talking out the whole program

over cocktails. He would guess an hour and a half. The clock logged 15 seconds of dream time. The mind sometimes works at frightening speed in a dream, but in a guided hypnotic dream it is working toward a goal—often providing creative thought worth an hour, in less than a minute.

Another promising field is time projection—a phenomenon useful in preparing people for situations they fear to face. I used it last year with a student who did well in his courses, knew his subject, but "panicked" on exams. I had him live through an approaching examination in his major subject—chemistry—with the assurance that he would enjoy it because he *knew* the subject, which he did. (Hypnotism can't give anyone knowledge they don't have). Then I asked his professor to watch his performance. "What did you do to that man?" he asked. "He spent half of his time drawing cartoons of me, but he turned in a brilliant paper." Furthermore, the student's attitude carried over to all examinations from then on. He graduated cum laude.

Regression is seeing more and more use in dealing with day-to-day problems of a wide variety of troubled souls. With it, the doctor is in touch with the whole unconscious mind and usually can dig out the cause of any psychogenic symptom.

A male patient referred to me recently was consumed by an obsession that there were record-player needles in his food. Eating was a torture. He examined and probed every spoonful before he could swallow it. Regressed under hypnosis he recalled that, at

the age of four, he had swallowed a steel record-player needle in a spoon of mashed potato. The ensuing experience—terrified parents, clanging ambulance, stern-faced doctors and crisis-packed hours—had so traumatized him that it burned a short circuit, so to speak, in his unconscious mind. The latent trouble spot made itself evident in later life when stresses began to pile up. When this was explained to him in a waking state, the patient was amazed. His relief and personality changes were surprising. "Everyone thought I was a screwball, and so did I," he told me. "Now the whole thing seems reasonable." His problem was fully resolved after only three sessions and he is now enjoying his meals for the first time in years.

One of the most fascinating but dangerous applications of hypnosis is its use in military intelligence. This is a field with which I am familiar through formulating guide lines for the techniques used by the United States in two world wars.

Communication in war is always a headache. Codes can be broken. A professional spy may or may not stay bought. Your own man may have unquestionable loyalty but his judgment is always open to question.

The "hypnotic courier," on the other hand, provides a unique solution. I was involved in preparing many subjects for this work during World War II. One successful case involved an Army Service Corps Captain whom we'll call George Smith.

Captain Smith had undergone months of training. He was an excellent subject but did not realize it. I had removed from him, by post-hypnotic suggestion, all recollection of ever having been hypnotized.

First I had the Service Corps call

the captain to Washington and tell him they needed a report on the mechanical equipment of Division X headquartered in Tokyo. Smith was ordered to leave by jet next morning, pick up the report and return at once. These orders were given him in the waking state. Consciously, that was all he knew, and it was the story he gave his wife and friends.

Then I put him under deep hypnosis, and gave him—orally—a vital message to be delivered directly on his arrival in Japan to a certain colonel—let's say his name was Brown—of military intelligence. Outside of myself, Colonel Brown was the only person who could hypnotize Captain Smith. This is "locking." I performed it by saying to the hypnotized Captain: "Until further orders from me, only Colonel Brown and I can hypnotize you. We will use a signal phrase 'the moon is clear.' Whenever you hear this phrase from Brown or myself you will pass instantly into deep hypnosis." When Captain Smith re-awakened, he had no conscious memory of what happened in trance. All that he was aware of was that he must head for Tokyo to pick up a division report.

On arrival there, Smith reported to Brown, who hypnotized him with the signal phrase. Under hypnosis, Smith delivered my message and received one to bring back. Awakened, he was given the division report and returned home by jet. There I hypnotized him once more with the signal phrase, and he spied off Brown's answer that had been dutifully tucked away in his unconscious mind.

The system is virtually foolproof. As exemplified by this case, the information literally was "locked" in Smith's unconscious for retrieval by the only two people who knew the

Experts are able to "lock" secret information into the hypnotized subject's unconscious.

combination. The subject had no conscious memory of what happened, so couldn't spill the beans. No one else could hypnotize him even if they might know the signal phrase.

Not all applications of hypnotism to military intelligence are as tidy as that. Perhaps you have read *The Three Faces of Eve*. The book was based on a case reported in 1905 by Dr. Morton Prince of Massachusetts General Hospital and Harvard. He startled everyone in the field by announcing that he had cured a woman named Beauchamp of a split personality problem. Using post-hypnotic suggestion to submerge an incompatible, childlike facet of the patient, he'd been able to make two other sides of Mrs. Beauchamp compatible, and lump them together in a single cohesive personality. Clinical hypnotists throughout the world jumped on the multiple personality bandwagon as a fascinating frontier. By the 1920s, not only had they learned to apply post-hypnotic suggestion to deal with this weird problem, but also had learned how to split certain complex individuals into multiple personalities like Jeckyl-Hydes.

The potential for military intelligence has been nightmarish. During World War II, I worked this technique with a vulnerable Marine lieutenant I'll call Jones. Under the watchful eye of Marine Intelligence I split his personality into Jones A and Jones B. Jones A, once a "normal" working Marine, became entirely different. He talked communist doctrine and meant it. He was welcomed enthusiastically by communist cells, was

deliberately given a dishonorable discharge by the Corps (which was in on the plot) and became a card-carrying party member.

The joker was Jones B, the second personality, formerly apparent in the conscious Marine. Under hypnosis, this Jones had been carefully coached by suggestion. Jones B was the deeper personality, knew all the thoughts of Jones A, was a loyal American and was "imprinted" to say nothing during unconscious phases.

All I had to do was hypnotize the whole man, get in touch with Jones B, the loyal American, and I had a pipeline straight into the Communist camp. It worked beautifully for months with this subject, but the technique backfired. While there was no way for an enemy to expose Jones' dual personality, they suspected it and played the same trick on us later.

The use of "waking hypnosis" in counter intelligence during World War II occasionally became so involved that it taxed even my credulity. Among the most complicated ploys used was the practice of sending a perfectly normal, wide awake agent into enemy camp, after he'd been carefully coached in waking hypnosis to act the part of a potential hypnotism subject. Trained in auto-suggestion, or self-hypnosis, such a subject can pass every test used to spot a hypnotized person. Using it, he can control the rate of his heartbeat, anesthetize himself to a degree against pain of electric shock or other torture.

In the case of an officer we'll call Cox, this carefully prepared counter spy was given a title to indicate he

had access to top priority information. He was planted in an international cafe in a border country where it was certain there would be enemy agents. He talked too much, drank a lot, made friends with local girls, and pretended a childish interest in hypnosis. The hope was that he would blunder into a situation in which enemy agents would kidnap and try to hypnotize him, in order to extract information from him.

Cox worked so well that they fell for the trick. He never allowed himself to be hypnotized during seances. While pretending to be a hypnotized subject of the foe, he was gathering and feeding back information.

Eventually, Cox did get caught, when he was followed to an information "drop." And this international group plays rough. The enemy offered him a "ride" at gunpoint. There were four men in the vehicle. Cox watched for a chance, and found it when the car skirted a ravine. He leaped for the wheel, twisted it, and over the edge they went. Two of his guards were killed in the crash. In the ensuing scramble, he got hold of another man's gun, liquidated the remaining two, then hobbled across the border with nothing worse than a broken leg.

So much for the darker side.

Since my retirement from Colgate six years ago, I have been applying hypnosis to student counseling. My primary interest has been the under-achiever who has ability but will not or cannot use it.

Recently at one of the four colleges where I did this work, the son of a faculty member offered himself as a subject. He'd flunked out for the second and presumably last time. I asked that Bill be given another chance. He got it, graduated on the

dean's list, went on to graduate school and has been doing very well since.

In such cases, hypnosis is used to build a strong motivating force in the man. Proper suggestions to heighten his personal satisfaction in his field, and the post-hypnotic suggestion to keep that satisfaction alive, turned the trick. This boy was also trained in auto-hypnosis so that he could use the technique on himself.

Doctors like Howard Miller see in hypnosis a possible answer to the rejection problem in tissue transplants. "Also," he says, "in long term flights through space auto-hypnosis could be an ideal solution to dealing with long periods of unoccupied time and tiredness. It could be used—as it is on earth in research laboratories—to alter the metabolism of astronauts enroute to other planets; to put them in a hibernation-like state of suspended animation for specified periods. In both outer space and submarine exploration, men trained in the use of hypnosis would be able to help each other in many ways such as control of pain, without resort to heavy and often hazardous drugs."

There is little doubt in my mind that people in this field 20 years from now will consider the material presented here interesting or curious background—but strictly ancient history. All the present signs indicate that hypnotism, after 200 years of struggle for attention, has come of age. ■

For further reading

HYPNOSIS: FACT AND FICTION, *Frederic Lawrence Marcuse, Penguin Books, 1959.*

HANDBOOK OF CLINICAL AND EXPERIMENTAL HYPNOSIS, *Edited by Jesse E. Gordon, Macmillan, 1967.*

The genetic control of man

by **Arthur J. Snider**

LEADERS OF THE FUTURE will decree that parents "have no right to burden society with a malformed or a mentally incompetent child," predicts the past president of the American Association for the Advancement of Science.

Unlimited access to state regulated abortion facilities will eliminate the fetus with "uncontrollable defects such as mongolism and sex deviation," Dr. H. Bentley Glass contends. The new techniques of determining genetic abnormalities in the developing fetus would be relied on to screen unborn babies.

Glass, 64, is a leading geneticist and academic vice president of the State University of New York, Stony Brook. Acknowledging that established social and ethical concepts will be challenged, Glass said the future will be a far more regulated society of man. "It will be inevitably forced upon us by our exponential rates of increase," he believes. "The once sacred rights of man must change in many ways."

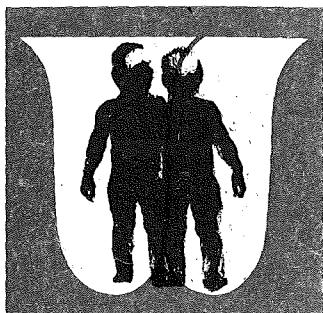
Screening of adult carriers of defective genes will make it possible to warn them against or prohibit them from having offspring.

"Genetic clinics will be constructed in which, before long, as many as 100 different recessive hereditary defects can be detected in the carriers," Glass says.

In a further effort to improve the quality of human heritage, Glass foresees "prenatal adoption," in which

selected embryos will be implanted in the uterus of a woman.

"Preservation of spermatozoa in deep frozen condition could permit a high degree of selectivity among



Drawings by Ellen Williams

sperm donors," he adds. "By checking the sperm and egg donors with a battery of biochemical tests, matching of carriers of the same defective genes can be avoided, or the defective embryos themselves can be detected and discarded."

Couples would be able to preserve their own fertilized egg, conceived early in marriage for reimplantation years later when they could afford to have the child. This would minimize the risk of congenital defects that sometimes occur in children of older couples.

"In the future age of man, it will become possible for every person to procreate with assurance that the child, either one's own or one prenatally adopted, has a sound heritage," assures Glass.

SCIENCE DIGEST

Madison College Library
Harrisonburg, Virginia

Adventure in Science & Discovery

APRIL 1971 • 50 CENTS (C.D.)

HYPNOSIS COMES OF AGE

SDHAR73 10001 77 BNA7RV H5#92
ST BONAVENTURE
H5
REV LIB
STURTEVANT MI
6/9
53177

CAN BE BEAUTIFIED WITH A COSMETIC SCALPEL

A team of science writers takes you on a Caribbean adventure to
THE MAYAN CAVES OF BONIMA

COMPUTERS THAT GIVE YOU A MEDICAL CHECKUP

ISAAC ASIMOV: WHAT'S BEYOND OUR UNIVERSE?

“PEOPLE,” Dr. George Estabrooks told us last summer, “still seem to equate hypnotism with magicians, side shows at county fairs and crystal balls. We’ve had a tough hurdle to overcome.” Dr. Estabrooks is a clinical psychologist. He’s been using hypnosis in therapeutic applications for half a century—so successfully that some of the case histories he tells about in this issue are enough to shake the most confirmed doubters. To explain post-hypnotic

THIS MONTH

suggestion and its uses in therapy for his patients, he has a graphic demonstration. He used it recently for a student at Colgate, whom he hypnotized. “There’s a dog sitting in front of you; pat it,” he said. The subject hallucinated, saw the dog, and patted it. Then the doctor said, “When you come for your appointment next Thursday, the dog will be here. You’ll play with him briefly, then call Dr. Brown and tell him his dog is in my office and he should come to get it.” The student behaved precisely as he’d been directed, on his next visit to the office. That, as any clinical hypnotist will tell you, is a post-hypnotic suggestion. In the case of this particular student, Estabrooks went further. He later told him, “Whenever you wish to see the dog, you will write the word ‘dog’ on a piece of paper and he’ll be sitting in front of you.” Later, the subject was able to do just that. This, the doctor explained, is self-hypnosis. How all these curious techniques are used in modern therapy is told in Dr. Estabrook’s fascinating and often startling article that starts on page 44.—RFD

SCIENCE

RICHARD F. DEMPEWOLFF, Editor
DAVID COLEMAN, Managing Editor
BARBARA FORD, Assistant Editor
KATHERINE BRYN, Assistant Editor
GEORGE V. KELVIN, Art Director
JOHN M. MITCHELL, School Dept.

Contributing Editors

Isaac Asimov, Ph.D., Biochemistry
Joseph D. Wassersug, M.D., Medicine
Jeane Reinert, General Science
Daniel Cohen, General Science
Bruce Frisch, General Science
Dr. Arthur S. Freese, Technology
Stacy V. Jones, Inventions
Arthur Snider, Medicine
M. & J. Daugherty, Quiz

Editorial Advisory Board

Anthropology, Thomas W. McKern, Ph.D.
Astronomy, Kenneth L. Franklin, Ph.D.
Chemistry, Isaac Asimov, Ph.D.
Engineering, John G. Truxal, Sc.D.
Geology, George A. Doumani, Ph.D.
Medicine, Neal Fisher, M.D.
Oceanography, Robert B. Abel, M.S.
Psychiatry, Thomas S. Szasz, M.D.
Psychology, Roy Dreistadt

Editorial and general offices:

224 West 57th St., New York, N.Y. 10019

Subscription offices:

250 West 55th St., New York, N.Y. 10019

Advertising offices:

WARREN VANDEVEER, Advertising Director

224 West 57th St., New York, N.Y. 10019

Phone 212 765-6850

Chicago: 520 N. Michigan Ave. 527-2400, Al Perry, Manager. Detroit: General Motors Bldg., Trinity 5-8711, Charles Sullivan, Manager. Cleveland: 20310 Chagrin Blvd., Shaker Heights, 283-7788, William Leavenworth, Manager. Los Angeles: 601 No. Vermont, 666-6263, Bruno Michetti, Manager.

© 1971 The Hearst Corporation

SCIENCE DIGEST is published monthly by The Hearst Corporation, 959 Eighth Avenue, New York, N.Y. 10019. **RICHARD E. BERLIN**, President; **GEORGE HEARST**, V-pres.; **RICHARD E. DEEMS**, President of Magazines; **JOHN R. MILLER**, Executive V-pres.; **WILLIAM S. CAMPBELL**, V-pres.; **MAGAZINES**; **ALBERT A. RACHOI**, V-pres. and Director of Circulation; **RAYMOND J. PETERSEN**, Senior V-pres. of Magazines; **FRANK MASSI**, Executive V-pres. and Treas.; **HARVEY L. LIPTON**, Sec.

DIGEST®

APRIL • 1971

Vol. 69, No. 4

This month's cover is a happy coincidence from Edmund Scientific Co. in Barrington, N.J. While searching for a subject to illustrate our article on clinical hypnotism (page 44), a brochure arrived in the mail from Edmund. In it was this dazzling moiré—one of many they stock, and the most "hypnotic" design we'd ever seen. So here it is.

From: Edmund Scientific Co.

CONTENTS

SCIENCE NEWS

Bulletins at Press Time	4
New for People	14
Russian Press Reports on Soviet Science	30
Science Month	34
New for Industry	62
Colleges in Action	80

ARCHAEOLOGY

Mayan Mystery of the Onima Caves	9
Dream City	52

BIOENGINEERING

Your Next Doctor May Be a Computer	39
--	----

BIOLOGY

Pearl Hunting in Scotland	21
---------------------------------	----

CONSERVATION

How Scotland Saved Its Salmon	64
The Fur Seals Are Coming Back to California	74

EDUCATION

Boys and Girls Together in Sports	68
---	----

INVENTIONS

Pulsars for Coded Communication	71
---------------------------------------	----

MEDICINE

The Other Face of Plastic Surgery	16
Genetic Control of Man	56

PSYCHOLOGY

Hypnosis Comes of Age	44
-----------------------------	----

QUIZ

What Are You Afraid Of?	33
How Much Do You Know About Mammals	72

A SCIENCE ADVENTURE

Alaska's Valley of Death	24
--------------------------------	----

TECHNOLOGY

Man-Made Diamonds—Who Really Made Them First	88
--	----

ZOOLOGY

Zoo Tattoos Identify Animals	61
------------------------------------	----

DEPARTMENTS

This Month	2	Isaac Asimov Explains	69
Letters to the Editor	7	Book Reviews	84

SUBSCRIPTION PRICES U.S.A. and Possessions, \$5.00 for one year; \$9.00 for two years; \$13.00 for three years. Canada, add 75¢ for each year. All other countries, add \$1.00 for each year. Special Teachers' and Students' rates available through SCIENCE DIGEST School Plan, 25¢ a copy, minimum order 10 copies per month. Write to: SCIENCE DIGEST School Dept., at address below. Subscription Service: Mail all subscription orders, changes of address, correspondence concerning subscriptions, and Postmaster notices of undeliverable copies to SCIENCE DIGEST, Box No. 654, New York, N.Y. 10019. Please enclose your latest address label for quickest service when writing about your subscription.—Second-class postage paid at New York, N.Y., and at additional mailing offices. Microfilm copies of SCIENCE DIGEST are available through University Microfilms Library Services, Xerox Corp., Ann Arbor, Mich. 48106. SCIENCE DIGEST is indexed in READERS' GUIDE TO PERIODICAL LITERATURE and CURRENT CONTENTS under Education. Articles are indexed in SCIENCE DIGEST for six-month periods every January and July. Printed in the U.S.A. Contributions must be accompanied by a self-addressed and stamped envelope.

