

READING SELECTIONS

THE
SACK-YOURMAN
DEVELOPMENTAL

SPEED READING

COURSE

FIFTH EDITION

An Analytical, Structural Method
To Develop Reading Efficiency
And Improve Study Technique

ALLAN SACK and JACK YOURMAN

THE SACK-YOURMAN DEVELOPMENTAL *SPEED READING* COURSE

An Analytical Method to Develop Reading Efficiency

Fifth Edition — The New Expanded Edition

AUTHORS

ALLAN SACK

Formerly: Director, College Skills Center and Speed Reading Institute; Supervisor, Adult Reading Laboratory, College of the City of New York; Lecturer, Reading, Study Skills and Vocabulary Development, Extension Division and Graduate School of Business Administration, Rutgers University; American Institute of Banking; Currently: Consultant on Teacher Training.

JACK YOURMAN

Clinical Psychologist, Formerly: Director, College Skills Center and Speed Reading Institute. Consultant, New York Telephone Co., Port of New York Authority, United Nations. Lecturer, Rutgers University, American Institute of Banking, Associate Professor, Fordham University. Currently: Consultant, I.B.M., International Paper Company.

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SECTION I — TESTING AND RECORD KEEPING

The testing in this course has a dual purpose. It enables the instructor to start at a realistic learning level, and provides you, the student, with a yardstick to measure your rate of progress objectively.

Your instructor will explain how to compute your reading speed from the chart on page 228 and will give you the answers to the comprehension questions on the test. You will record your speed and comprehension scores on your Progress Chart. Rather than emphasize speed alone or stress comprehension solely, this program aims at improving your *speed of comprehension*.

Traffic Courts

Cash Register Justice LEONARD SCANDUR

The traditional American image of justice—the benign, blindfolded lady balancing the scales of evidence—is being transformed into a hard-faced harridan punching a cash register. The United States traffic courts are to blame. Thirty million traffic summonses were issued by the nation's police last year. All but a few were disposed of by cafeteria-line justice and mass pronouncements of guilty from the bench. By these means, the traffic courts became the only tribunals in the entire court system of the country to bring in more revenue than their cost of operation.

New York City's traffic courts alone rang up around \$50 million in fines—very close to the estimate of anticipated revenue which the court is required to submit when the city's budget is being prepared. New York is not alone in this practice of estimating anticipated revenue from traffic courts. Collection of fines for traffic and parking violations has become a major item in municipal budgets throughout the country.

It was inevitable that the ever-swelling stream of revenue flowing into the traffic courts would bring with it abuses of the traditional concept of dispensing justice. Increasing case loads have strained facilities of traffic courts, and suddenly there is no time for the tradition that a courtroom defendant is innocent until proved guilty.

The establishment of violations bureaus has been one answer to the courts' jammed calendars. This permits a ticketed motorist to admit his guilt and pay a prescribed fine to a bureau clerk without ever having to face a judge.

Almost three-fourths of summonses for traffic and parking violations are handled this way. This procedure has practically eliminated the basic purpose of traffic courts—to educate the offending motorist, and to instill in him a greater respect for the law.

An authority on traffic courts, George Warren, foresaw one evil of such cash register justice twenty years ago:

The effective use of these bureaus avoids badly crowding ticket dockets and permits the bench to exercise judicial considerations of the more serious traffic cases. But the use of such bureaus is to be weighed against the purpose of the traffic court—to enforce the traffic law effectively and promote safety—and when utilization of the device does not or will not promote these ends, a violations bureau is out of place.

For this reason "cafeteria court" jurisdiction should be limited to offenses against the public convenience and should not include those which involve public safety to a serious extent. It is most desirable that all traffic offenders be brought before the judge for correction as well as punitive action.

For many citizens a summons to appear in court on a traffic charge represents their first, and in many cases their only, personal exposure to courtroom justice. Usually—too often—they are disillusioned by the experience. On this initial court appearance, the motorist has but one choice—to plead guilty or not guilty—and that, only after hours of waiting. If he chooses the not guilty plea, he must return to court another day, usually not at his convenience. He soon learns that it is easier, and cheaper, to plead guilty and pay a fine at the start. This breeds bitter motorists, not better ones.

Highly principled motorists who decide to buck cafeteria justice by insisting on a trial rarely meet a judge who is not impatiently staggering under his case load. An elderly defendant who recently came to a traffic court armed with photographs to prove his innocence of the charge against him protested to this writer the attitude of the judge. "I was treated practically like a criminal. The judge had allowed several attorneys in previous cases as much as ten minutes to argue their cases but he would not permit me the courtesy of trying to explain the circumstances or showing him the photographs I had."

In another case, a New York mother appeared for her daughter who had been charged with making an illegal turn. She explained to the court that

her daughter was attending college in Texas. She had been riding with her daughter when the summons was issued and wanted to explain the circumstances. "The judge told me he wouldn't listen to me. Then he said if I didn't get my daughter to return here for a hearing on the summons he would have a warrant out for her arrest."

Then there's the plight of a man who was tagged for speeding the morning he was moving his family from New York City to a community upstate. In the confusion of moving into a new home he lost the summons. He expected to be summoned again, but when nothing happened for a year he forgot the incident. But one day the post office forwarded from his old city address a citation which warned that he would be subject to arrest if he failed to appear in traffic court.

Dutifully, he arranged to make the long trip to the city. He got on a milk train, arrived in the city about 8 A.M. and was among the first to appear when court convened at 9 A.M. The man had brought with him \$50 and a return train ticket, hoping to get back to his business upstate the same afternoon. After two hours of waiting without being called, he approached a court attendant, explained his predicament, begged to have his case expedited and gave the attendant \$3 for his trouble.

He was called soon, but never got a chance to explain to the judge why he had failed to answer the original summons. "\$50 fine," the bench ordered. Having given the \$3 tip, he could produce only \$47 in cash. He searched the courtroom in vain for the attendant; his promise to mail the balance meant nothing to the clerk at the cash register. Neither did a walletful of identification proving he owned a business upstate. He was locked in a cell, fingerprinted and slated for transfer to jail. After a couple of hours in the detention pen, he was permitted to make a phone call. A brother who lives in the city got to court with the necessary \$3 minutes before he was due to enter a police van.

Besides fighting an undeserved traffic summons or a specified fine in the interest of justice, motorists today have an immediate reason for pleading not guilty. In many cases the cost of auto insurance is based on a car owner's driving record. Thus, a \$25 or \$30 fine in court can ultimately cost a car owner up to \$250 in excess premiums. As a result, more and more not guilty pleas are being entered in traffic courts,

and the situation becomes more and more unbearable for court staffs and defendants.

But it isn't only in crowded city courts that justice is compromised by cash-register procedures. Small towns have learned how to levy rich tolls on cars traveling within their borders.

Police traps have victimized transient motorists so flagrantly that the American Automobile Association now recommends detours around certain towns when mapping road directions for its members. One town in Kentucky, with a population of slightly more than 500, boasted that 80 per cent of its municipal budget was derived from fines imposed on passing motorists. And a Florida town was disenfranchised by the state for its overzealous policing of motorists visiting the Sunshine State. In Georgia last year the governor appointed a commission to study village traps that were snaring vacation-bound drivers. In one case, the investigators recommended that highway jurisdiction of a certain town be transferred from local police to the state highway patrol.

The problem of distorted traffic court justice has not gone unnoticed, and the American Bar Association is leading a national drive to improve the system. For the past several years it has sponsored traffic court conferences throughout the country. Regional traffic court judges and prosecutors attend to exchange views and recommendations. The director of this program, James P. Economos, has long been urging traffic court judges to demonstrate more dignity and less financial zeal in the conduct of their duties.

One New York City Traffic judge recently, gratified motorists and surprised attendants by opening his sessions with a mass pledge of allegiance to the American flag and a short lecture on the rights of a citizen in the court. This same judge insisted that policemen testifying in his court wear neckties and jackets and was chided for his punctilio.

At a meeting last December in Chicago of legislators and their representatives from seven states, Economos told his audience that traffic courts must be relieved of the "stigma" of being simply revenue courts by being staffed adequately to handle their immense burden. His recommendations of a legislative program to correct traffic court abuses included the elimination of the current requirement that traffic courts estimate anticipated revenue. Instead, he proposed that the actual revenue for the prior year be

submitted for budget purposes.

Through its traffic court program, the Bar Association hopes to have the courts restate the American principle that a man is innocent until proved guilty. "Too many judges," said Economos, "proceed on the theory that a motorist is guilty of a traffic offense because a policeman has handed him a summons."



IS TRAFFIC COURT JUSTICE BLIND?

By ALBERT MAISEL

I

It was 2 A.M. on a hot August night. In a San Francisco suburb, a man lurched out of a bar and into his car, and roared northward at 80 miles an hour.

Before police could stop the drink-crazed driver, he had crashed into another car and sent six persons to the hospital. At the police station he was examined by a doctor who confirmed, by a chemical test, what everyone already knew. Six people had been maimed because a madman, too drunk even to walk, had gotten behind the wheel.

Is that driver now in jail? Hardly. Police charged the man with felony drunken driving (which carries a penitentiary penalty in California), reckless driving, and driving on the wrong side of the highway. When he was taken to court, the felony charge was dismissed. The injured were there, ready to testify, but they weren't even called to the stand. The two lesser charges brought a fine of only \$200 and a slap-on-the-wrist license suspension of 90 days.

Move up the coast now to Portland, Oregon, where a motorized maniac was brought into court after killing his victim and running from the scene. Did he end up in the penitentiary? Not at all. A charge of negligent homicide was substituted for the original indictment, and the killer, after paying a \$75 fine, walked out of court a free man.

These cases are not exceptional. New York City's magistrates last year discharged nearly two-thirds of all the defendants who were tried before them for drunken driving. Of those they convicted, 91 percent were let off with either a suspended sentence or a small fine. Not a single one of the five — that's right, only five — who received jail sentences served more than 30 days.

Records such as these go a long way toward explaining why we still kill some 32,000 people on our highways every year and maim 1,100,000 others. In most cities, serious offenses are all too easily written off the books in a flood of continuances, dismissals, and ridiculously small fines.

II

But there is another shocking side to the traffic-court picture. In city after city, police and the courts have ganged up on the least dangerous of motor-law offenders — the harried salesman and the busy housewife who violate parking ordinances. These motorists, guilty of little more than trying to go about

their business, are being pursued with single-minded efficiency. Police are taken off their motorcycles and squad cars to spend their days ticketing parked cars.

How far this has gone is demonstrated by St. Paul, Minnesota. Two years ago that city had 31,747 traffic cases. Last year the load on its courts had almost doubled: 63,266 cases. The entire increase is accounted for by the drive against parkers. Overtime parking cases rose from less than 22,000 the year before to nearly 55,000 last year.

In Detroit, in less than a decade, police complaints against parkers increased 65 percent, while complaints against nonparking violators increased less than two percent.

In Syracuse, New York, convictions for moving violations increased less than ten percent, while convictions for parking violators in the same period increased more than 450 percent.

Behind this urge to penalize parking lies the discovery by many tax-hungry municipal officials that there is gold mine in parking-law enforcement. Cleveland's income from traffic fines last year was six times as great as it was five years ago. In Charleston, South Carolina, Salt Lake City, Utah, and Kalamazoo, Michigan, traffic-fine revenues have jumped more than 400 percent. In Los Angeles, traffic fines and forfeitures pay the cost of operating all municipal courts and yield the city a profit of \$3,200,000 besides.

Throughout the country, the campaign to soak the parker has more than doubled the already overwhelming burden of traffic cases that clogged our court machinery for years. Judges are so busy mechanically repeating the routine of "Ten dollars and costs" in trivial cases that they have no time to deal properly with serious violators.

As the number of trivial cases has grown, city after city has resorted to new device — the cash-register or cafeteria court. More than 70 percent of all traffic tickets served by the police are now answerable in such Violations Bureaus. All the overtime parker has to do is to plead guilty — whether guilty or not — swallow his perhaps valid mitigating explanations and answer "Yes" to the clerk's refrain of "Ya wanna pay?"

True, the ticketed citizen still has the right to demand his day in court. But when he tries to exer-

IS TRAFFIC COURT JUSTICE BLIND? (continued)

cise that right, he finds numerous pressures exerted to induce a guilty plea. I have sat in 40 courtrooms during the last six months watching this parody of justice. Typical was the performance I witnessed in a New York court last summer.

The judge arrived more than an hour late while nearly 200 accused motorists sweated and fumed. First he had his clerk call up all who were ready to plead guilty. Anyone offering a not-guilty plea or an explanation was gruffly ordered back to his seat. One woman approached the bench with a baby in her arms, to ask for special consideration. The magistrate cut her short with "Lady, if you hadn't done wrong, you wouldn't be here. Now get back to your seat and take your turn like everyone else."

The vast majority of the "guilty" were overtime parkers or those caught parking in restricted areas. Without discernible rhyme or reason they drew fines of from four to ten dollars.

Next — an hour later — came the "guilty with an explanation" group. Many were speeders. If their stories were glib, they got off with fines which were sometimes less than those of the parkers who had pleaded guilty before them.

Those who pleaded not guilty had to wait till noon before they were even called before the bench. Then the vast majority were held over for a trial at a later date. Confronted with further loss of time from work, many offered to change their pleas to guilty.

Small wonder that the attitude of the average motorist tagged with a parking ticket is one of utter cynicism. As my neighbor in court, a burly truck driver, put it: "Don't be a dope. Plead guilty and get it over with."

Drives against the parker do not contribute to traffic safety; often they work against it. For the last year and a half, New York City's police have been conducting a savage drive against parkers. Last year they ticketed 83,806 more parking-ordinance violators than the year before. But to accomplish this prodigy of law enforcement they had to let up elsewhere. They caught 8,270 fewer speeders and 6,807 fewer drivers who ran through red lights.

As a result, New York — which has always been below the national average in street safety — has fallen into last place among the largest cities of the country. This year, accidents, injuries, and deaths have all increased over the previous year.

III

Chicago has had a different experience. Long at the bottom of the heap in traffic safety, Chicago finally called upon the Northwestern University

Traffic Institute and the International Association of Chiefs of Police for a plan to cure its difficulties.

Studies made early last year showed that 80 percent of all traffic tickets being issued in Chicago were for nonmoving violations. In the month of February, only three speeding tickets were issued.

A new policy of selective enforcement was developed. Men were called away from the fruitless job of tagging parked cars. The number of motorcycle policemen was trebled, and 54 special traffic-control autos were added. Police were instructed to give priority to violations connected with traffic accidents. Reckless and drunken driving were placed at the top of the enforcement list.

The pay-off has been dramatic. In the year before the reforms, Chicago had 529 traffic deaths. In the year since, traffic deaths dropped to 435. Ninety-four lives were saved and thousands of injuries avoided.

But Chicago knows this is only the first step. The process of driving shoppers and businessmen out of town by the parking-ticket route has been halted. Now the city is planning to invite more cars than ever before to park in its busiest districts — not on the streets but in municipally owned lots and garages. Nearly 30,000 parking meters are to be installed in the Loop and on outlying arteries. The revenue from these meters will finance new off-street parking spaces.

Outstanding in this respect has been the achievement of White Plains, New York, a large shopping center, which set up the first Parking Authority in the United States two years ago. Instead of chasing parkers away with punitive fines, the city put meters on its main streets and dedicated their revenue to the improvement of parking facilities. Meter revenues have soared, and the money is used by the Parking Authority.

San Francisco, with one large underground municipal garage already paying for itself, is planning \$19,000,000 worth of new projects to house 15,000 cars. Pittsburgh has set up a Parking Authority and is issuing \$34,000,000 in bonds to be liquidated by the income from 32 big public lots and garages. Denver has a \$4,500,000 program under way.

IV

These plans are impressive. Yet, there are still far too many cities that still think of parking as merely a matter for police action. Until these cities wake up, our traffic courts will continue to be swamped with petty violators, and real law enforcement for safety will continue to be sacrificed.

Reading Hygiene

The human eye is still uncivilized. Thousands of years ago, poets made up songs and chanted them for eager ears. These songs were handed down by word of mouth. For a long time they were not written, since no one, song maker or listener, thought of writing books.

When writing was finally developed, it was used very little at first. Only a few precious records were carved on stone. Eventually, men began to use less bulky writing materials — skins and various paper-like fibers, such as the Egyptian papyrus. For hundreds of years, everything was written by hand.

Printing was invented by the Chinese, and was first used in Europe in the twelfth century. It was not until 1475, however, shortly before Columbus sailed for America, that William Caxton printed the first book in English. Even after that, books were so rare that few people used their eyes for reading. Not until much later did they become concerned about how to prevent their eyes from getting tired when reading.

Your eyes get tired for several reasons. If you spend only five minutes reading, your eyes may make over one thousand separate stops and starts as they move across the page. These many and rapid movements often tire your eyes. It is also more tiring to do close work than to look in the distance. When you read or write, certain eye muscles tighten up or contract; when you look in the distance, these eye muscles can relax, and that rests them.

When you looked at the title of this article, perhaps you asked, What is reading hygiene? *Hygiene* tells us how to live comfortably and healthfully; it helps us to make the best use of our bodies. *Reading hygiene* tells us how to make the best use of our eyes — how to prevent eyestrain and how to read more comfortably.

When you misuse your eyes, they let you know in various ways. Your eyes may hurt and your eyelids become red. You may not be able to see clearly. You may have headaches, feel dizzy, or be uncomfortable in other ways. The human eye will stand hard use, but not abuse. Every day you have many opportunities to use your eyes wisely and well.

Here are some good hints for good eye health that everyone can follow:

Rest your eyes before they get tired. Have you ever been so interested in a fascinating story that you read on and on without a break? Perhaps you paid no attention to the distress signals your eyes gave you. You can easily avoid this sort of strain. Just close your eyes from time to time or look off at some distant object. You will find that doing this relaxes your eye muscles, just as a good stretch relaxes your body.

Never be careless about lighting. Do not read in either too dim a light or a glare. Be careful not to read in the twilight or in direct sunlight. It is hard to say exactly how bright a light bulb you should have.

The strength of the light bulb you need depends on many things, such as the distance of your book from the light and the color of the walls. Dark walls absorb light, while pale colors reflect it. Have the kind of light in which you see most clearly and comfortably.

Read with the light falling over your left shoulder (or the right, if you are left-handed). In this way, you keep out of your own light and avoid a bright light shining in your eyes.

Hold your book the distance from your eyes at which you can read most easily and comfortably. Many people read comfortably with the book about fourteen inches from their eyes. But each one of us must find the distance that is best for him.

The way the book is held is important, too. You should not lay it flat on the desk or table. Hold it upright in your hand at the best distance from your eyes. This lets you hold your head up as you read.

Try not to read much while traveling on a moving train or bus. That causes eyestrain for many people. If you ride to school and back, you can use the time learning difficult words or formulas and thinking about what you have read.

Some of us need glasses. If you do, get them and wear them. Science comes to your rescue by providing glasses, which lessen the strain on your eyes. A thorough and skillful eye examination may show that you need glasses. However, to be of any help, glasses must be worn as directed and kept clean and properly fitted. Poorly fitted glasses are worse than none at all.

What about the type of the book? That is important, too. In many older books and in some magazines and newspapers, the type is too small and close together. When words and lines are too close together, it is hard to read the words and sentences. When they are too far apart, it is hard to bring the parts of a sentence together or to pass quickly from one line to the next. Fortunately, most of the textbooks you use have good-sized, well-spaced type on dull white paper. Whenever possible, you should choose books printed in this way.

Following all these suggestions will do much to guard your eyes from strain. But — there is still one important factor.

The health of your eyes depends on the health of your body as a whole. If you get plenty of good food, sleep, exercise, and happiness, you will build health and improve the condition of your eyes. Poor general health will soon affect your eyes. If you have had a serious illness, such as measles or scarlet fever, your eyes, like your muscles, are weaker than usual. They tire quickly, are oversensitive to light, and need special care.

Your eyes are your most faithful servants. Like friends, if treated well, they will help you for many years.

ON READING ANOTHER LANGUAGE

By Ruth Strang

BEGINNING a foreign language is somewhat like seeing a slow-motion picture. When we watch an actual tennis game, we may be able to follow the ball, and to pay fairly strict attention to the players; but we simply cannot catch all the little movements which make up what we call a stroke. But the slow-motion picture of the game will enable us to see every one of these movements. Our first reading in a foreign language is as much slower than our reading of English as the motion picture is slower than the game itself. At the start we are all too conscious of the elementary mechanics of reading. If our general reading habits are good, probably this slow-motion reading will be smooth and skillful. If our general habits are poor, we may learn something from the slower process which will help in the diagnosis of our difficulties.

The secret of making rapid progress in reading a foreign language is this: To learn many words and constructions accurately, and at the same time to be able to get the meaning from those partially unknown. We must do some guessing in almost every sentence, but we must have some clues for guessing. In addition, we must make the most of everything we know, and we must also keep adding to our stock of definite knowledge by testing our guesses.

Many of us make slow progress in reading Latin or German or French or Italian because we do only one of the things suggested in the previous paragraph. Some of us conscientiously learn vocabulary and rules for grammar, and translate "word for word"; some of us guess wildly without making any effort to acquire a real knowledge of the words and the sentence structure.

What are the definite things we must know? First of all, we must know the meaning of a number of words. We must have a small vocabulary to start with. But how words are put together to make meaning is likewise important. Accordingly, our second task is to become familiar with grammar and syntax (the *tax* of syntax, from the same root as the military term *tactics*, means "the way troops—or words—are drawn up"; *syn* means "together"; *syn-tax* means "drawn up together.") For thorough mastery, we need a third thing, knowledge of those special phrases which do not follow the rules, but which are familiar to everyone who knows the language. These we call idiomatic expressions, or idioms. An example of an English idiom is "run home." We do not say "run house" or "run school." But "run home" and "go home" have been used as idioms so long that it would sound quite wrong to say "run to the home," "go to the home." Notice that all three kinds of knowledge have to do with words: first, words in themselves; second, the rules for putting words together; third, words put together in special ways which differ from those allowed by

the rules.

The laws of reading apply to a foreign language just as they do to one's own language, and the first law is: Learn to read by reading. Even in the very earliest stages of the study of a new language, when all the reading we do is confined to a few short, disconnected sentences, it is better to read these sentences than to translate them. This means that we read the entire group of sentences without trying to get the meaning of each separate word. This we may do two or three times, preferably aloud. If, after doing this, we do not know the meaning of the sentences as wholes, we should try to detect how they are put together. We can discover which words are closely tied to one another in phrases or clauses. Sometimes such a breaking up of a difficult sentence shows us the meaning at once. If not, it shows us what we do not understand—perhaps the words themselves, perhaps their arrangement.

A vocabulary of a new language is acquired in several ways: by intelligent guessing from the context, by use of the dictionary in connection with our reading, and by special vocabulary drill apart from reading. Shall we build up our vocabulary slowly and laboriously, so that years later we can read fluently; or shall we learn our vocabulary at the same time that we are reading? Perhaps the easiest and most interesting way to increase the vocabulary is to get a story written in an easy style (the teacher or librarian can recommend one) and read it *as a story*. To read a selection as a story means to read whole sentences and paragraphs rather than to translate word for word. Even though we lose the meaning here and there, we finally grow familiar with certain words without looking them up at all. Of course, this is just what we do in reading stories in our own language. Such reading gives us a better feeling for idiomatic usage and for syntax than would be gained from word-for-word translation.

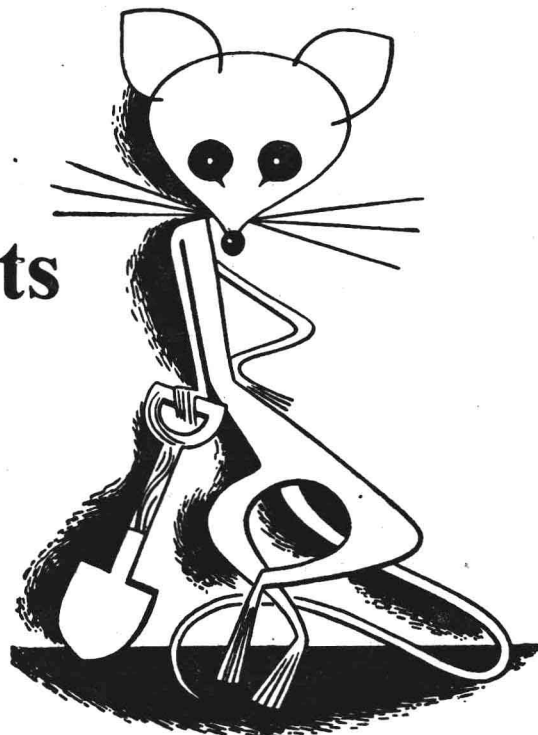
This "feeling" for vocabulary and usage must, of course, be verified and strengthened by definite study of rules and idioms. Rules of grammar are time-savers. A rule is not an arbitrary commandment laid down in the past. It is merely a statement of the way things are, or the way things act. We might learn all the ways of the words in a given language by reading many books that have been written in it, and noticing the usual mode of behavior of words. But we do not need to do this because it is what has been done by the men who tell us what the rules are. By using their work, we can save time and energy and make more rapid progress.

Idiomatic expressions of whatever length should be learned as a whole, as though each expression were a word in a vocabulary. They should be learned by use both in reading and in conversation, and by drill.

The Thin Rats Bury The Fat Rats

James Rorty

Drawings by Sam Norkin



WHAT is most notable about the Cornell rats is not so much the rats themselves as the company they attract. Not only do biochemists, nutritionists, and physiologists come to visit them; they are also being inspected by increasing numbers of highly impressed and thoughtful psychiatric social workers, pediatricians, gerontologists, economists, and demographers.

There are many cages of these rats in the Cornell nutrition laboratory at Ithaca, New York. At first sight there is nothing remarkable about them except that they are distinctly on the thin side, while obviously healthy. Their white coats are sleek, their eyes glisten, their movements are lively. You see them exercising diligently in their little treadmills, proving their intelligence by successfully finding their way through difficult mazes, occasionally pausing to consummate impromptu and zestful matings. At which their attendant

shocks you by remarking proudly, "If he were a human being, each of those rats would be one hundred twenty years old."

Back to Methusaleh! And they aren't just biological sports either. Not breeding but feeding got them that way, or rather under-feeding. The Cornell scientists have proved that it is possible to double the normal life span of the rat; to delay the onset of degenerative diseases that rats—and human beings—normally die of; to produce rat Methusalehs at will and in quantity simply by keeping random litters of rat weanlings on an excellent diet *which is low in calories*, especially during the early stages of their lives.

The implications of this discovery—which is the result of twenty-five years of studies of the aging process conducted by Dr. Clive M. McCay and his associates (first with trout, then with rats and hamsters, and more recently with dogs)—are potentially tremendous. For if controlled feeding

James Rorty is the author of American Medicine Mobilizes and the co-author of Tomorrow's Food. It was while working on the latter that he first met the aging rats he describes here.

can double the normal life span of rats, is it not possible that the same thing can be done eventually with other animals? With human beings?

To put it crudely at first, what these findings suggest is that the secret of a long and healthy life may lie in diet; that if the human race intends to deal intelligently with the degenerative diseases of later life, it had better change its eating habits, beginning in childhood; and that the best diet for the purpose may be one which is low in calories but rich in vitamin and mineral requirements—in short, what most of us would call a good reducing diet (of which, more later).

HOW long might men and women live? The incredible fact is that nobody knows what is the maximum life span of man, or of any other species for that matter. Recently the Cornell group, helped by a substantial subsidy from the United States Public Health Service, has been doing controlled feeding experiments with dogs. These take longer than those with rats, for the normal life span of the dog is ten years as against a little over two for the rat; but they will probably enable the scientists to extend their rat findings greatly because the physiology of the dog is closer to that of man.

Much has already been learned from these experiments about the diseases that old animals die of—human beings as well as rats: diseases such as cancer, diabetes, nephritis, arteriosclerosis, hypertension, heart disease. When enough has been learned about the relation of the degenerative diseases to nutrition *at all ages*, the new science of gerontology—the study of the aging process—will have equipped itself powerfully with some of the basic physiological knowledge that it has hitherto lacked. It may then be possible to fulfill a modest fraction of Ponce de Leon's dream: to delay the onset of the degenerative diseases by five, even ten or fifteen years eventually; and thus incidentally to reduce the growing public burden of old-age support.

Provided, of course, that the required revolutions in popular food habits, in the food industries, and in pediatrics can be duly engineered. And provided especially that more knowledgeable and careful feeding in childhood and throughout life really produces more lively and productive sexagenarians, septuagenarians, and octogenarians—not just Struldbuggs who will be a nuisance to themselves and to others.

The Struldbuggs, you will remember if you read the unexpurgated edition of *Gulliver's Travels*, was the name Dean Swift gave to the creatures of one of his most macabre imaginings. They are condemned to immortality in the flesh. "They commonly act like mortals till about thirty," reported Gulliver. "After which by degrees they grew melancholy and dejected, increasing both till they come to fourscore. Then they had not only all the follies and infirmities of other old men but many more, which arose from the dreadful prospect of never dying. They were not only opinionative, peevish, covetous, morose, vain, talkative, but incapable of friendship and dead to all natural affection, which never descended below their grandchildren. . . . Whenever they see a funeral they lament and repine that others are gone to an arbor of rest to which they themselves can never hope to arrive."

Fortunately, the Cornell rats are not immortal, nor do they behave like Struldbuggs. They are distinctly happy animals as well as physically vigorous up to the age of three—the rat equivalent of one hundred years in human beings; at the end they go to pieces suddenly, like the one hoss shay—which of course is ideal from the point of view of the gerontologist and of most of us mortals, too.

II

DR. McCAY'S studies of aging received their first impetus at Yale a quarter of a century ago. As a research fellow under L. B. Mendell, McCay was assigned to study the growth of trout in the Unionville, Connecticut, hatchery, with the idea of reducing the cost of their feeding. To his surprise he found that if he cut down the rations of the trout, they grew more slowly, but lived longer. When McCay moved to Cornell, he transferred his trout experiments to the Cortland, New York, hatchery and continued them over a period of sixteen years.

The Cornell rat experiments were begun in 1930. Rats were kept thin on diets high in vitamins, minerals, and essential amino acids but low in calories. Thereby their growth was retarded, but they greatly exceeded the normal life span of the rat, the females regularly surviving the males. As against two years, which corresponds to the biblical three score and ten of human beings, the oldest of these thin rats lived 1,456 days—just short of four years. That would be age one hundred forty in a comparable extension of the human life span. This thin,

THE THIN RATS BURY THE FAT RATS

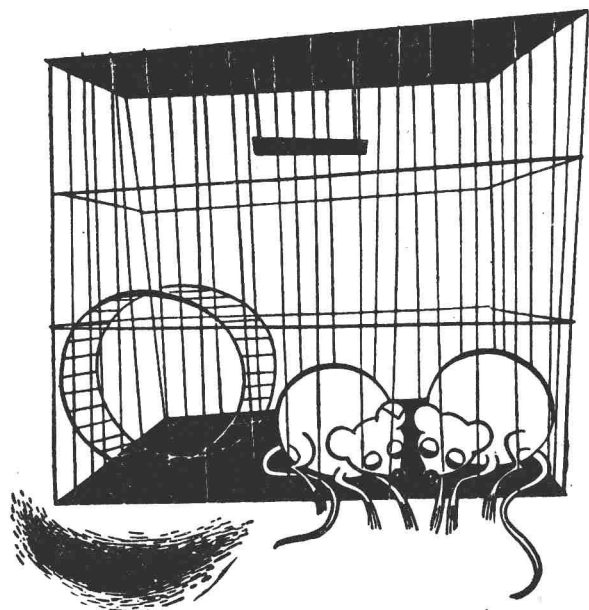
spry rat Methusaleh, like other rat ancients of the same series, remained vigorous, potent, and fertile up to within a few weeks of his death.

Normally rats become middle-aged by the beginning of their second year, when tumors appear and lungs, kidneys, and the middle ear show signs of deterioration. At this point tumors developed in 12 per cent of the fat rats, but in none of the thin rats.

A rat study started in 1939 involved 500 rats. Some of these were killed and autopsied at regular intervals to follow the development of the chronic diseases. It was found that the chronic pneumonia that kills most rats develops much more slowly in those fed restricted diets; the kidneys too, like the lungs, stayed young longer in the thin rats. The thin rats that were forced to exercise also seemed to have less calcification of the heart. In general, the optimum conditions for a long life proved to be thin bodies, exercise, and a low protein diet, with this protein supplied by liver. This sounds remarkably like what the family doctor has been telling his older patients these many years.

When rats were allowed to grow normally during the first year but kept on a restricted diet from then on, they lived longer than the control rats, but not nearly so long as those which had been put on short rations from the beginning.

In one experiment, 70 per cent of the fat rats had died by the end of nine hundred days, as compared to only 20 per cent of casualties among the thin rats. Thus four-fifths of the thin rats were alive and happy at what would be age ninety in human beings.



The control rats were kept fat by giving them supplementary rations of dried liver, dried whole milk, or dried starch and sugar. Of these fat rats, the males who were fed starch and sugar became sterile during the first half of life. Nobody loved those starch- and sugar-saturated fat rats, including their attendants, who noted serious faults in their dispositions. In contrast, the retarded thin rats remained lively and amiable, procreative and fertile, well into old age. The fat rats that were fed milk and dried liver also remained fertile during their relatively short life spans. But only the thin rats achieved long lives and merry ones.

III

THE Greeks knew that thin animals, including thin human beings, live longer than fat animals. They also speculated, as far back as Aristotle, on the relationship between the rate of growth and the total life span. And even in the Renaissance, when men tended to be gluttons and wine-bibbers who lived violently and died young, there were lean ascetics who demonstrated that one could eat less and live longer.

Perhaps the most celebrated of these was the Italian centenarian Luigi Cornaro (1464-1556), whose book *The Art of Living* was republished in this country in 1916. Born with a poor constitution, Cornaro ate and drank to excess for nearly forty years before he saw the error of his ways. He recommended a diet limited to about fourteen ounces of food a day, consisting of soup, bread, and an egg. By restricting himself to this diet—plus wine instead of water—Cornaro deliberately kept himself slightly hungry for the last sixty years of his life. He administered the bishopric of Padua, drained marshes, encouraged agriculture, and made a good deal of money. At the age of ninety he was still mentally and physically vigorous, cheerful, and contented.

Cornaro's recommended weekly food allowance is slightly smaller than the prison rations studied by Edwin Chadwick, a pioneer English sanitarian of the nineteenth century. Some of the prisons studied by Chadwick served 122 ounces of food per prisoner weekly, this being approximately the food consumption of the average English agricultural laborer of the period. Other prisons served nearly twice this amount. The prisons with the lowest food allowances had by far the lowest sickness and mortality rates.

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Although 122 ounces of food weekly is less than the minimum subsistence allowance of American relief agencies, contemporary nutritionists and geriatricians have no difficulty in believing Chadwick. They say flatly that we Americans eat too much at all ages but especially after the age of forty. "Obesity," wrote Darby and Milam in the *American Journal of Public Health*, "is a common unquestioned form of malnutrition, occurring in some fifteen to twenty per cent of the population, which has been greatly neglected."

Because we eat too much we are too fat and because we are too fat we victimize ourselves and burden our relatives and the state by becoming the premature victims of the degenerative diseases.

THE question, "What price obesity?" is answered in part by the life insurance statistics. Even as little as 10 per cent of overweight increases the mortality rate 20 per cent. If you are 15 to 25 per cent overweight, your chance of dying prematurely is 44 per cent greater than the average. If you are more than 25 per cent overweight, your chance is 74 per cent greater than that of your normal contemporaries!

The handicap of obesity increases with age. Of ten fat men at thirty, six will survive to sixty, three to seventy, and perhaps one to eighty; of ten lean men, eight will reach sixty, five will reach seventy, and three will become octogenarians.

Excessive consumption of sweets is believed to be a factor in causing diabetes, and obese diabetics are notoriously bad risks. They are two-and-one-half times as likely to die prematurely as diabetics of average weight, whereas the mortality of underweight diabetics is 26 per cent below the average for the group.

The statistics of cardio-vascular disease exhibit a similar pattern. Overweight increases the mortality by 62 per cent; underweight decreases it by 23 per cent. Dr. Edward A. Stieglitz, author of *The Second Forty Years*, believes that more than half the cases of heart exhaustion in later years are due to obesity.

When you admit to a "tendency to take on weight," what you mean is that you have a tendency to overeat. Ninety-nine per cent of obesity is the result of overeating; one per cent is due to other causes. Says Stieglitz: "Any adult obviously overweight might just as well wear a placard fore and after saying 'I ain't got no self-control.'"



Being a reformed fat man himself, by his own confession, Dr. Stieglitz can afford to be intransigent in such matters. He tells us how he took off sixty pounds, at the gradual rate of about a pound a week. His prescription is simple: Eat a few less calories than you burn up in work and exercise.

IV

LET us be specific. The requirements of a safe and effective reducing diet are simple. There are dozens of such diets; your physician can probably provide you with one which will serve admirably. Here is the diet on which I myself have been losing about a pound a week for the past two months:

Breakfast: Coffee with milk but no sugar or cream (the Cornell rats thrive on coffee). One egg. Citrus and other fresh fruit in quantity sufficient to satisfy hunger. Whole grain muffins or bread. One pat of butter.

Lunch: A large salad composed of lettuce, celery, carrots, cabbage, pepper, peas, lima beans, etc., with a small amount of soy bean oil and lemon juice or vinegar dressing. Fruit. Buttermilk.

Dinner: A hearty soup or meat, usually one of the more nutritious organ meats such as pork liver, kidneys, heart. One or two vegeta-

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bles. For dessert, fresh, dried, or canned fruit without sugar.*

Note that this diet is cheap, easy to prepare, and shy on the high caloric sugars, starches, and fats. Whole grains, raw salads, milk, buttermilk, and organ meats are relied upon to provide optimum vitamin and mineral requirements. (We buy cleaned wheat, rye, and corn by the pound or the bushel and grind it freshly in a kitchen electric grist mill.) Dr. N. Phillip Norman, my collaborator, who is the author of *Constructive Meal Planning*, recommends a diet somewhat similar to the above for both overweight and underweight patients. For it is his experience that once an optimum intake of proteins, minerals, and vitamins is provided from natural food sources, the fat ones lose weight and the thin ones gain.

It is easy for the physician to write this prescription. It is less easy for even intelligent and reasonably well disciplined laymen to fill it. What makes it hard is that our whole American food economy and culture is oriented, not toward optimum nutrition, but toward the obese type of malnutrition. To take off fat, you must scrap ruthlessly the dietetic and culinary folkways of your family and your community. You are obliged to secede from the American food culture. You become the private, if not the public, enemy of whole industries. Your grocer raises his eyebrows when your order no longer includes white bread, cakes, pies, and soft drinks. The butcher is dismayed when you stop buying fatback and bacon. The milkman is saddened when you stop keeping up with the Joneses in your purchase of cream and butter; nor is he placated when you begin buying a daily quart of

buttermilk. The liquor dealer sniffs when you stop buying scotch, bourbon, gin, and rum and walk out with a modest quart or two of claret. All these tradesmen make less money out of you when you begin to eat and drink sensibly, and you can't expect them to like it; maybe you should stay fat in order to keep them in funds.

Perhaps the most difficult task of a man bent on reducing is to emancipate his wife from her unconscious thralldom to the menu and advertising pages of the women's magazines. It is hard for her to believe that she is not letting her husband down—or losing face with guests—when she stops making those elaborate, colorie-laden desserts.

For the fact is that the customs of the country, and the industries which support them, tend to fatten us—and shorten our lives thereby; that there has been at least a twenty-year lag in the application of nutrition science; that as a nation we consume at least twice as much sugar as we should; that despite two decades of agitation and governmental intervention, our milling and baking industries are still unwilling or unable to provide us with reasonably priced white or whole-grain breads of high nutritional quality made without the use of chemical bleaches or "improvers"; and that our food processors and their *de facto* allies, our advertising-supported press and radio, have established vested interests in some of our worst—and most fat-accumulating—food habits. One might say that there is fat on the midriff of the American citizen because there is fat on the midriff of the American body politic.

*Here is Dr. McCay's own comment upon this diet: "Our idea of a low calorie diet is actually to keep the calories down. Few fat people will do this. The simplest way to keep the calories down is to limit the ingestion of fried foods and those high in fat, as well as to cut the cream out of coffee and other foodstuffs. The low calorie diet also involves reducing the alcohol, since every gram of alcohol contains seven calories in comparison with four calories for every gram of sugar. It also involves a moderate use of starch, although I think people often omit potatoes needlessly. Such a diet involves eating whole grain breads, since they satisfy the demands for bulk. It also involves eating a moderate amount of high vitamin meats. As you are aware, the richness of meats in vitamins starts at the top with liver. Next in order are kidneys, then heart, and finally, muscle meats. Such a diet involves a moderate use of eggs and also such special products as wheat germ and dried brewer's yeast. If there is a choice in such diets between low quality bread and potatoes, I believe potatoes should be given the advantage, since they contain high quality protein and are less liable to have been injured by processing. Furthermore, potatoes favor assimilation of Vitamin A, in contrast to cereal."

LET me illustrate what I mean. One of the most important findings of the Cornell scientists was that both rats and dogs, as they age, lose calcium. The lesson seemed to be that older people ought to take in more calcium. A logical place to apply this lesson seemed to be in public institutions such as hospitals in which old people live. And bread seemed a logical carrier for both calcium and cheap proteins needed both by institutionalized old people and low income groups everywhere. Dr. McCay and his associates found a willing collaborator in Commissioner Frederick MacCurdy, head of the New York State Department of Mental Hygiene. As a result of this collaboration, the inmates of the New York State mental hospitals (a large percentage of whom are confused old people) will soon be among the comparatively few Americans whose health environment gives them access to a nutritionally satisfactory loaf of white bread.