

receivers what is observed through telescopes.

The true nature of the variable stars in the Magellanic clouds are likely to be identified.

Astronomers will establish more accurately the new scale of the universe which roughly doubles linear distances, and, therefore, doubles the age of the exploding universe.

It is probable that a new formulation of what an elementary particle consists of will be offered during the year.

There may be more understanding of the superconductive state which causes electricity to flow so easily in metals at very low temperature.

Within our own earth, there will be new information and theories upon the fluidity of the earth's core. There may be convincing demonstration of how the continents originated.

The electronic "brains" which have had such development in the last decade will grow still more and become more useful.

Computing machines will make use of magnetic elements as active components replacing tubes and transistors. Significant improvements in reliability of electronic systems in aircraft armaments will be attained through correlated design.

Color television may arrive on actual broadcast schedules. Tape recording of television is likely to have its first practical broadcast use during the year.

The great jigsaw puzzle of man's origin will have more pieces fitted into it. Africa is the great continent of opportunity in anthropology. There are likely to be further interesting finds in Africa of ancient man and his cultures.

Science News Letter, January 2, 1954

#### ICHTHYOLOGY

### Activity of Fish Told by Gill Size

► IF YOU ever wonder how much vitality a fish has, do not look at his muscles. The size of its gills is what counts.

Fast-moving, active fish, such as the mackerel and menhaden, are also fast breathers. They require a large gill area for their oxygen intake. Only sluggish, lazy fish, which rest and feed at the bottom of the ocean, like toadfish and flounder, can afford to grow small gills.

After measuring the gill surfaces of some 30 species of fish, Dr. Irving E. Gray, professor of zoology at Duke University, Durham, N. C., found at one extreme that the ocean-swimming mackerel carried an average of 1,617 square inches of gill surface for each pound of flesh. At the other extreme, the slow-moving toadfish carried only 127 square inches to the pound.

This difference means essentially one thing. If the toadfish were to swear off sedentary ways and attempt to take up the adventurous life of the mackerel, he would never make a go of it.

Science News Letter, January 2, 1954

## How to Stop Worrying

# HOW TO PAY FOR

## YOUR SON'S OR DAUGHTER'S COLLEGE EDUCATION

**EVEN** if you don't think you can save another dollar these days, and you're wondering how you're going to get together \$5000 cash for your son or daughter—the minimum cost of a four years' college education today—

George Adams' big new book *How to Afford That College Education—and Where to Study* definitely and clearly tells you *what to do to assure your child his (or her) college education.*

In his details about 970 American colleges and universities, he tells you all about the loan funds, work-study plans, employment opportunities, the plans to cut tuition and living expenses, and the many other ways that virtually guarantee a college education to anyone who really wants one.

He shows clearly how you and your child can swing the last three years of college, if you can meet the irreducible cash needs of the first year. He shows how to provide for these cash needs *out of current income*, and he even shows clearly how you can build up a college nest egg for your younger boy or girl through the right savings and insurance plan.

**This book does even more:**

—it tells how to find the best college for your son and daughter, the one that will give them the best training considering their talents, abilities, and the future career they want. With the help of this book's rating chart, you can stop worrying "Which college?" and can open the way to a successful, well-paid career for your child.

Of course you get details, briefly, about each of America's 970 leading colleges and universities; their costs, courses, location, the help they give parents and students in cutting cash needs and expenses.

**And your son or daughter learns still more: proved ways to earn one's way through college, proved campus businesses any intelligent college student can start, pre-college jobs from which a boy can save a full year's college expenses, the best kind of vacation jobs (combining vacations with good pay), etc.**

You'd think it worth while spending \$25, \$50, even \$100 if you could visit a college adviser and get from him even a fraction of all the facts in George Adams' *How to Afford That College Education—and Where to Study*. So, when you're told this book costs only \$2 on a money back guarantee if not satisfied, why wait?

To do the best you can to assure your child's college education and his success in life, send \$2 (cash, check, or money order) with name and address and ask for "college book." Mail to:

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