To show our appreciation of your long-term commitment to The Gamut, we have reprinted seven of our articles about Cleveland in a paperback called The Gamut Looks at Cleveland. It is yours, free, if you renew at the Lifetime ($100) or three-year rate ($25). Don't miss this excellent opportunity.

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"Quicquid agunt homines nostri farrago libelli."

As you know, we are a periodical of "general interest." And our publisher is a university, an institution whose name implies generality: students from all backgrounds, subjects of all kinds. Unfortunately The Gamut's essential principle, generality of subject matter, often seems to need defense, or at least explanation.

Today, for every general magazine there are 500 specialized ones. If a reader is interested in tropical fish, he subscribes to The Tropical Fish Hobbyist instead of waiting for The Atlantic to come out with an article on this topic. Similarly for others: philately, gardening, politics, furniture, print collecting. But even with such specialized publications one can't be sure of satisfaction. Not every issue of Stamps has an article on where to find prisoner of war covers. Nor does every issue of Horticulture have articles about swamp flora. Short of seeking ever more specialized magazines one must look for that sort of information in reference books. A periodical by definition and origin is not a work of reference but an occasional publication dedicated to bringing to readers' attention matters of general interest. Richard Steele, the editor and writer of the first true magazine (The Tatler, which opened on April 12, 1709) said it well in his epigraph which we have borrowed for our title ["Whatever mankind does will
be the subject of our miscellaneous publication."—Juvenal, Satire I, 85-86).

The principle of general interest is based on the ideal of general education: that there are a certain number of subjects that every citizen entitled to be called educated is expected to be familiar with, regardless of vocation. We at the university ought not to exempt accountants from a knowledge of history, nor literature students from a knowledge of physics. The purely vocational student, like the reader of specialized magazines, will never know which end is up when the world turns.

There is probably no other magazine on earth where one can find an article on thermometers next to one on fasting, a distinction we think worth claiming without making a fetish of it. We believe our readers will benefit (and our non-readers would also if they only knew) from the facts our writers provide about these topics. Although we are not surprised to learn that not eating is considered good for you, we are dismayed to find how uniformly our superstitious race has invested abstention from food with devotional significance. Dismaying too is the inside view of education in China provided in this issue. Although some may be pleased finally to find something that makes our own educational system look good, thoughtful readers will also note ominous similarities between the two systems; in China the abuses have merely been more extreme. The present issue of The Gamut also has another article on education, the education of a farrier, written by one who finds no knowledge irrelevant to his trade of horseshoeing. And, at another angle of the educational mansion, readers may learn about the aesthetic experience itself by considering the peculiar deception known as "trompe l'oeil." Not only is such miscellaneous reading of practical value, it makes us feel more in tune with the universe. Knowing what heat is and realizing for how many centuries it could not be measured gives the sun and the snow a different look and meaning. That new look of things is the essence of learning, and the satisfaction it provides to those for whom learning is a daily refreshment is of inestimable worth. It is the role of The Gamut both to provide this refreshment and to enlarge the part of the population that we can induce to benefit from it.

Louis F. Hille
Shattering the Iron Rice Bowl

Education in China Today

Barbara B. Green

Every system of education reflects and influences the larger social and political scheme of which it is a part. The truth of this observation is particularly clear today in China, where education is an explicit tool of economic and social policy. On a recent visit to China I was able to get a look at the structure and operation of the country’s schools and universities, which exemplify the massive problems and enormous changes taking place there now.

Traditional China was a highly stratified society in which the educational system reinforced the social class system. But after the Communist triumph under Mao in 1949, the government maintained a strong ideological emphasis on egalitarianism. At first Mao was also committed to economic development, as a means of benefiting the peasants and urban workers. In actuality, however, by the late 1950s it became apparent that the beneficiaries of the regime’s economic development policies were in large measure the same groups which had been privileged before the revolution. The social consequences of economic development seriously endangered egalitarian goals. Although the immediate effect of the revolution was to shake up the social hierarchy, social stratification had re-emerged. Mao was particularly concerned with the arrogance and privileges of the educated classes. Some effort was made to attack this problem during the Great Leap Forward but an all-out onslaught was not begun until the Cultural Revolution (1966-1976).

To a large extent the Cultural Revolution was a direct attack on the elitism of the educational system. In the spring of 1966, a small group of faculty and students at Beijing University attacked university administrators for allegedly discriminating against students of worker and peasant origin. Lu Ping, the president of the university, was the main target. Students captured Lu Ping and forced him to attend a “struggle meeting”—a session in which one is subjected to intensive criticism. He was condemned and compelled to criticize himself. Hostilities broke out among various groups within the university and in the city. In July, Mao sent his personal secretary, the secret police chief, and his wife to the university to organize pro-Mao forces. On August 4 they returned to the univer-
sity and set up a Cultural Revolutionary Committee to take over its administration. By this time, pro-Mao student organizations had spread through the middle schools, colleges, and universities. A mass rally in Beijing on August 18 officially constituted these groups as the Red Guard. By November, twenty million young people were organized into Red Guard units associated with various educational institutions; it is estimated that between August and mid-November of 1966 ten million of them came to Beijing. The young people in this mass movement attacked all forms of constituted authority including the government and the party (Winberg Chai, The New Politics of Communist China, 1972, pp. 76-86).

To the external observer the Cultural Revolution may appear to have been a form of collective madness, but it had a defensible rationale. If the primary goal of the revolution was egalitarianism, and if economic development had, instead of promoting this goal, in fact worked counter to it, then it followed that the economic development had to be eradicated. What seemed to be required was a vast social leveling after which economic development could begin anew.

The consequences for the educational system were enormous. China is a poor country, whose lack of resources requires that choices be made between competing needs. During the Cultural Revolution, the choice was made to spread education as widely as possible rather than to use the educational system to produce experts. It was decided that any economic development would have to result from the growth of basic education among the masses rather than from concentration on the education of an elite of experts. Priority was given to lessening differences between rural and urban areas in basic education and opening educational opportunities to new social groups.

The results, as is well known, were disastrous. The people awoke from the ideological orgy to find the entire country in disarray. The post-Mao leadership altered course. The new leaders again stressed economic development. Education became the central focus of the "Four Modernizations" (agriculture, industry, science and technology, defense). The new goal was to transform China into a relatively advanced country by the year 2000. To do this required that priority be given to the education and training of a scientific and technological elite. Abandoning the notion of a broad educational base, the rulers shifted the emphasis to quality even though this meant the new creation of hierarchy in the educational, and consequently, the social system. In this altering of course, however, universal primary and junior middle-school education remained an active goal.

The immediate need was to train experts. Academic performance rather than social equality has become the criterion for educational advancement. Certain schools from kindergarten through the university level, designated as keypoint schools, receive special funding, and are staffed with the best-qualified teachers. The best students are channeled into these schools at each level and given special training to compete for entrance to the keypoint school at the next level. Because this system merely reinforces the initial advantages of upper class children, the keypoint system had been abolished during the
Cultural Revolution. It was re-established in the late 1970s to become an integral part of a highly competitive hierarchical education system.

The system begins with the six-year primary school, which the child enters at age six. The differences in the quality of the schools is vast although the curriculum is unified throughout the country with set textbooks, teaching plans, and school calendars. Primary schools are run by factories, villages, and neighborhood committees, or by local governments. The government-run schools are better equipped and staffed and their standards are higher. The keypoint schools are the most selective; entrance to them is competitive. All schools charge a modest tuition, and families are often responsible for the cost of books, transportation, food, and heating. The fees are essential because of the severe shortage of government funding, but they are also justified on the grounds that a modest fee encourages parents to treat education seriously and to make sure that children attend regularly.

The concept of community responsibility for schools goes furthest with the rural minban or people-run schools, which were encouraged during the Cultural Revolution. Although they have since come under attack because of the low quality of education provided by half-trained teachers, the government has been forced to permit their continuation because it lacks the financial resources to do better. It has tried to increase its control over the quality of these schools, but at the cost of the peasants' resentment, since they are the ones who have to pay for the improvements.

Approximately two-thirds of the primary school students enter junior middle school. In the Cultural Revolution, primary school had been cut from six years to five, and a two-year junior middle school was tacked on to the primary school. Afterwards, primary school was restored to six years and junior middle school to three years. The junior middle schools have been detached from the primary schools and administration removed from the village level. Classes are divided into three tracks, according to ability. The effort to improve quality and to invest in keypoint junior middle schools has slowed expansion, but in May 1985 the government initiated a heroic effort to achieve nine-year compulsory schooling.

The obstacles in the path of this goal are formidable. Some areas of China are so poor that they can barely provide the people with minimum food, clothing, and shelter. Some ethnic groups have only recently acquired a written language. The rate of illiteracy nation-wide is 23% but it is twice as high among the minority peoples. In one county, 100% of the females and 80% of the males are illiterate. There are vast economic disparities between the developed coastal areas and the less developed inland areas. The urban-rural differences are enormous.

One major obstacle is the shortage of qualified teachers. Although in 1984 there were 5,369,000 primary school teachers and 2,097,000 junior middle school teachers, it has been estimated that there is a shortage of 1,800,000 and 900,000 respectively. Furthermore, many of the teachers are unqualified or underqualified. During the Cultural Revolution, teach-
ers were produced rapidly to staff elementary schools, but many of these were inadequately trained. Urban middle school graduates were “rusticated”—sent to undeveloped rural areas and assigned to local schools. Even in urban areas, teachers were mistreated; their working and living conditions were deplorable.

A man whom I spoke to in Guilin said he had been sent to the countryside during the Cultural Revolution when he finished middle school. He had to stay seven years in a backward area with no conveniences. Because he was from the city, he was assigned to teach school. There were 350 students from first to fifth grade, and five teachers who had to teach every subject. He told us that since there was nothing to do, he taught himself English. His father sent him tapes. He said, “Now I can say it—I listened to the Voice of America.” Another in Beijing said that during the Cultural Revolution, “kids didn’t go to school, or they caused trouble so no one wanted to be a teacher.”

Salaries have been raised and conditions improved, but there is still a severe teacher shortage. The Chinese people have long revered learning, but along with the status extended to the educated elite has gone a strong feeling of resentment against privileged groups who, it is felt, have monopolized knowledge and culture. University professors in China have at least as much prestige as physicians do in the United States, but the resentment is stronger because the educated are perceived as almost a closed class. Primary and middle school teachers have never had the same prestige as university faculty. Because of the debased standards of teacher training during the Cultural Revolution, any status they once had was lost. Peasants felt that the teachers didn’t know much more than they did, and since they were being paid by the peasants they should do what the peasants wanted them to do. Many were forced to work in the fields to earn their keep. School teaching is not yet looked upon as fully respectable.

A middle school teacher in Shanghai complained bitterly. He teaches fourteen-year-olds. He said this was a difficult age; it is hard to handle 35-40 children in a class. He complained that there was no incentive for him to work hard because everyone was paid the same and no one received any respect. School lasts from 7:30 A.M. until 3:00 P.M., plus Saturday morning. He felt overworked and underpaid. Teachers’ salaries are about half those of average urban workers. In 1984, the monthly salary of a locally supported teacher was 30-40 yuan; a teacher supported by the central government received 40-50 yuan. In contrast, college professors received 200-300 yuan. The salaries of elementary and secondary teachers were raised in 1985, but this is considered only a first step.

Finances are a major obstacle. There is an acute shortage of government funding, much of which is expended on supplies, leaving little to cover administrative costs, operations, equipment, and maintenance. Local communities must levy school taxes and seek donations from collectives and even individuals in addition to charging tuition.

Despite these overwhelming difficulties, 95% of primary-school-age children are now in schools. The total number of children now enrolled in primary and junior middle schools is

Yuan: It is almost impossible to explain the value of yuan, because the price structure is so different from ours. This past summer, the exchange rate was a little over 3 yuan to the dollar. The average income in Shanghai was 70-90 yuan a month, with a range from 40 up to 300 or more. One man I met told me he earns 90 yuan a month and his wife earns 85. They have one son. About 75% of their combined earnings are spent on food, about 4 yuan a month on rent. They also pay for electricity and water. They are able to save about 30 yuan per month. A bicycle costs about 300 yuan, a color television costs about 600 yuan if it’s Chinese, about 1200 yuan if it’s Japanese. A Chinese refrigerator is 700 yuan, a Japanese one about 1600. Clothing is very inexpensive. I bought a plastic raincoat for a little over one yuan. An infant’s handmade cotton playsuit costs two yuan in a Chinese department store.
a fourth of the total population of China—250 million children!

Nine-year compulsory schooling is scheduled to be introduced in stages. The well-developed areas of the country containing approximately one-quarter of the population are expected to achieve this goal by 1990; less advanced areas, with another 50% of the population, are scheduled to achieve it by 1995; the backward areas with the remaining quarter of the population are to try to achieve basic education commensurate with their level of economic development and to move toward the nine-year goal even more slowly.

About half of those who complete junior middle school go on to three-year senior middle schools. Entrance to these has been based on examinations in mathematics and the Chinese language. In those rural areas where senior middle schools exist, entrance examinations have been used only for placement. In urban areas the examinations play a screening function, especially for admission to outstanding keypoint schools in major cities. There is a tendency to rate senior middle schools in terms of the success of their students on the entrance examination for colleges and universities.

Students seeking admission to higher education choose between two tracks. For the science-technology track, they must take the examinations in mathematics, physics, chemistry, a foreign language, and Chinese literature. For the liberal arts track, the examinations are in mathematics, a foreign language, Chinese literature, biology, and geography. There is no attempt to test scholastic aptitude or creativity; rather, the examinations focus directly on the content of middle-school textbooks. On the science examinations, students are asked to solve problems modeled on those in their texts. The foreign language examination includes one section with multiple choice questions on grammar, vocabulary, and sentence structure. The reading comprehension section requires students to read a passage from a short story and answer brief questions about it. There is also a section on spelling and another requiring translation. There have been recent complaints in the press about subjective scoring and the lack of predictive reliability of these examinations.

Higher education has normally been considered the means to an "iron rice bowl," or guaranteed security for the rest of one's life. Admission to a university is an object of intense desire for students and their families. But only 4% of secondary school graduates or 1.2% of the age cohort enter higher education. Consequently the entire curriculum has been distorted: the sole aim has become the coaching of students to pass the university admission examination. Although 96% of the seven million senior middle school graduates cannot go on to universities and colleges, almost their entire education has been directed toward that elusive goal. The government plans to admit 20% of senior middle school graduates to higher education by the end of the century, but emphasizes that it is important that secondary schools begin to train students to become qualified workers, not just to aim for advanced education. The government insists that specialized technical and vocational middle schools must play an increasing role. These were frowned upon during the Cultural Revolution since they were viewed as a means of identifying the less able, who were
generally the children of workers and peasants. During the Four Modernizations period, these schools have been revived. Thousands of them have been converted to a new vocational curriculum. The goal is to increase the number of students in such schools from 33 to 50 percent of the total secondary enrollment.

We visited a keypoint senior middle school in Shanghai, stopping in several classrooms. Children in this school studied math, history, geography, biology, chemistry, the Chinese language, and English in addition to music, sports, and arts. The children sat in tightly-packed rows of old-fashioned wooden desks. The teacher stood in front and lectured while the students took notes. But, despite a highly structured and competitive curriculum, the children did not seem grim. They laughed, waved, and poked each other when they saw us. Obviously we had disrupted normal routine, and the level of discipline did not prevent them from reacting. In one class the children were learning English. On the blackboard were written two sentences: (1) "Do the soldiers support their government?" (2) "Do you know why Nathan Hale refused to fight for the British Army?" We wondered what sorts of answers were elicited. We noticed that there were no pictures of Mao or other leaders, and no revolutionary posters on the walls. Rather, there were a few scrolls of flowers or trees decorating the otherwise bare walls.

China has been attempting almost desperately to alter its educational system to meet the country's practical needs. At the same time that there is a shortage of the technically skilled manpower needed for economic development, vast numbers of middle-school graduates are unemployed or "waiting job assignments," sometimes for two or three years or more. The government has been encouraging unemployed youth to try their hands at "penny capitalism" since there appears to be no way at present for the state or collective economy to absorb youth who have a general education but no technical or vocational skills.

During the Cultural Revolution, universities were shut. When they reopened, entrance examinations were abolished for a while, but they were reintroduced in 1973. Political criteria weighed as much as performance during this period. A consequence is that not only is it estimated that society is missing approximately 1-1/2 million graduates of higher educational institutions, but those who did attend higher educational institutions during the Cultural Revolution are far less qualified than those who preceded and those who followed them. China has suffered the loss of a decade's worth of experts, and many young people's careers have been ruined.

In 1976, a decision was taken to recruit students for higher education solely on the basis of their academic qualifications. In the first national examinations held in December 1977, 5.7 million people competed for 278,000 places. In 1980, eligibility to take the examination was restricted to senior middle school graduates under the age of 26. Pre-selection examinations were introduced at the provincial level, and provincial authorities were instructed to select only outstanding students to take the national examination, so as to keep the number of applicants from exceeding the number of places available by
more than five times. Each province was assigned a quota for admission to keypoint universities. A second quota was established for admission to regular universities in the provinces, and a third quota was established for admission of students from outside a province to institutions within the province. Separate provisions were made to ensure access for minority students. In effect, there was a centrally set quota for every college and university, for every field of study, and for each opening. Recently universities have been given more flexibility in admissions. In addition to quotas for unified enrollment, universities have been permitted to undertake some contract training whereby enterprises finance employees who study at higher educational institutions and are required to return to the enterprise after graduation. There has been some "directional" recruitment, a term used for bringing in students from less developed areas who will return to the remote and backward areas after graduation. Although these students take the standard entrance examination, the educational level of the region from which they are recruited is taken into account in deciding on admission. In 1984 the government admitted some students who pay their own tuition. The university does not provide lodging or meals for these students and has no obligation to find jobs for them upon graduation. The 1985 educational reform ended free tuition. Almost all students will now be required to pay tuition, room and board, and other expenses. Exceptions will be made for students in teachers' colleges who have agreed to take hardship assignments, and for the exceptionally poor. It is estimated that it costs the state about 20,000 yuan to train a college student, but students will only be charged a portion of this cost.

More far reaching is the decision to implement gradually a system of independent enrollment. Until 1984, applicants who passed the national examination and proved physically and morally sound were admitted in the order of their scores. But because institutions of higher education could not as a result take the initiative in recruiting, the need for students in specialized fields could not be met, special talents were ignored, and middle school academic records were given no weight. As a consequence, secondary schools became obsessed solely by the percentage of students who passed the entrance examination. There were also serious problems with the subjectivity of the examiners and with non-standardized questions, so the examination did not turn out to be a good predictor of success.

Keypoint universities which recruit in the first phase of the admissions procedure will be able to "recruit independently." Those admitted must meet a basic cut-off grade on the national examination: the university must recruit from this pool. But university authorities will decide how many students' files to examine in order to fill the class. They will have leeway to admit applicants who are outstanding in character or who have special skills, even if their scores are lower than those who are rejected. They will also be able to select students whose overall scores may be lower but who perform particularly well in their prospective major field. Institutions of higher education that recruit in the second phase will continue to admit students on the basis of examination scores, student preference, and quotas.
A few keypoint universities will be permitted to recruit some students from certain keypoint middle schools solely on the basis of recommendations. The hope is that these keypoint middle schools, once freed of the necessity of training their students to achieve high scores on the examination, will be able to foster creativity and a spirit of inquiry rather than rote learning. Part of the educational reform also involves a continuing commitment to enlarging institutions of higher education. In 1985, the total number of students enrolled in institutions reached 1.6 million. This total includes undergraduate universities and colleges and polytechnics as well as the far less prestigious adult institutions of higher learning. Among the 902 institutions of higher education in China there were 82 short-term professional schools. There are only 38 comprehensive universities. The remaining institutions include 232 technical colleges, 242 normal schools, 114 medical and pharmacy schools, and 57 agricultural schools. The average enrollment at any school is only 1500 students; only 37 institutions enroll more than 5000 students. Beijing University, with an enrollment of 12,500 students, is the largest in China. The student-faculty ratio is approximately 5:1. In 1984 in all of China there were 56,300 master’s level students and 1200 doctoral level students. Of the total number, 43.5% were in engineering, 22.5% in science, and 9.7% in medicine. The regime is concerned with the imbalance between engineering and science students on the one hand, and students in finance and economics, political science, law, and management on the other. There have been recent efforts to encourage enrollment in the latter fields.

Each of the universities and colleges stands apart from society, behind walls, a privileged enclave. Beijing University [called Beida], founded in 1898, is probably the most prestigious. In 1952 it merged with Yanjing University, moving from the center of the city to the Yanjing campus in the northwestern suburbs. Yanjing University had been administered by Americans with Boxer indemnity funds [money paid to the United States by the Chinese government for damage done to U.S. property during the Boxer Rebellion in 1899] until 1949. As a consequence, the campus has something of the flavor of an American college. In Shanghai, we visited Jao-Tong University, founded in 1886 as a polytechnical university. The first thing we noticed was an enormous statue of Mao in the courtyard. This was startling because almost all traces of Mao have disappeared elsewhere. The campus is attractive with open space, tennis courts, and a soccer field. There is a tall, brand-new library building built with a $10-million donation from a Hong Kong shipping magnate. The university, which is adding humanities and social studies to its curriculum, has about 9000 students, 1000 of whom are graduate students. The faculty numbers 2000. All students need English to be admitted and must take German, Japanese, or Russian at the University. There is no room to expand. They are planning a new campus twenty kilometers away. Around the campus, boys walked arm-in-arm with other boys; girls with girls. The girls carried brightly colored umbrellas since the weather was very rainy; the boys mostly wore jeans.
Despite this idyllic atmosphere, the students at Chinese universities live in deplorable conditions. A dormitory room about 10 by 12 feet accommodates seven students. In 1984, there were student demonstrations at Beijing University protesting poor teaching, bad food, and nighttime electricity cut-offs that interfered with their studying. In Shanghai, despite winters as cold as Cleveland’s, there is no heat—not just no central heating, but no heat at all.

Each university retains 3 to 5 percent of its graduating seniors to fill teaching and administrative posts. In many institutions, 90% or more of the staff is made up of the university’s own graduates. Faculty members are treated exceptionally well. Their salaries are high—200-300 yuan a month when the average worker’s salary is about 85 yuan. They are provided with apartments for their families, schools for their children, health care, and other amenities. Until the 1985-86 school year they had life tenure after one probationary year. Once one is hired, transfer from one university to another is extremely rare. Male faculty members can retire at age 60 and women at age 55, but retirement is not compulsory. While the overall faculty to student ratio is only 1 to 5 or 6, at better universities it is 1 to 3. Because of this overstaffing, one-third of the faculty (on a rotating basis) are relieved of teaching and assigned to full-time research. This extraordinarily privileged existence has come under fire recently.

Faculty members in higher education now have 2-4 year contracts which may be extended. Those who qualified as teaching assistants, lecturers, associate professors, or professors before September 1, 1983 will be allowed to retain these titles, but not all will be invited to teach. Those not invited “will be encouraged to take other jobs.” This educational purge is intended to thin the ranks of the professoriate and to weed out those who were appointed during the Cultural Revolution and who do not meet standards. One goal is to bring up the faculty-student ratio to 1:10. There is also a need to improve the quality of the faculty, to provide retraining, and to reassign incompetent teachers. New faculty members are needed who are able to teach specialized subjects essential for economic modernization.

Just as the iron rice bowl has cracked for faculty members, it has also cracked for students. One of the driving forces behind the compulsion to compete for entrance to higher educational institutions has been the promise of secure life-time employment in a suitable position. When senior-year examinations are over, students spend up to one additional month in their crowded dormitory rooms waiting for a job assignment. Students can specify their job preferences and location. In fact, they often choose their fields of study to maximize their chances of being assigned to urban areas. The Education Commission draws up a list of job assignments that schools must fill. Other assignments are on the school-compiled list. Students do have the opportunity to contest an assignment. If they then refuse, they forfeit their right to a state-assigned job.
This can mean unemployment, because if an enterprise hires someone who refused a job assignment, it must pay the full cost of the student's education—10,000 to 20,000 yuan. In actuality, students generally accept their assignments.

In the past, those assigned to remote and undeveloped areas had to spend their entire careers there. They now must remain five years and are then free to seek another position. In 1985, students who had enrolled under the state enrollment plan were given more opportunity to express job preferences. Students who attended under contract by a work unit were assigned jobs by the work unit. Those who were self-supporting had to seek their own jobs. This was the least favored position to be in. Although assigned students might not get their preference, they were guaranteed lifetime employment.

Beginning in 1986, however, students recruited through the state enrollment plan will no longer be guaranteed placement by the state. Enrollment in higher education will no longer be a guarantee of employment. While there is a tremendous need for experts in general, there are gluts in certain fields while there are shortages in others. Experts in science, engineering, medicine, and agriculture are relatively plentiful, while there is a shortage in the arts, law, finance, economics, and management. An article in one newspaper said, "We can't let all our students be Chinese language and literature majors. How many do we need?" It went on to say, "It's all right to engage in cultural pursuits, but we need to take account of the realistic needs of the market place." The national planning mechanism seems unable to deal with this problem. The system of contracts between specific enterprises and higher education institutions is one effort to deal with the issue. A second approach encourages universities to deal directly with firms and enterprises so that they can ascertain needs and match their admissions and training to these needs. The third approach seems to be the introduction of a free market ruled by supply and demand, leaving students unemployed who are in overcrowded fields. The number of students who will be adversely affected is not known, but the idea of having to find their own jobs seems terrifying to many.

All of Chinese society has entered on a period of vast change in which it is experimenting with limited private enterprise and joint ventures. While continuing to define the economic system as essentially socialist, students, intellectuals, and even government employees are insisting that "Modernization is Westernization." There is a sense of near desperation in the drive for economic development. Egalitarianism has been left behind, and the necessity of wage differentials to provide incentives is asserted. Competition is considered essential. Mao proclaimed that no one should have two bowls of rice until everybody had one. Now even the iron rice bowls are being broken. No one is assured a rice bowl. The educational hierarchy squeezes talented youth out at each level, and even the winners have no guarantee.

References

The photographs in this article are from the files of The Cleveland Press.
"This show will open on time in every theatre even if the actors have to walk around the stage reading their parts off a script in their hands and wearing signs identifying themselves."

After her first year as director of the WPA's Federal Theatre Project, few could have doubted that Hallie Flanagan would carry out her threat. It was to observe the first birthday of the New Deal arts project that Flanagan was attempting something never before—or since—accomplished in the American theater: a live, simultaneous nationwide opening of a single play—the dramatization of Sinclair Lewis's *It Can't Happen Here*.

A score of companies in nearly as many cities were striving to meet the scheduled premiere date of October 27, 1936. Even *Variety* dropped its customary bias against the government theater project long enough to pronounce this "the most ambitious single production ever attempted in the U.S." Enemies of the New Deal read sinister significance into the opening's proximity to that year's Presidential election.

If shock value was wanted, the Federal Theatre had chosen its vehicle well. Similarly celebrating its first birthday in October of 1936, the Lewis novel had become an instant *cause célèbre* in the supercharged political atmosphere of the 1930s. Having eavesdropped on innumerable discussions of the European situation ("It") by colleagues of his wife (political columnist Dorothy Thompson), Lewis employed his own medium to flesh "It" out into a scenario depicting a fascist takeover on this side of the Atlantic. His homegrown Hitler was one Senator Berzelius ("Buzz") Windrip, a thinly disguised caricature of Louisiana's late Senator Huey Long. Through the eyes of a small-town New England newspaper editor named Doremus Jessup, Lewis described how Windrip got himself elected President in the upcoming 1936 election and thereupon proceeded to subvert the Constitution and establish a single-party dictatorship. Coming during a long decline in the novelist's powers, *It Can't Happen Here* at least provided him with a public success rivaling that of his biggest books.
So successful was it, in fact, that a movie seemed inevitable. The controversy which had propelled it onto best-seller lists was not necessarily an asset in Hollywood, however. Although Metro-Goldwyn-Mayer had quickly moved to acquire picture rights and even had a screenplay prepared by Sidney Howard, production plans had been abandoned earlier in 1936. Lewis and Howard cried censorship, pointing to motion picture czar Will Hays and his Republican connections. MGM cried poverty, pointing to the story’s huge anticipated production costs. What the studio really feared was probably the effect of possible German and Italian bans on not only the Lewis story but future MGM films as well. At any rate, by summer it was clear that It Can’t Happen Here would not reach the screen.

That left the stage, and Lewis reportedly had been in the process of negotiating with commercial producers when the Federal Theatre crossed his path. Credited with the original inspiration was Francis Bosworth, director of the Play Bureau, during a summer brainstorming session of the project’s Play Policy Board. “Why not get Sinclair Lewis to dramatize It Can’t Happen Here,” he suggested, “and do the play all over the country?” “And open it everywhere on the same night,” chimed in William Farnsworth, a WPA deputy visiting from Washington.

Besides the sheer novelty of the idea, there was also an economic dividend. With a self-imposed $50-per-week ceiling on royalties, the Federal Theatre had had difficulty attracting contemporary playwrights. A multiple opening of a single play, however, could pyramid that modest royalty into an impressive figure. It was an offer even Nobel-laureate Lewis couldn’t refuse. Original plans called for twenty-eight productions in fifteen cities, which would provide a weekly royalty of $1,400 to be split between Lewis and his announced collaborator, screen-writer John C. Moffitt.

In fact, It Can’t Happen Here was one of those big, multi-problem-solving schemes (e.g., NRA, CCC, TVA) relished by New Dealers. Besides the royalty problem, it would also overcome that of keeping large casts busy at their craft, thus fulfilling the primary purpose of the Works Progress Administration. Both Flanagan and Lewis, moreover, discerned larger ramifications.

“A year ago our problems of requisitions, of procurement, of working under government regulations had been so great that it was difficult to state that any curtain anywhere would go up on a definite date,” recalled Flanagan in her Federal Theatre memoir, Arena. A simultaneous national premiere would provide spectacular proof of Federal Theatre’s arrival as a force to be reckoned with in American theater.

In the press conference called on August 21 to announce his Federal Theatre partnership, Lewis demonstrated the outsider’s instinctive grasp of the larger picture. “The theatre has become just a formalized thing, with stage productions in only
a few cities and, indeed, almost only in New York, which is perfectly absurd," he observed. "The theatre, under the WPA, can be brought back to the people." Here was a chance to short-circuit the "hit or miss" formula imposed on the American theater by the Broadway bottleneck. As Flanagan pointed out, Federal Theatre could multiply a new play's chances for success by granting it a wider hearing.

Even on the old single-production basis, Federal Theatre had already proved itself capable of producing hits. It was one of four arts projects added to the Works Progress Administration on the theory that unemployed creative workers needed relief as much as those in more mundane callings, and if the government was going to put them to work it might just as well let them paint murals or write local histories as rake leaves or dig up roads. Art, literature, music, and theater were the four divisions chosen, and as a concession to their esoteric nature they were to be administered directly from Washington as "Federal One" rather than by local political types on the state level. To direct the Theatre Project, WPA chief Harry Hopkins selected an old Grinnell College classmate of his and announced her appointment at an Iowa theater conference in July, 1935. Hallie Flanagan happened to have far solider credentials than a shared alma mater with Hopkins. However much the Broadway theater establishment might sneer at "academic" experience, Flanagan had earned a respected national reputation as head of the Experimental Theatre program at Vassar College. She had further broadened her background in theatrical conditions and movements with tours through Europe and [here was the politicians' cue to sneer] Russia.

After months of organization and preparation, during which Federal Theatre was exposed to the sniping of the politicians and theater professionals, the New York unit brought in several winners in the spring of 1936. These included two modern problem plays, *Chalk Dust* and *Class of '29*, as well as T.S. Eliot's challenging verse drama, *Murder in the Cathedral*, which had been rejected as too risky by the Theatre Guild. A new dramatic form was introduced by *Triple-A Plowed Under*, a "Living Newspaper" docudrama on the farm problem. Utilizing a large cast and multi-media techniques including loudspeakers, charts, and creative lighting, the "Living Newspaper" was a joint invention of Flanagan and her first New York project director, Elmer Rice. Up in Harlem, John Houseman and Orson Welles had inaugurated their historic theatrical collaboration with a black version of Shakespeare's *Macbeth*.

Understandably slower than New York, other Federal Theatre units were nevertheless beginning to hit their stride as this second season got under way. Deprived of live theater by the effects of the Depression and the competition of talking motion pictures, audiences in the hinterlands began flocking to local Federal Theatre productions in numbers that were surprising, even considering the project's generally free admission policy. *It Can't Happen Here* was just the sort of stimulus to galvanize them into their best effort.

First Hallie Flanagan needed a play, however, for *It Can't Happen Here* was still only a novel. Getting a workable script out of Lewis would prove to be the greatest obstacle—perhaps

Hallie Flanagan with WPA chief Harry Hopkins. Flanagan brought a solid academic background as well as theatrical experience to her position as head of the WPA Theatre Project.

Hallie Flanagan and Sinclair Lewis. One of Flanagan's major problems in staging *It Can't Happen Here* was the management of Lewis, which included keeping him on the wagon.
a fatal one—to her plans. Though long fascinated by the theater, Lewis had never mastered its discipline. His one previous essay in the medium, a collaboration with Lloyd Lewis, had been a failure. True, his novel *Dodsworth* had provided the basis for a highly successful play, but it was adapted by Sidney Howard, not by Lewis. Apparently Lewis had already drafted a dramatization of *It Can't Happen Here* when he called on Paramount’s John Moffitt for assistance. After the announcement of their arrangement with the Federal Theatre, Moffitt and Lewis repaired to the latter’s retreat in Bethel, Vermont, to whip the work into shape for an anticipated opening on October 20.

Federal Theatre went ahead with its own preparations. Bosworth was charged with overall coordination of the national effort, but each local unit was urged to adapt the play to its peculiar requirements. Not only were costumes and scenery left to local discretion, but even locale and the language itself might be changed. Included in the original plans were productions by Yiddish, German, Italian, Spanish, and black casts. Two productions were soon scratched, as the Syracuse unit ran into a booking conflict for the desired date at the local auditorium, and WPA officials in New Orleans hesitated to put their imprimatur on a play that might be interpreted as reflecting adversely on the reputation of Huey Long.

Another change of plan was the original target date of October 20. Although Lewis and Moffitt returned from Vermont right after Labor Day, as scheduled, their manuscript was a far cry from Flanagan’s expectations. Lewis moved into the Essex House Hotel on Manhattan’s Central Park South, where Moffitt maintained a residence, but the strains of collaboration necessitated separate suites. Bosworth and two of his colleagues from the Play Bureau maintained a round-the-clock watch to keep Lewis on the wagon, as sobriety was another discipline never mastered by the author. Flanagan booked her own room at the prestigious hotel, better to mediate between the increasingly estranged writers.

After a week of this “shuttle diplomacy,” Flanagan and Lewis called a press conference in the Madison Avenue office of the latter’s agent. While the script still needed some revision, they committed themselves to an opening night of October 27, a week later than the original goal. This raised the question of whether the date was being deliberately timed to coincide with the following week’s election, a point denied by both Lewis and Flanagan. The only thing it was timed to do was begin Federal Theatre’s second year with a “major objective,” reiterated Mrs. Flanagan, while the author vouchsafed that his work contained “no propaganda except for the American system of democracy, with all its failings, as opposed to dictatorship.”

Flanagan’s troubles with Lewis were far from over, as the admittedly stage-struck author settled into rehearsals with the principal New York company preparing his play. While a Yiddish version and a traveling Suitcase Theatre company were planned for New York, as well as productions in neighboring Brooklyn and Yonkers, the flagship for the occasion would be the project’s Popular Price unit in Broadway’s Adelphi Theatre on West 54th Street—just outside the theater
district originally declared off limits for Federal Theatre operations in a modus vivendi reached between Flanagan and the commercial producers.

There Lewis supervised casting with director Vincent Sherman, whose status was reduced "to that of a yes-man for Mr. Lewis, whose say is final," according to a report appearing in the New York Herald Tribune. "If it should happen here, as Mr. Lewis fears it may," commented reporter Sanderson Vanderbilt, "the boys who take over the reins of the new Fascist state ought to be able to get a few pointers in the art of dictatorship from Mr. Lewis himself, say those who have seen the Nobel Prize novelist at work in his new role of casting director." With the eyes of the nation on Broadway, said Vanderbilt, it was considered unfortunate—if inevitable—that Lewis should have selected the Manhattan unit for his personal attention. "It's the most vicious example of type casting that's been seen around here in a long time," said one informant quoted by Vanderbilt. "As a result, you'll probably see a better production of 'It Can't Happen Here' in Bridgeport or the Bronx than you will on Broadway."

If only the Adelphi had been affected, it wouldn't have been so bad. Under the stimulus of actual rehearsals, however, Lewis began tinkering with the script, aided by Sherman, who evidently didn't have much else to do anyway. Revised scenes began flowing from the Adelphi to the provinces, and anguished telegrams began pouring back. "Where is revised version act three Lewis play rush immediately," wired Denver, while Chicago complained, "New ending act three does not make sense please advise." "We didn't have the last act until it was just about time to start," recalled Florida state director Dorothea Lynch, "Then it came, without who was to say what." "Making superhuman effort to meet October 27 Lewis play," implored Los Angeles, "Imperative have no more revisions stop stop."

Staging It Can't Happen Here would have presented a formidable challenge under any circumstances. Lewis actually didn't do a bad job of telescoping his sprawling novel into three acts and eleven scenes, requiring seven sets and two dozen speaking parts. He wisely excised most of the national figures except for brief appearances by Dictator "Buzz" Windrip and Bishop Paul Peter Prang, Lewis's Father Coughlin. Gone were such "mob" scenes from the novel as the climactic Windrip rally in Madison Square Garden. Gone also was much of the running history of the Corpo dictatorship provided by Lewis, including the concentration of legislative and judicial powers in the executive, the reorganization of the country into eight provinces, and the eventual replacement of Windrip by the commander of his storm troopers, the "Minute Men."

Attention in the play was focused almost entirely on Doremus Jessup, with local Corpo official Effingham Swan as his chief adversary. The action was largely confined to the microcosm of Jessup's Fort Beulah, Vermont, where the townspeople watched the national scene from afar and got their first hint of the impending tyranny through the beating murder of the local druggist. In a subtle deviation from the novel, Jessup was much slower to catch on to the Corpos, failing to realize
the danger until too late. Play and novel converged again, however, when Doremus joined the underground, was arrested and sent to a concentration camp, from which he escaped, and ultimately got his family into Canada to continue the fight against fascism.

As the play ground out of the Adelphi in bits and pieces, other Federal Theatre units went to work on it. Benson Inge of the New York World-Telegram prepared the Yiddish version, while his Spanish, German, and Italian counterparts did their best to keep abreast of the changes. Sets for the New York productions began to take shape in a former Erlanger warehouse on West 49th converted into a Federal Theatre workshop. True to Flanagan’s ideal of local variety, they ranged from realistic colonial-style sets for the Adelphi to the single “quasi-constructivist” set ordered for the Brooklyn production. Once built, they would be carted over to a studio on West 43rd for painting, while a third shop on Tenth Avenue handled properties.

Busiest of all, perhaps, were the Federal Theatre press agents, who later claimed that a total of 78,000 lines of publicity was inspired by their work. So successful was their campaign, in fact, that the regional Federal Theatre director for New York, Philip Barber, requested less rather than more publicity from Washington headquarters. When this prompted rumors that Washington was “gagging” the production from fears of conservative opposition, Barber was forced to explain that “we do not want the public to think that this is our only play; we have a large number of plays and this is just one of them.” With four weeks sold out already by October, the Manhattan It Can’t Happen Here didn’t seem to need any more help. Aided by block bookings from labor and peace organizations, advances were healthy in many of the other participating cities as well. Federal Theatre’s recommended top of fifty-five cents was observed by most.

As the 1936 Presidential campaign went into its own countdown, charges of Democratic collusion were revived against the Federal Theatre experiment. “Every regional director is concentrating on the play,” observed Variety, “showing of which is designed, it is understood, to aid the Federal administration’s Presidential campaign.” This was passed on by the rabidly anti-New Deal New York Herald Tribune. “In the past,” pointedly added the Herald Tribune, “the Federal Theatre had not been adverse to postponing productions almost indefinitely if W.P.A. officials believed they were not ready, but in the case of ‘It Can’t Happen Here’ haste has been the byword.” Yet even Republican newspapers contributed to the play’s ballyhoo by running a syndicated serialization of the Lewis novel.

At this point Flanagan had little time to respond to political pot shots. “Please report by wire if you are set now for opening It Can’t Happen positively on twenty seventh,” went a wire from headquarters to participating units. From New England to California, back came the replies. Chicago, Denver, and Detroit would be set; Omaha wasn’t sure; Birmingham, Seattle, and San Francisco would open, as would Cleveland “if labor problems work out satisfactorily here”; Indianapolis, Newark, Tampa, and Tacoma were ready, but the Italian translations planned for Newark and San Francisco weren’t. Miami
and Yonkers were hopeful, but Brooklyn and Kansas City were
doubtful. Des Moines and St. Louis were out.

Here Edward Goodman of the Popular Price Theatre and
other New York directors requested a postponement for their
productions until after the out-of-town "tryouts," at which
Flanagan exploded with her signboards and scripts ultimatum
quoted earlier. When Lewis added his own plea for a stay two
days before opening, Hallie shamed him into silence by driv­
ing down to the Adelphi from her home in Poughkeepsie and
spending her Sunday evening personally rearranging and
repainting sets. Lewis had been rewriting to the end. "I have
the scene called the 'rape scene,'" complained an Adelphi
actor. "We got our first rehearsal in it at 11:40 Saturday night,
then the stagehands had to quit and thus the actors could do
no more. After a week's playing we will probably have a
show. Too bad the critics have to look at a dress rehearsal." Out in Kansas City was the "Forgotten Man" of
It Can't Happen Here, co-author John Moffitt, who reportedly was trying to
break a deadlock between state WPA administrators and the
local Federal Theatre unit over whether admission might be
charged for his play. Possibly he went because he was a home­
town boy, regularly film critic for the Kansas City Star; but his
absence also kept him out of Lewis's way.

By Tuesday, a thousand players and technicians were
poised for twenty-one openings in eighteen cities. "We want to
do 'It Can't Happen Here,'" Flanagan said in an article written
for the current issue of the Federal Theatre Magazine, "because,
like Doremus Jessup and his creator, Sinclair Lewis, we, as
American citizens and as workers in a theatre supported by
the government of the United States, should like to do what
we can to keep alive the 'free, inquiring, critical spirit' which
is the center and core of a democracy."

Her "We" included William Bendix, cast as a fascist heavy
in Newark, as well as E.G. Marshall, who had found a role in
the Chicago production. It included even future film director
Sidney Lumet, who was set to portray Doremus Jessup's ten
year-old grandson in New York's Yiddish production. To all of

*The Corps are ordered out. From It Can't Happen Here, the Cleveland, Ohio production (November 3, 1936).*
them, scattered in theaters across the continent, went a telegram early on opening day over Hallie's signature: "Please express to the cast and crew of It Can't Happen Here company my warm personal thanks for their loyal work stop Success to you."

In New York, Hallie and her WPA entourage took advantage of the unique opportunity to attend two different versions of the same opening. After catching the first act at the Adelphi, where ticket scalpers had already put in an appearance, they went to see the second act in Yiddish at the Biltmore, where the play's particular relevance was causing spectators to faint. For the final act they taxied back to the Adelphi, where Moffitt paced forlornly in the lobby and Lewis was preparing to take the curtain calls. Included in the latter's party, besides his wife, were W.H. Auden, Ernst Toller, Erika Mann, and Louis Adamic. Extracting his watch with a dramatic flourish in front of the cheering audience, Lewis responded to the cries of "Author!" with "I've been making a speech since seven minutes to nine." If only his dialogue had been so terse.

New York's excitement was echoed and even surpassed by the other opening-night cities. Among the capacity crowd in Indianapolis was Indiana's Governor Paul V. McNutt, later head of the War Manpower Commission. Sellouts were also

*The radio wreckers.*
*From It Can't Happen Here, the Cleveland, Ohio production* (November 3, 1936).
reported in Chicago, Los Angeles, Newark, Miami, and San Francisco, where the show was booked for four weeks and tickets were selling ten days in advance. Seattle counted a packed house of 2,300, while Cleveland's Carter Theater at East 9th and Prospect was "packed from the drinking fountain in the foyer to the piccolo section in the Federal Music Project Military Band."

It was not the usual theater crowd, as *Variety* observed in several regional reports. There was "a proletarian aspect to the assemblage" in Seattle and "an unusual mixture of socialists and laborites" in Newark. "Majority of the audience obviously not accustomed to attending legit shows," reported *Variety* 's Birmingham stringer. In contrast to the "evening gowns, dress suits and such" of the old days were what "appeared to be construction workers." As if to confirm the observer's worst suspicions, "not a single person got up between acts for a smoke."

By and large, these regional productions had displayed enterprise and imagination in achieving the goal of generating diversity from uniform material. Los Angeles had its Yiddish as well as English versions, while the sole Tampa production was given in Spanish. Seattle used a largely black cast except for the dictators, which added a class slant to the play's political theme. Several productions localized the play's setting, which the novel and Adelphi script laid in Vermont. Denver set the scene in a small Colorado town, while Detroit's version took place in a factory district. Stylistic variety ranged from the use of pantomime in Los Angeles to that of movie devices in Miami. Dictators in the Birmingham production emulated Il Duce by haranguing the audience from the theater boxes on the sides of the auditorium.

Critics on the whole agreed that the casts were deserving of better material. In a yearning expressed by many of his colleagues, Arthur Spaeth of the *Cleveland News* speculated that "a Sidney Howard could strengthen this tale and add to its ring of authority by judicious editing." A sentence in *Newsweek* fairly summed up the consensus: "A confused, disconnected job of playwriting, with scenes that open powerfully but end in a muddle, the production is slowly paced, though relieved by several good performances." "Baldly stated it comes to this," said *Variety* : "if viewed as a show selling at 55 cents top and for the purpose of keeping unemployed actors from going hungry, it's very good; if viewed as the newest play of a Nobel prize winning writer, it's very bad."

Despite its dramatic shortcomings, however, most reviewers thought that the importance of the play's theme justified the effort. "I suppose one reason why I sat on the edge of my chair... was because I was in Germany the summer Hitler came to power," said Howard O'Brien in the *Chicago Daily News*. "Mr. Lewis has a story to tell that is calculated to make the blood of a liberal run pretty cold," said *New York Times* critic Brooks Atkinson, who gave the play a more reflective second look in a Sunday column. The play had its faults, he admitted, "But thousands of Americans who do not know what a Fascist dictatorship would mean now have an opportunity to find out, thanks to Mr. Lewis's energetic public spirit"
and the Federal Theatre's wide facilities." To Edith Issacs of
*Theatre Arts Monthly*, *It Can't Happen Here* "was a worthy
attempt in a good cause."

If anything, a sizeable proportion of critics felt that Lewis
had been too easy on the bad guys. "My objection is that the
play, while it has its chilling and effective moments, does not
make the attack on Fascism as bitter and angry as it should,"
said Richard Watts, Jr., in the *New York Herald Tribune*.
"*It Can't Happen Here* should both frighten you and make you
mad, and I don't think it achieves either result as completely
as it should." To both Watts and Atkinson, the problem was
Lewis's weakness for burlesque and caricature, which made
his Corpus more laughable than threatening. For Stark Young
in *The New Republic*, realism demanded that Lewis should
have shown the mass appeal which made fascism such a real
threat to democracy. Yet realism of a different sort was found
by William Schack, who reviewed the Yiddish production for
the *New York Times*. Beyond its own merits, said Schack, the
real contribution of *Da Ken Es Nit Geshen* was its demonstra-
tion to Yiddish playwrights "that the American scene readily
lends itself to treatment in Yiddish."

Mixed reviews could hardly dispel the euphoria of open-
ing night. Thanks to the broad base of the Federal Theatre,
Flanagan and Lewis knew they had a hit regardless of the
notices. At a post-opening party at the Plaza Hotel, Lewis
eagerly talked about writing another play this time with his
Adelphi collaborator, Vincent Sherman. Flanagan discussed the
possibility of bringing some of the out-of-town versions into
New York. Buoyed by a laudatory telegram from Frank
Gilmore, president of Actors Equity, she allowed that Federal
Theatre might be ready to undertake another mass opening by
January.

For Lewis the letdown came that same evening, when he
began drinking and ended by insulting his wife and driving
away their guests. For Federal Theatre, reality was deferred
another week, until the morning after Roosevelt's landslide re-
election victory. Despite the result, Harry Hopkins called the
directors of the four WPA arts projects to his office and
informed them they would have to cut a total of 8,000 work-
ers from their rolls. It was their share of emergency aid pro-
vided from WPA funds for Midwest drought victims that fall.

That was not the end of the Federal Theatre, by any
means. Still to come were the *Swing Mikado* in Chicago, *Altars
of Steel* in Atlanta, and *Pinocchio* in Los Angeles. The most
memorable Living Newspapers were still waiting in the wings,
as were *Haiti, Prologue to Glory*, and Welles and Houseman's
Project 891. In order to save the best, however, Flanagan was
forced to consolidate some of the smaller projects and elimi-
nate marginal operations. Never again would Federal Theatre
possess the capability of mounting another national premiere.

Before Federal Theatre was through with *It Can't Happen
Here*, it had given the Lewis play the equivalent of a five-year
run. That included ninety-five performances at the Adelphi,
before Flanagan moved it out over Lewis's bitter protests.
Brooklyn and Kansas City never did open, but the original twenty-one productions were joined later by companies in Cincinnati, Des Moines, Philadelphia, Peoria, Omaha, Memphis, and Paterson, New Jersey. Several companies also toured in their regions, such as those from Boston, Newark, Detroit, Miami, Tacoma, and Los Angeles. The combined audience for all productions totaled nearly half a million theatergoers.

Unfortunately, little mileage remained thereafter in the Lewis play. Lewis scaled it down further in 1938 for a summer theater in Massachusetts, where he played the role of Doremus Jessup himself. As far as a career in the theater was concerned, however, *It Can't Happen Here* lowered rather than raised curtains for Sinclair Lewis.

In the history of the American theater, *It Can't Happen Here* nevertheless was more than just a stunt. It may have been the decisive influence behind the release to Federal Theatre later that season of the plays of the English language's two greatest living playwrights. Even a pared-down Federal Theatre was able to put on cycles of fourteen O'Neill and nine Shaw plays.

*It Can't Happen Here* also remained the greatest single example of what might have been, had the Federal Theatre been nurtured instead of starved and eventually trampled. Going in where the movies feared to tread, Federal Theatre had secured a significant hearing for a flawed work with an important message. Produced under ordinary commercial conditions, Lewis's play probably would have suffered a swift, silent burial; under government auspices, it had been seen by more people than hitherto had read the novel.

It was precisely this propensity for bold strokes, with their resultant publicity value, that exposed Federal Theatre to an earlier demise than its three sister arts projects. Politicians considered it an irresistible target from the beginning, and it was while defending her project before the Dies Committee in 1938 that Flanagan had to assure an Alabama Congressman that Christopher Marlowe was not a Communist but only a sixteenth-century English playwright. In order to get the WPA appropriation through Congress the following year, the Roosevelt Administration felt compelled to accept a ban against its application towards the theater—and only the theater—project. With it died the idealists' dream of a theater that could afford regularly to take risks.

Only with the rise of regional theaters in the past twenty years has anything resembling Federal Theatre made a reappearance in this country. Most of today's significant drama originates on the regional or university circuit, which has replaced the old pre-Broadway road tryouts. With improved networking among the regionals, in fact, the capability for another simultaneous national dramatic premiere might not be too far away. About the only thing that may be lacking is another Hallie Flanagan.

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*The photographs in this article are reproduced here with the permission of the Institute on the Federal Theatre Project and New Deal Culture at George Mason University in Fairfax, Virginia.*
All the arts involve some kind of deception: fiction and drama invite us to believe that non-existent beings have lived and behaved in ways interesting to us; program music suggests that certain noises made by instruments of metal, wood, and horsehair resemble the sounds made by natural phenomena, by animals and humans; painting and drawing, in addressing the most impressionable of our senses, ask us to accept lines drawn on surfaces in two dimensions as representing objects, landscapes, buildings, animals, people, that have life only in three. Representational art (the kind that was prevalent before the invention of photography around 1840 prompted artists to turn to expressionism, cubism, surrealism, dadaism, abstraction, and other departures from realistic imitation) requires that the observer allow the eyes to instruct the imagination to see what the painter intended by the marks on the canvas. Trompe l’œil (French for “deceive the eye”) is a kind of realism, deceptive realism. That is, whereas an ordinary still life painting invites you to admire the painter’s skill in representing objects with paint on canvas, a trompe l’œil painting tries to deceive you into believing that you are not looking at a painting. The painter is subsequently praised to the extent that the viewer did not at first even think of his work as art. The violin hanging on a door in the illustration above right is actually a painting of a violin on a door. The painter (Jan van der Vaart, 1647-1721) achieved his purpose when passersby saw a violin instead of a painting of a violin. The same happened when George Washington, passing by the door on which Charles Willson Peale had painted the Staircase Group, bowed politely to Rembrandt Peale, whom he recognized as the figure holding the palette.

The technique basic to this illusion is linear perspective, the drawing of lines on a surface in such a manner that a person situated at a particular point has the impression of looking into three-dimensional space. Stage sets are designed so as to give the impression of greater than actual depth by the use of distorted perspective. This foreshortening is not apparent to a person sitting in the auditorium but is obvious to an actor on the stage. The elaborate arched ceilings of Renaissance and Baroque palaces represented a painted world of immense complexity and depth to an observer standing under them.
Trompe L'oeil painted facade (by Richard Haas) of the building on the corner of Greene and Prince Streets in New York City is only deceptive to a viewer standing across the street from it. Any movement away from that point makes gradually more obvious the distortion of perspective that is necessary to the illusion. A type of this illusion was known to the ancients. Examples of walls with painted windows, columns and buildings visible at a distance between them have been found in the ruins of Pompeii. But it was only after Brunelleschi and Alberti in fifteenth-century Florence discovered the scientific basis of linear perspective that trompe l'oeil illusion began to appear in all sorts of media. Artists who specialized in architectural effects were called "perspectivists" and created what are still remarkable effects. A famous room (the "Studiolo") in the Duke of Montefeltro's palace at Gubbio is made largely of inlaid wood ("intarsia") of different kinds and colors to imitate open shelves and cupboards with half-open doors holding musical and scientific instruments, books, paper, and other familiar objects.

In portraiture also deceptive effects were achieved by the use of light and shadow and by integrating the subject with the frame of the painting. The most striking were in still life, whether a collection of edibles, a book whose open pages seem to beckon the observer to turn them or a letter rack with pieces of paper, printed or written on, sometimes torn, stuck here and there on a painted board with a tape or ribbon attached to it in a quadrilateral form. The American painter William Harnett carried this form of illusion to a high pitch of perfection, imitating both earlier letter-rack and still-life formulas. The requirement of these "deceptions," as these works
“Open Missal.”
Ludwig von Ring,
c. 1600. Courtesy of Columbus Museum of Art and Vassar College Art Gallery.

“Letter Rack.”
Wallerant Vaillant,
c. 1658.

“A Closet Door.”
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John Haberle, 1888.
Original publisher was required to insert notice:
"Reproduced by special permission of the Secretary of the Treasury."

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"The Old Violin."
Jefferson David Chalfant, 1888.
were called until the term *trompe l'oeil* was adopted early in this century, is a high degree of technique. Textures, colors, light and shadow, must look absolutely realistic if the deception is to succeed. The modern master of assemblage, Marcel Duchamp, refused to believe that the music in Chalfant’s “Old Violin” was painted and insisted that it had been pasted on. And one of John Haberle’s paintings of U.S. currency was castigated by a reviewer as a fraud because it seemed to him to be a genuine bill pasted on the backing, an erroneous claim he later retracted. Haberle also received a warning from the Treasury Department to cease his “counterfeiting” (see the notice at the bottom of the reproduction).

Although the photorealists of the 1960s flirted with this tradition of precise detail but on a movie-screen scale, and some practiced the creation of illusions, the most interesting postwar practitioner of surrealist illusion is René Magritte, whose paintings full of literal detail deserve the name of *trompe l'esprit*, because the confusion they engender in the viewer is merely transmitted by the eye but resides in the mind.

Notes

'Jeanne Conte, a free-lance writer of Columbus, Ohio, proposed the original idea for this article and arranged for our use of "Open Missal."

"Open Missal," attributed to a German painter of the 16th century was shown at an exhibition entitled “More Than Meets the Eye: The Art of Trompe l’oeil” at the Columbus [Ohio] Museum of Art in December 1985, an event that testifies to the continuing appeal of deception.

Readers interested in this subject can consult the following works:

Martin Battersby. *Trompe l'oeil: The Eye Deceived* (New York: St. Martin’s, 1974).


Fasting:
Religious Ritual or Definitive Diet?

Lee W. Gibbs

People who refuse delicious tidbits at parties with the claim that they are fasting are usually only dieting. This confusion reflects some of the ambiguity in the term "fasting." There is no people in the world to whom the custom of fasting is wholly unknown; and there is virtually no religion where the custom of fasting has not been observed as a ritual.

The word "fast" is derived from an old Teutonic word meaning originally "to observe," and later, "to keep strict observance of ritual." Fasting is most accurately defined as abstention from all food for a determined period of time. In a looser sense, the word is identified with abstinence, which denotes keeping away only from certain kinds of food or drink—from meat or a specific kind of meat, for example, or from alcoholic beverages.

"Diet," on the other hand, is derived from a Greek word, meaning "to live one's life," and eventually, "to govern or prescribe (food and drink)." In our time the word has assumed a more specific meaning, i.e., "a regulated selection of foods, especially as prescribed by a doctor for gaining or losing weight or for other medical reasons."

Medical science has from its inception associated dieting and fasting with good health. Four hundred years before Christ, Hippocrates, known as the father of modern medicine, prescribed fasting as a measure to combat illness: "To eat when you are sick," he said, "is to feed your sickness." The medieval Arab philosopher and physician Avicenna similarly prescribed fasting for all human ailments. And, in the fourteenth century, Chaucer observes of one of his Canterbury pilgrims, the Doctor of Physic, that

Of his diete mesureble was he,
For it was of no superfluite,
But of greet norissing and digestible.

Modern doctors, like their forebears, continue to recommend spare diets; some treat certain illnesses by means of supervised fasts.

Before he wrote this article, Lee Gibbs had never fasted, 'he has done so three times since, twice for three days and once for four. "I anticipate that it will become integrated with my life style," he says.

Now chairperson and professor of religious studies at Cleveland State University, Gibbs earned his B.A. at Macalester College, and his Bachelor of Sacred Theology and Ph.D. at Harvard University. An analysis of fasting is a natural outgrowth of Gibbs's other research. "I have been reading, teaching, writing in the fields of myth, ritual, religion, and culture. The religious and moral dimensions of fasting grew out of these interests."
In our own health-conscious and youth-oriented society, an increasing number of people are dieting and fasting more for the secular goals of losing weight and maintaining good health than for traditional religious purposes. Medical reports indicate that being fat increases the risk of heart disease, high blood pressure, diabetes, and disorders of the digestive system.

Nevertheless, most Americans continue to overeat and many are overweight. We spend billions of dollars a year in the hope of getting rid of extra pounds: we make periodic pilgrimages to expensive "fat farms," join weight watchers associations (a kind of Alcoholics Anonymous for overweight people), undertake strenuous physical exercise programs, buy great quantities of low calorie foods and chemical appetite suppressants, and pursue a large variety of diet programs. Some people make a virtual career of dieting, moving among such alternatives as the grapefruit diet, the hardboiled egg diet, the brown rice diet, the 900-calorie-a-day liquid diet, and now the rotation diet.

A significant variation on the numerous diet options is fasting, which is being promoted by some as "the ultimate diet" whose time has now come. Advocates point out that most diets fail because they are too restrictive and boring, and further claim that fasting for shorter periods of time is actually a better way of controlling or losing weight than following diets that restrict you to one food or an unbalanced combination of foods.

The logic of those who support fasting as the definitive diet is based on the belief that the ordinary human body has ample reserve nutrients to sustain itself without food for surprisingly long periods, provided it is supplied with water. They argue that calories in our food do count and can add up to fat; but, they continue, in fasting there is nothing to count. When you fast, that is, when you eat nothing at all and drink nothing except water, you lose weight in the cheapest and quickest possible way. And even though proponents do not claim that fasting is a panacea for all human ills, one might almost infer such a claim from the list of more than twenty reasons to fast in one recent popular book. Fasting, it is said, enables one to lose weight quickly and easily, to look and feel younger, to feel better physically and mentally, to lower blood pressure and cholesterol levels, to get more out of sex, to sleep better, to sharpen the senses and quicken mental processes, to feel euphoric and perhaps experience spiritual revelations, to gain control of oneself and thereby boost self-esteem, to cut down on smoking and drinking, to end dependence on drugs, and to save time and money [Cott, The Ultimate Diet, p.1]. Finally, advocates urge us to set aside our fears that we may harm ourselves by fasting, and to be assured that fasting is "in" because people from all walks of life are doing it (p. 6).

Magazines, movies, and television have reinforced the medical reasons for fasting or dieting by making youthful thinness an American ideal. Of course fashions change over time and across cultures. One has only to compare the full-bodied women in Botticelli's or Rubens's paintings with Modigliani's elongated women in the early twentieth century for an example of the shift of the idealized image of women as reflected in art.
In many societies, plumpness in females has been and continues to be admired and even regarded as a secondary sexual characteristic. What we would now regard as obese women have in the past symbolized strength and fertility. Where food has been scarce, body fat has been considered an overt sign of wealth and social status. In our own affluent society, inferior diets are cheaper but tend to be fat-making; so fat people tend to be poor rather than well-off, and thinness is associated with an elevated social status.

During the nineteenth century, corsets were mechanical aids women used to achieve the thinner look weight-conscious people continue to strive for today. Wearing a corset was associated not only with beauty but also with virtue; to appear publicly without a corset connoted promiscuity.

Even in the twentieth century there have been major changes of preference with regard to feminine form. In America during the early part of the century favor was shown for a buxom appearance. The "flat-chested" flappers of the 1920s were followed by the busy sweater girls of succeeding decades. More recently, the trend has been toward a more tubular thinness. The vogue of the emaciated Twiggy as the most elegant model of fifteen years ago may, however, have been a mere eccentricity of high fashion and not representative of popular taste.

In spite of the trend toward thinness, statistics indicate that the average American female under thirty has actually become heavier over the past twenty years. While the social pressure has been toward losing weight, the average woman has been getting fatter. The consequent tension is reflected in widespread dieting or fasting among women.

The health- and fashion-conscious among both sexes come to view dieting or fasting as a way of asserting and achieving a sense of mastery or control over their own bodies.

A person in control of himself thinks well of himself . . . . Successful exertion of willpower gives us a keen sense of character-building . . . . I believe there is enough asceticism in most of us that occasionally we get a good feeling out of denying ourselves something. It gives us the chance to test our resources, to prove we need not be victims of our desires (Cott, The Ultimate Diet, p. 23).

But if successful exertion of willpower and self-control in maintaining a diet or fast gives a boost to one's self-regard, then failure implies vice, guilt, and a deflated image of self. Studies reveal that the fat tend to think of themselves as generally unhappy, nervous, tense, and dissatisfied. They are prone to overeating when they are distraught or under stress. One specific study of obesity among adolescents showed that fat girls had only one-third as good a chance of being accepted by their peers as their normal-weight classmates, and obese boys half as good a chance. The dramatic increase of anorexia nervosa (a disabling, even fatal, obsession with abstention from nourishment) among teenage females has been directly related not only to the relentless pursuit of a thin body size but also to an obsessive quest for self-control and self-discipline.

The person with anorexia nervosa begins dieting in an attempt to lose weight. Over time, achievement of ever decreasing weights becomes a sign of mastery, control, and virtue.
It is of more than passing interest that books on anorexia are often shelved among such titles as *Psychological Aspects of Obesity, The Overeater,* and *Excessive Appetites: A Psychological View of Addictions.* Excessive self-starvation and excessive overeating are opposite sides of the same coin; the anorexic is driven by an exaggerated dread of being fat; the overeater consciously or unconsciously equates eating with staying alive, and dieting with starvation and death.

In the modern era, fasting has been used to protest against social and political injustice. Many people have fasted to express their moral indignation at world starvation and to manifest symbolically their solidarity with the poor.

Politically motivated fasting in modern times has taken the form of “hunger strikes” directed against governments. Governments are not usually anxious to create new martyrs, and the hunger strike has therefore often proved an effective political tactic. In the Soviet Union fasting has been a common recourse for political or religious dissidents to obtain visas to leave the country. During the 1960s in the United States, fasting was one of the techniques used by the proponents of the civil rights movement and by opponents of the war in Vietnam.

Some of the most celebrated of the politically motivated fasts took place in Britain in the early 1900s. In 1903, Emmeline Pankhurst with her daughters Christabel and Sylvia formed the Women’s Social and Political Union to fight for women’s rights. Led by the Pankhursts, hundreds of women broke windows, slashed pictures, attacked legislators, and assaulted police. When jailed, they went on hunger strikes and were brutally force fed. Women in Britain were given the vote in 1918.

The best known faster of this century was Mohandas K. Gandhi. Once a barrister in South Africa, where he fasted for the first time, Gandhi made newspaper headlines throughout the world by his successful use of fasting as a tactic in his non-violent resistance to British rule in India. He also fasted in penance for the “moral lapses” of his Hindu followers when violence periodically broke out between them and the Indian Muslims.

Gandhi fasted not only for moral and political reasons but also because he was a religious ascetic inspired by the ancient traditions of Hinduism, oldest of the living religions. The religious dimension of his fasting is evident in the description he gave of one of his experiences in the early 1930s:

The fast was an uninterrupted 21-days’ prayer whose effect I can feel now . . . there is no prayer without fasting . . . and that fasting relates not merely to the palate but to all sense organs . . . . Thus, all fasting, if it is a spiritual act, is an intense prayer or a preparation for it. It is a yearning of the soul to merge in the divine essence."

The combination of religious and political motives in Gandhi’s fasting suggests the complexity of the origins and purposes of the custom. Fasting has no single cause or purpose; it has originated and manifested itself differently according to time, climate, race, and civilization.
In primitive or pre-literate societies fasting has served as a purification rite, a method for adding force or effectiveness to ceremonial magic, a preparatory rite before some sacramental eating of sacred food, a part of a mourning ceremony, a means of inducing dreams and visions, and sometimes as a means of gaining social prestige. The times most often set aside as proper for fasting have traditionally been before the hunt, before the harvest, or, more generally, in the spring or winter. Fasting was also early and widely observed at the critical junctures of human life: before or after births, at initiations, before marriage, and in mourning.

Behind the various purposes of fasting as a social custom or religious ritual lies the basic experience of enforced fasting when food was scarce. Moreover, people in primitive societies have been and remain very concerned about the danger of ingesting impurities or evil entities with their food and drink. The custom of fasting before a funeral feast probably has its origin not only in the grief at the loss of a loved one but also in the fear of eating food contaminated by death or the danger of devouring the ghost of the departed spirit.

All of the ancient Hellenistic mystery religions required fasting as a necessary condition for initiation into the sacred rites, which almost always culminated in the consumption of some kind of holy food as the sacramental means of being united with a deity.

Fasting as an act of penitence or propitiation of an angry divinity emerged early and distinctively among the ancient Hebrews:

The most prominent feature, and one which is singular to the Old Testament, is the fact that fasting expresses submission to God. The fast is an act of self-renunciation and self-discipline which is designed to make an impression on God, to mollify His wrath, and to move Him to grant what man desires (Behm, "Néistis," p. 928.)

Many aspects of fasting among the ancient Hebrews were similar to those in other religions. Fasting at the time of death still had overtones of the fear of swallowing ghosts or demons, even though during historical times it had taken on the character of a mourning custom expressing sorrow for the deceased (see I Samuel 31:13; 2 Samuel 1:12). The forty-day fasts of Moses on Mount Sinai before receiving the law (Exodus 34:28) and of Elijah fleeing to Mount Sinai before hearing God speak to him (1 Kings 18:8-18) served as preparations for receiving divine revelations.

The most distinctive emphasis in ancient Israel focussed upon penitential or propitiatory fasting, which was combined with other austerities such as prayers of confession, almsgiving, and other acts demonstrating a concern for the unfortunate and a humbling of the soul before God.

There were fixed days for public fasting, of which the most significant was the Day of Atonement (Yom Kippur). The rules regulating the observance of this great day of national confession of sins and repentance are set forth in Leviticus 16:29-24 and 23:27-32, and in Numbers 29:7-11. The Day of Atonement was celebrated in the Fall, close to the time of the ingathering of fruits, and precedes the autumnal Feast of
Booths, the chief feast of the Jewish liturgical year. Before that feast could be safely entered upon, it was perceived that the sins of the people had first to be confessed and expiated. Fasting and complete rest from work are to last for the entire day (from sunset to sunset). Death used to be the punishment for violation of these observances, a practice long since discarded.

After the Babylonian Exile of the Jews in 587-86 B.C.E., four additional yearly public fasts were added to commemorate this national disaster (Zachariah 8:19). Another day fixed for public fasting was later established before the feast of Purim and commemorates the fast of Esther and her maidens (Esther 4:16).

In Judaism, as in most other religions, the frequency and severity of fasting has varied over the centuries. Both private and public fasting were multiplied extensively during and after the Exile. Strict Jews began to fast on the second and fifth days (Mondays and Thursdays) of each week, and these also became the days adopted for special public fasts. Fasting came to be so important and meritorious an activity for post-exilic Judaism that by the first century C.E. it had become for Gentiles one of the distinguishing marks of a Jew. Yet, in the twentieth century, during the course of a year only nine fast days are recognized by the different traditions within Jewry, and of these only one, Yom Kippur, is observed by all practicing Jews.

The history of Christianity exemplifies a similar fluctuation in the frequency and intensity of fasting. We are told that Jesus fasted once for forty days in the wilderness (Matthew 4:1-2), as had Moses and Elijah before him. The Gospel sources make no other reference to Jesus fasting.

There were two specific sayings of Jesus, however, that molded the thinking of early Christians about fasting. The first was made in the context of his rejection of the criticism made by his critics that his disciples did not fast like the disciples of John the Baptist or the Pharisees. Jesus responded that it was nonsensical for his disciples to fast while the Bridegroom was present with them; but that when the Bridegroom was taken away, they would fast “in that day” (Mark 2:18-20). The second saying occurs in Matthew 6:16-18, where Jesus presupposes that his disciples will engage in voluntary fasting as one of the accepted forms of religious discipline. But he interprets such fasting as a sign of inward conversion to God which should take place in concealment; ostentatious display and external signs of disfigurement defeat the true end of fasting.

These two sayings can best be understood in terms of Jesus's conviction that the Messianic Age had dawned. During the time when the Messiah is present, fasting is suspended. But when the Messiah is killed, and before his return to consummate the coming of the Kingdom of God in all of its glory, fasting will be appropriate.

Jesus therefore left some general guidelines on fasting but no specific regulations for carrying those principles out. Hence the early church was slow in developing its system of fasts and festivals, and fasting did not at first occupy nearly so prominent a place in Christian ritual as it did later. We are told that the early followers of Jesus were in the habit of strengthening their prayers by fasting (Acts 13:3; 14:23), but neither
Paul's nor any other of the New Testament Epistles contains any mention of this practice.

Beginning with the post-apostolic period, fasts increased in number, duration, and severity. In the second century much was left to individual piety and localized customs. Between 200 and 500 A.D., however, and especially during the fourth century, what before had been a matter of voluntary or customary observance came under rule.

It was during the second century that Christians began to fast on Wednesdays (to commemorate the arrest of Jesus) and on Fridays (in remembrance of the crucifixion). The fast of candidates before baptism also became customary during this century. Soon the baptizer and others who were to participate in the ceremony were encouraged to fast as well.

The Eucharistic fast—i.e., for a certain period before taking communion—was not heard of before the third century, but by the end of the fourth it was observed virtually everywhere Christianity had spread. It was also during the third and fourth centuries that fasting was enjoined on those under discipline of the church as appropriate to their penitence. In the fifth century the Church instituted a four-week fast before Christmas. Lent, the best-known Christian fast, takes place before Easter. It is first mentioned at the end of the second century, but there was no forty days’ fast until the fourth century, when the first legislation was passed prohibiting horse racing, theatrical spectacles, and the celebration of birthday or wedding feasts during that period. In the seventh century, the eating of flesh during Lent was declared a mortal sin; fish and dairy products were also forbidden, leaving only fruits and vegetables to eat.

During the sixteenth century, the Protestant reformers did not deny that fasting might be practiced, nor did they maintain that the church or the civil authority could not ordain fasts. What they protested against was the medieval teaching that fasts were good works which influenced one’s salvation. Most Protestant churches left the question of whether or how to fast to the conscience of the individual believer, and most greatly reduced the number of fast days to be observed.

In Protestant New England, however, where Church and State were originally considered to be coextensive, governors in time of calamity or threatened disaster proclaimed public days of fasting, when religious services for the collective confession of sins were conducted in the churches. National fasts have also been observed by Americans on certain occasions, most notable of which are those recommended by the Continental Congress during and after the Revolutionary War.

The trend in modern Roman Catholicism, especially during the twentieth century, has clearly been toward a dramatic reduction of fasting. As early as the ninth century the prohibition against eating fish was removed from the Lenten fast; a relaxation of the restrictions against dairy products followed soon after. But it was during the 1950s and especially the 1960s that what can only be described as a total rethinking and reorganization of ecclesiastical discipline on fasting and abstinence took place. George Armelagos, Professor of Anthro-
Theology at the University of Massachusetts in Amherst, has analyzed the major social forces at work in bringing about this major change:

The liberalization of Lenten dietary rules reflects the willingness over the centuries of a conservative institution—the Roman Catholic Church—to adjust to certain realities: to its inability to control members' behavior; to its desire for a consolidation of power and the need to make its rules more acceptable to both members and prospective converts; and to life in an increasingly industrialized world, in which the demands of heavy labor made the imposition of food prohibitions increasingly difficult.13

The trend toward the liberalization of rules governing fasting and abstinence has not been so plain in the Eastern Orthodox churches. The rigor of monastic practices in the East had its influence on what was expected of the laity. During the fourth century, the hermit St. Anthony and his followers frequently fasted by abstaining from all food except bread, salt, and water.

In addition to the Great Lent before Easter, the Eastern churches continue to observe three minor fast seasons: that of the Apostles Peter and Paul (June 22 to 29); that of the Virgin Mary (August 1 to 14); and that before Christmas (November 15 to January 5). These minor fasts became obligatory in the eighth century; their observance began in the monasteries and spread thence to the faithful. In the Greek Orthodox Church, the number of minor fast days has been as high as one hundred and eighty in the course of a single year.

Fasting has also played a central role in the religion of Islam—so much so that it is regarded as the "third pillar" of Muslim observance. Islam is not an ascetic religion in the sense that it encourages mortification of the flesh. Yet the practice of fasting, when carried out in a spirit of devotion, is regarded as meritorious and a way to bring one closer to God.

The principle of fasting was recognized and highly commended by the Prophet Muhammad,14 who referred to it as "the gate of religion." He himself generally fasted on several days each month and during the whole month of Ramadan.

Fasting is one of the ways for expiating various breaches in the observance of the Muslim religious law. The believer who kills another believer and cannot find the blood-money must fast for two months as a penance (The Qur'an, IV,94), and the oath-breaker who cannot as a penance feed ten poor men must fast for three days (V,91).

Islam also recommends to the faithful various times for undertaking voluntary fasts. The Qur'an recommends fasting as a penance for three days while on a pilgrimage to Mecca, and for seven upon returning (II,193). The thirteenth, fourteenth, and fifteenth days of each month are generally observed as fasting days, and strict Muslims fast, as had their Jewish predecessors, on Monday and Thursday of each week. The fast of Ashura has persisted. It is now said to be sacred for many reasons, including commemoration of the day Noah left the ark. It is the day when the doors of the Ka'ba in Mecca are opened to visitors.
Ramadan, the ninth month of the Muslim year, is the only fast which Islam makes obligatory for all the faithful. It is one of the Muslims' most sacred times, said to commemorate the month when the Qur'an first descended from heaven. Since the Muslim calendar is a lunar one, Ramadan moves progressively through all the seasons of the year. With the annual pilgrimage to Mecca in the twelfth month, the Ramadan fast is one of the two prominent external manifestations of the religious life of Islam; it is observed with extraordinary vigor and in some localities enforced by the state.

Fasting during Ramadan is obligatory only during the day. The fast begins at dawn as soon as a white thread may be told from a black one when held at arm's length, and it lasts until dark when the one may no longer be distinguished from the other. All normally healthy people are required to abstain from food, water or any other liquid, smoking, and sexual relations. Sleep is permitted during the daylight time of fasting, however, and eating and drinking are permitted at night, when more social gatherings than usual are scheduled.

This observation of fasting only during the daylight hours is one of two major characteristics which distinguish Ramadan from fasting in the Jewish and Christian traditions; the second is its lack of associations with themes of penitential atonement for sin and redemption:

Fasting in Ramadan is a demanding spiritual discipline and enhances one's awareness of one's dependence on God and essential similarity with other human beings, especially the poor and hungry. Thus, one's religious awe is renewed, and one's regard for others is made keener. But Ramadan is by no means a Lent, as in Christianity. It is a time of serious reflection, to be sure, but it is not a sad or even a somber period. Ramadan nights are joyful times, when friends and extended families gather for food and singing and simple entertainments.

The fast of Ramadan is followed by one of the greatest festivals of rejoicing of the Muslim year. Here again we see the common pattern of strenuous self-denial followed by feasting.

The excesses of rigorous fasting and of luxurious feasting are both avoided in the sober religion of Buddhism. Siddhartha Gotama, the young Indian prince who became the Buddha, taught moderation rather than excess. He taught that food and drink are to be taken in moderation as a method of guarding the senses against the appetites of the body and the fantasies of the mind. According to the Dhammapada, fasting and other ascetic practices are said to have no effect in purifying a mortal who has not overcome desire; of themselves, they cannot purify the passions.

The Buddha did not easily reach this position of balance and moderation. After the Great Renunciation, when he rejected the pleasures of his earlier luxurious life in his father's palace, Gotama entered into an intensely ascetic, six-year struggle in an attempt to realize enlightenment and liberation. Determined to test the ascetic theory that the mind becomes clearer as the body becomes more disciplined, he is said to have reduced his diet to only one hemp grain, a single grain of rice, or one jujube fruit a day.
rice, or one jujube fruit a day. The Majjhima Nikaya credits him with this vivid description of his fast:

> When I was living on a single fruit a day, my body grew emaciated in the extreme; [my limbs became] like the knotted joints of withered creepers; like a buffalo's hoof were my shrunken buttocks; like the twists in a rope were my spinal vertebrae; like the rafters of a tumble-down roof were my gaunt ribs; like the starry gleams on water deep down in the depths of a well, so shone my gleaming eyes deep down in the depths of their sockets; and as the rind of a cut gourd shrinks and shrivels in the heat, so shrank and shrivelled the scalp of my head . . . . If I sought to feel my belly, it was my backbone I found in my grasp."

Such extraordinary self-mortification did not lead Gotama to enlightenment and liberation. He later learned that his body was the one instrument through which enlightenment could occur, and therefore should not be abused. Hence, after enlightenment and liberation had been attained, he took the Buddhist middle path of moderation between extremes.

The custom of fasting quickly found its way into Buddhist practices, however. The anniversary of the Buddha's death was soon observed by a five-days' abstinence in which both monks and laity abstained from flesh. The Sangha, the religious order that emerged to observe the Buddha's teaching and example, was governed by a set of rules known as the Ten Precepts, which included prohibitions against intoxicants and against eating more than one meal a day, to be taken at noon. In general, the precepts maintained the spirit of the order's founder:

> It may be said that the Precepts illustrate the Middle Way between asceticism and self-indulgence in a specially concrete way; on the one hand self-indulgence in the pleasures of life is explicitly disavowed, and on the other more extreme ascetic practices are not enjoined. Faithfulness in carrying out the Precepts was expected. If any monk broke any of them, he made public confession of his sin before the assembly of his chapter on the bi-monthly fast days (Noss and Noss, Man's Religions, p. 113).

Clearly, fasting is practiced both as a religious ritual and as a secular diet. But can a practice be religious and at the same time serve the apparently worldly purposes discussed earlier? Perhaps the artificial distinction between the religious and the secular which this question implies can be transcended by turning to Paul Tillich's phenomenological description of religion as "the state of being grasped by an ultimate concern." If in "religious" we include "moral," even the apparently secular reasons for fasting or dieting can be discerned as having a religious ground or dimension. Fasting or abstinence can and will remain an aid to the devotional life of those who continue to observe traditional religious rituals and seasons. But there is also religious significance in the actions of those who fast to morally protest against a callous lack of concern for the poor and starving people in the world or those who fast and use the money saved to feed the hungry and clothe the needy, or those who fast at risk to themselves to call public attention to injustice and oppression.
Nor should fasting or dieting for self-enlightened purposes of health and more efficient bodily functioning be excluded from the realms of the moral or the religious. The person who is in touch not only with the external worlds of nature and society but also with his or her own organism is a more complete person. Food and drink are necessary to maintain the existence of our bodies, and our bodies contain our brains, awareness, thinking, emotions, sensitivity, imagination, creativeness, and motivations for action. Insofar as fasting or dieting promotes bodily health through weight loss or weight control, increases the effectiveness of our thinking and sensing, develops our character through the exercise of self-control, enhances our self-image and sense of self-worth, or makes us feel more alive and energetic—they are intrinsically good.

When regarded as a means for exercising self-control or enhancing self-image, though, fasting and dieting must be evaluated with due regard to other needs and responsibilities. Habitual temperance or moderation will usually be found more beneficial than occasional fasting or sporadic dieting. Insofar as fasting or excessively rigid dieting may overexcite the imagination (there are physiological reasons for this well-documented phenomenon) or otherwise disturb that healthy and well balanced interaction of body and mind which is the best, or at least the normal, condition for thinking and acting responsibly, they should be avoided altogether. Temperance and moderation are the best diet.

Notes

1 Fasting should not be confused with permanent restrictions on diet, such as medical restraints against foods with a high-cholesterol level for persons with heart disease, or the religious prohibitions against the eating of pork in Judaism and against the drinking of alcoholic beverages in Islam.

2 See, for example, Alan Cott, M.D., Fasting: the Ultimate Diet, with Jerome Agel and Eugene Boe (New York: Bantam, 1975). Not only medical doctors but other professionals have become advocates of the virtues of fasting. As long ago as 1923, the novelist Upton Sinclair found a diet that promoted the creative process and allowed him to overwork with impunity while fasting; see The Fasting Cure (New York: Mitchell Kennerley, 1923).

3 On youth as one of the major “modern myths” controlling the thought and values of contemporary Western society, see Jacques Ellul, The New Demons, trans. C. Edward Hopkin (New York: Seabury Press, 1975), pp. 108-09.


6 “Why I Fasted for Twenty-One Days,” World Tomorrow, 16 (1933), 496-97.

7 The pioneer in nineteenth-century anthropology, Edward B. Tylor, for example, supported the theory that fasting originated in the desire of primitive people to bring on at will certain abnormal nervous conditions favorable to the seeing of visions and the dreaming of those dreams which are supposed to give the soul direct access to the realities of the spiritual world. See
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Primate Culture: Researches into the Development of Mythology, Philosophy, Religion, Language, Art and Custom, 2nd ed. (London: John Murray, 1873), 1:77, 40; 2:37. The shamanistic axiom that "the continually stuffed body cannot see secret things" still meets with widespread acceptance throughout the world today.


"These fasts were associated with the beginning of the Chaldean siege of Jerusalem, the capture of the city, the destruction of the temple, and the assassination of Gedaliah. On these four fasts as well as fasting in general in Judaism, see Theodor H. Gaster, Festivals of the Jewish Year: A Modern Interpretation and Guide (New York: William Sloane Associates, 1953), pp. 189-211.

"As in other religions and other Christian observances, Christianity borrowed and appropriated from earlier pagan beliefs and practices. The name "Lent" came from the heathen Anglo-Saxons for whom the word meant "spring" and referred to the season when the length of days was increasing. "Easter" was derived from the Teutonic "Eostre," who was the goddess of the dawn and the spring.


"The Lenten Fast and How it Evolved Through the Centuries," The New York Times [Wednesday, Feb. 12, 1986]. At the close of the third session of Vatican Council II on November 21, 1964, Pope Paul VI reduced the time period for abstinence from solid food and all beverages other than water to one hour before receiving the eucharist. Even more drastically, his apostolic constitution Poenitentia (February 17, 1966) reduced the fast days in Lent to two: Ash Wednesday and Good Friday. On both days, no meat is allowed and only one full meal is to be eaten. The same decree raises the age at which children must observe this abstinence from seven to fourteen. He also encouraged local conferences of bishops to substitute for fasting and abstinence other forms of penance, especially works of charity. Although Roman Catholics are still urged by their bishops to practice frequent acts of voluntary abstinence from meat on Fridays, along with other individual acts of mortification, more and more people are substituting various forms of community service.


"The Ramadan fast may have been derived from the Christian fast of Lent, but it was far more likely an appropriation of the thirty-days' Harranian fast, a pagan fast in honor of the moon when all food and drink were avoided between dawn and sunset.


Measuring the Motion That Is Heat

Ron Haybron

When I first attempted candy-making, the crucial importance of temperature in determining the exact way melted sugar crystallizes was one of the early lessons. I found that experienced candy cooks can estimate the temperature of the syrup quite closely by dropping a bit of it into ice water and inspecting the form taken by the result, a sort of culinary augury.

For example, one of my cookbooks describes the "firm ball" stage as the condition when "a small quantity of syrup [is dropped] into ice water. The ball will hold its shape and will not flatten unless pressed with the fingers." This result indicates that the syrup is at a temperature between 242 and 248 degrees F. The book lists seven distinct temperature ranges which are of relevance to candy making and describes the corresponding behavior of syrup in those ranges when dropped into ice water. I never developed the confidence to use this method and bought an expensive candy thermometer.

In the old days—that is, before the 1700s—there were no thermometers, and people had to rely on experience to control the temperature of foods. When the Comte de Plessis-Praslin, a French noble, was entertaining King Louis XIV, his cook became so distracted by the pageantry that he overheated the candy, apparently ruining it. Someone had the wit to sample the product and found it excellent: the cook had accidentally invented the confection we now call pralines, a long-time favorite with the French-descended Cajuns of Louisiana. If the count's cook had had a thermometer, we might have lost this sugar-and-nut confection, unfairly named after the cook's employer.

But this is no argument for doing without thermometers. So many phenomena in our everyday lives depend on temperature that we forget its significance. From cooking to choosing winter garments to monitoring the progress of a disease, our ability to measure temperature conveniently and with reasonable accuracy is essential to our comfort and well-being. And of course, the machinery of modern technology could not be designed, constructed, or operated without a mastery of thermometry.

The importance of temperature to human health stimulated the development of ways to measure it. A lizard suffering from an infection will seek a warmer environment than a
healthy one will. Since chemical reactions proceed more rapidly at higher temperatures, it is reasonable to conclude that in the lizard's body chemistry, resistance to invading microbes is rendered more effective by heat. On the basis of evidence like the lizard's behavior, some experts suspect that fevers should be allowed to run their natural course, unless the patient's temperature is excessively high. Elevated temperature may help the body fight infection, and lowering the temperature with medicine may in fact impede the healing. In the early days of thermometry, such subtleties played no role, but even then the relation between temperature and health was noted. Physicians were among the pioneers of the study of heat and thermometry.

Temperature is also closely related to the structure of matter. The way an object is affected by a given amount of heat tells us something about its atoms and molecules. The development of temperature measurement opened the door to the realm of atoms and helped reveal hidden patterns in the fabric of nature.

From the beginning, the aim of science has been to discover the patterns that underlie the phenomena perceived by our senses. In fact, the idea that there is a pattern, that nature is intelligible, was the single most extraordinary breakthrough science has ever produced. Of course, having the idea and proving it are two very different things. The notion seems to have originated in the sixth century B.C. in the Greek colonies of Asia Minor. But not until the latter part of the seventeenth century, with Newton's work on the dynamics of material particles, did it become possible to believe that the old Greek search for some sort of unity in nature could be realized.

A phenomenon that deceives the senses.

It was to be expected that physicists would begin studying heat and temperature early on, because these phenomena are so common. People have always had a firm intuitive notion of what is meant by hot or cold. That is, the qualitative idea of temperature was well developed. But without thermometers, intuition can be deceived. For instance, if a metal object and a wooden one are set out for a long time on a cold day, they will both come to the same temperature; but the metal will feel much colder to the touch because metal conducts heat so much better than wood. Fingers on the metal will lose more heat to it than to the wood, and it will seem to be at a lower temperature. Only with a thermometer can the equality of the temperatures be established.

The invention of thermometers made possible experiments to detect and measure the transfer of heat between bodies, and ultimately to establish the nature of heat and the fact of energy conservation. And the emergence of these theories was integral to the atomic theory of matter and our modern, non-Newtonian world view.

That an understanding of heat was so long in coming is a measure of the subtlety of the phenomena involved. In modern terms, heat is all the energy stored in random atomic or
molecular motions as well as in internal vibrations or rotations of these structures. Temperature reflects only the energy associated with the motions of atoms or molecules. To produce these definitions required both an atomic theory of matter and the notion of conservation of energy, and it took over two hundred years after the first thermometers were invented to develop all the concepts, feel confident of them, and make delicate use of them in scientific work.

The idea that matter is constructed of atoms was already accepted by most scientists by the time of Galileo. It was another invention of the ancient Greeks. Proof, however, was lacking, so that, although the physicists of those times thought in terms of atoms, they always had to attach disclaimers to discussions employing the concept. And these conjectural atoms had no specific properties because they were not then accessible to experiment.

Conservation of energy was also in the minds of the early researchers. In certain mechanical situations (e.g., where there is no friction to convert motion energy into heat), conservation of energy could be discussed as soon as Newton completed his synthesis. That heat is a form of energy was suspected by some for a long time before there was proof. In fact, some Greek philosophers of antiquity conjectured that heat is the consequence of the motion of atoms. But until atoms had been explicitly incorporated into the theories of matter, the most useful theories about heat saw it as some kind of fluid, called *phlogiston* or *caloric*.

The attractiveness of this way of conceptualizing the nature of heat is easy enough to understand. If I take a warm piece of metal and place it in contact with a cold piece of metal, the former will cool while the latter heats up and both will assume a common temperature intermediate to the values exhibited by the samples before they were placed in contact. Something seems to have flowed from one body to the other, carrying the entity called heat, whatever it might be. The chemist Lavoisier applied the term caloric to heat in 1787. The postulates of the caloric theory have been summarized as follows:

1. Caloric is an elastic fluid, the particles of which repel one another. 2. The particles of caloric are attracted by the particles of ordinary matter, the magnitude of the attraction being different for different substances and for different states of aggregation. 3. Caloric is indestructible and uncreatable. 4. Caloric can be either sensible or latent, and in the latter state is combined "chemically" with the particles of matter to form the liquid or vapor. [Sensible caloric . . . increases the temperature of a body to which it is added . . .].

This curious substance was thus conceived as an invisible and weightless liquid which was self-repellent, the latter property producing the tendency to flow.

Lavoisier's "caloric" replaced a more primitive entity, "phlogiston." This name was applied in 1703 to label a vague, inconsistent concept introduced by chemists in the seventeenth century. In general, phlogiston was the essential ingredient of all combustible bodies, and in different circumstances it...
might have weight, be weightless, or possess negative weight, that is, a tendency to rise. The idea was an outgrowth of the belief that matter is made up of four elements: earth, air, fire, and water. Phlogiston represented the element of fire, with assorted modifications designed to accommodate the findings of chemists who were beginning to delve into the processes of oxidation and combustion.

Although the caloric theory was obsolete by the middle of the eighteenth century, it provided the conceptual scaffolding for most of the work done on the subject of heat in the early nineteenth century, when some of the defining experiments were performed. But the possibility that heat was not a substance but rather a manifestation of the motion of the atoms making up an object was never abandoned. The researchers of the period usually noted that "most of the phenomena can be explained equally well by considering heat as a substance or as a mode of motion; even if the former view [the caloric theory] was to be adopted for the sake of convenience, it was not to be regarded as firmly established beyond any doubt." Even though some of the important work in understanding heat was based on the now discredited hypothesis that heat is a fluid, the evolution of the subject was not much affected. Caloric gave an adequate account of the principle.

Early in the seventeenth century, Francis Bacon gave a typical description of the alternate viewpoint stating that heat is "motion of the smaller particles of bodies." This "atomic" picture was widely held by the scientists of the time, including Isaac Newton and the constellation of thinkers he influenced. In recounting the origins of the modern understanding of the structure of matter, it would be most convenient if atoms had been discovered first and their motion were shown to have given rise to the manifestation we call heat. In fact, the reverse happened: in the middle of the nineteenth century it was argued pretty conclusively that heat must be the motion of invisible atoms composing matter, and this description lent credence to the atomic theory and gave urgency to the job of uncovering conclusive evidence that atoms exist and have individual, discernible properties.

The first thermometer.

Modern scientific methodology began to take form with the experiments of Galileo (1564-1642); it was he who first attempted to measure temperature. He may have taken his inspiration for these experiments from certain ingenious mechanical toys and devices invented in the first century, which depended on the application of physical principles which would not be understood for fifteen centuries: among these were examples which utilized the expansion of heated air for their operation.

It seems likely that one or another of these ancient toys served as a model for the devices used in the first attempts to measure temperature. Whether Galileo was indeed the first to make such an effort is not known. He apparently did not attach much significance to it, for he only mentioned the work once and then incidentally, but his contemporaries described the experiments.
The instrument he used was quite crude, a glass bulb with a long stem, open at its end. This Galileo filled part way with colored water, and, covering the open end with a finger, turned it upside down in a bowl containing more of the colored water. The liquid in the stem leading to the now topmost bulb assumed a level where the air pressure on the surface of the water in the bowl just balanced the pressure on the top of the fluid column inside the glass plus the weight of the suspended water.

Now Galileo had a crude instrument with which to measure temperature. With a few marks for reference on a piece of paper attached to the glass stem, he had constructed an early, not very accurate prototype of the modern mercury-filled instrument on the wall outside my window. His version indicated temperature changes the reverse of the way to which we are now accustomed. When the temperature went up, the air trapped in the bulb above the water in the stem expanded and pushed the water level lower: as the surroundings cooled, the trapped air contracted, and water rose until balance was restored.

This device, however, reacted not only to changes in temperature, but also to atmospheric pressure changes, just like a barometer. If the external air pressure declined, as with an approaching storm, the water level in the stem dropped, suggesting an increase in temperature, whereas no such thing had occurred. In short, this thermometer-barometer, which was called a "thermoscope" in some circles and a "barothermoscope" in others, was of little practical value, except to point the way for the more refined inventions which would follow in short order.

Galileo was also probably responsible for applying the term "degree" to the unit by which temperature is measured. He described his rough scale as being marked off arbitrarily, or "at pleasure" as he put it, and one of the scales he used was divided into eight large spaces, each further divided into 60 parts. Roller conjectures that this might have been by analogy with astronomical instruments graduated in degrees and minutes. Thus our temperatures are described in terms designed at first to measure angles, a most curious and quite meaningless connection.

The best materials for a thermometer.

To construct a device to measure temperature, it is necessary to start with a physical property that varies to a measurable degree with modest temperature changes.

Of course there are many such properties within the purview of the physicist: if there were not, the determination of temperature would not be so important. For example, the velocity of sound varies with air temperature, from perhaps 330 meters per second (743 miles per hour) on a cold, winter day to 355 meters per second (799 miles per hour) on a hot summer day. So it would be possible to learn the temperature of the air by determining the speed of sound at the time either by direct measurement or by finding the wavelength for a source of fixed frequency. But measuring the velocity of...
sound precisely enough to give an accurate measure of the temperature would be difficult. It seems wise to append to the requirements for a suitable thermometric property that it be something which can be measured easily and with portable equipment.

Another property which could serve as a thermometric quantity is density, which is the mass per unit volume of a material. The density of all substances generally increases with decreasing temperature. As the temperature of a substance goes down, its molecules move around less vigorously and occupy a smaller volume. Whether solid, liquid, or gas, the density of the material increases, because the same amount of matter (number of atoms) is occupying a smaller total volume.

There are, however, exceptions to this fact which can complicate the use of a specific substance in making a thermometer. When water is cooled, its density increases, as would be expected. But something anomalous happens at four degrees Centigrade. Below that level, the cooling water expands and its density decreases until the freezing point at 0 degrees is reached. As the average speed of the water molecules decreases with diminishing temperature, the molecules begin to interact more strongly and start to form the ordered structures which will become ice. In this configuration, the molecules are more widely spaced than when they assume the disordered, liquid quality. It is roughly analogous to a group of gymnasts who can stand together in a small area, or form a pyramid which occupies more space. Ice is less dense than water and therefore floats. The implication for thermometry is that the irregular variation of the density of water with temperature makes it a poor substance for measuring density.

Galileo’s thermoscope depended on the density variations of air but was not very useful for measuring temperatures because its indications were affected by the air pressure as well. But the notion of using the volume expansion of a fluid (the air in Galileo’s tube) to push an indicating column up and down a glass stem was already established and became the form taken by all the early instruments. To bring about the modern thermometer, it still remained necessary to find a suitable fluid to serve as the indicator and a scale to express the measurements. The latter task included two parts: choosing a unit of measurement and setting an absolute point so that thermometers could be calibrated to agree with one another.

The most convenient fluid to use, after air, is water. In 1631, Jean Rey, a French physician, used a glass bulb and stem partly filled with water and designed to measure the expansion of the water with temperature. But we have already seen one disadvantage of water as an indicating medium—its irregular expansion at low temperatures. Alcohol was also employed in such instruments by various experimenters; it had the advantage of allowing the measurement of temperatures below the freezing point of water. But both alcohol and water are liquids over a relatively small range of temperatures and both suffer from an additional defect for thermometry: they make glass wet. The molecules of some liquids have an affinity for
glass and are attracted to the walls of their containers. (A liq­
uid which interacts with a solid material in this way is said to
wet it.) Where the surface of such a liquid meets the wall of
the container, its edges are pulled up a bit. More important, if
the level of the liquid is lowered, some of it will remain
behind, adhering to the sides of the container. In a thermome­
ter, that means as the temperature goes down, some of the
liquid will be subtracted from the column and the indicated
temperature will be lower than the actual temperature.

The other liquid which was relatively common in the
period when thermometers were being developed was mer­
cury. It was used in barometers for measuring air pressure
when Gabriel Daniel Fahrenheit, a famous European maker of
meteorological instruments, began to use it in some of his
thermometers in the first two decades of the eighteenth cen­
tury. Although he was not the first to use mercury—it was
common in pocket thermometers in the previous century—he
seemed original in his appreciation of its special merits as a
thermometric substance, namely that it is a liquid with a rea­
sonably large coefficient of thermal expansion which does not
vary much with temperature [i.e., a modest temperature
increase produces a fairly large expansion, and the amount of
expansion is about the same at any temperature within the
range of interest], that it remains liquid over a fairly wide
range of temperature (-38.89 degrees C. to 356.9 degrees C.),
and that it does not wet glass.

The operation of a mercury thermometer depends on the
fact that as the temperature increases, the mercury expands.
In such an instrument, the mercury is confined in a space
including the bulb at the bottom and the long, narrow, cylin­
drical channel up the stem. The “empty” part of this space is
evacuated when it is manufactured, to eliminate the effects of
air expansion on the indication given by the thermometer. As
the mercury expands, it climbs up the channel. The increase
in height of the column is inversely proportional to the radius
of the channel. That is, the larger the bore, the smaller the
change in the level of the liquid. So the easiest thermometer to
read will have a small bore. Unless this channel is uniform, of
course, the thermometer will not be accurate.

For many people the most familiar thermometer is the one
in their home’s thermostat. That instrument works on a differ­
ent principle from the mercury-in-glass thermometer—the
differential expansion of a bimetal strip. Different metals have
different coefficients of expansion—for example, the coefficient
for brass is 19 (in units I won’t bother to elaborate) while that
for steel is 11. This means that a piece of brass expands 1.7
times more for a given increase in temperature than does a
piece of steel of the same size. If a strip of brass is welded to a
similar one of steel, the two sides of the “sandwich” expand at
considerably different rates and the strip warps and bends
towards the steel side. The higher the temperature, the greater
the curvature of the bimetallic strip, that is, the more it bends
around. If a suitably calibrated pointer is attached to the end
of the strip, and allowed to travel along a scale, the tempera­
ture can be indicated.
Defining a "degree" of temperature.

Having chosen the thermometric substance, the physical principle, and the form of the instrument,\textsuperscript{12} we are left only the task of finding a unit of measure, a zero point, and a way of calibrating the device with some constant physical phenomenon which is easily accessible and stable against variations in the environment.

Historically, the unit of measure has always been called a "degree," as we have indicated earlier. But these degrees have shown a variety of sizes and have been chosen to satisfy the needs of the experimenter and the physical characteristic used for calibration. For example, thermometers built by the Academia del Cimento in the period between 1657 and 1667 were alcohol-in-glass expansion devices. The scale ranged from "the most severe winter cold" to "the greatest summer heat" and this interval was equally divided into parts which were indicated by divisions on the scale marked by tiny, colored glass beads attached to the stem. Since the reference points for this scale depended on the local climate, it was of no real value for communicating between one place and another, and so scientists had little use for it. The procedure these Italian instrument-makers used, however, set the pattern for our modern thermometers and is called a "two-fixed-point method." In this method one chooses two well-defined phenomena, each of which can happen only at a unique temperature (we use the freezing point and boiling point of pure water). If one then divides the interval between the two into an equal number of parts (the step size chosen for convenience), all that now remains is selection of a zero point for the scale—a stage to which which the Italians apparently had not progressed.

In 1701, Sir Isaac Newton proposed a scale with two reference points with nearly universal properties: the freezing point of water (as zero) and the temperature of the human body (as 12 degrees). In the following year, Ole Roemer, a Danish astronomer, proposed a zero point chosen at the temperature of a certain mixture of ice, water and salt (lower than the freezing point of pure water) and the temperature of boiling water arbitrarily set at 60 degrees. He encouraged Fahrenheit to adopt a similar scale, and by 1717, the latter had come out with his well-known temperature scale, with the freezing point of water at 32 degrees and the boiling point at 212 degrees. These particular numbers kept Roemer's zero in the same place. In all of these systems, the use of two measurements serves to define the size of the degree and ties the system to the rest of the world for absolute calibration.

Fahrenheit did considerably more than simply define the reference points and select a degree size. Because water can be supercooled several degrees below its "normal" freezing point before crystallizing, experimenters of that time believed the freezing point was variable. Fahrenheit proved that a mixture of ice and water always assumed the same temperature. In addition, he demonstrated that the temperature of boiling water depends on atmospheric pressure but is always the
same at the same pressure. Thus, with the specification of a
definite pressure, such as that at sea level, the boiling point
becomes the second reference temperature.

By the time Fahrenheit died in 1731, the freezing and
boiling points of water were generally accepted as the most
convenient fixed points. Even so, not everyone accepted his
minute degree size. The French naturalist René Antoine Fer-
chault de Réaumur introduced a scale with the interval
between the freezing and boiling points of water divided into
80 (large) degrees, and his scale is still used in some countries.

Given the growing interest of the modern world in the
decimal system, the introduction of the Celsius or Centigrade
scale was inevitable. With this scale, the freezing point of pure
water is at zero degrees and the boiling point at 100. Anders
Celsius, who used the centesimal system in 1742, put 100
degrees at the freezing point of water and zero degrees at the
boiling point, but in spite of its inversion his contribution has
kept his name as an alternative to "Centigrade" as a term for
his scale.

The "fixed points" defined by the freezing and boiling
points of water are actually not independent of physical phe-
nomena other than the temperature. Both depend on atmo-
spheric pressure—especially the boiling point, which drops
from 212 degrees Fahrenheit at one atmosphere (a pressure
that will support a 760-millimeter or 30-inch column of mer-
ccury), to 203 degrees at a pressure of 0.83 atmospheres, a typi-
cal value at the elevation of Denver, Colorado. Mountain
climbers know that one can boil water at 15,000 feet using
only paper as fuel and drink it without getting burned. This
dependence on pressure is not crucial to the accurate calibra-
tion of a temperature system, but it does raise an interesting
question: is there any condition depending only on tempera-
ture which can serve as an absolute reference point? Such a
point does indeed exist, and it is called "absolute zero."

The notion of an absolute zero seems to have first been
suggested at the beginning of the eighteenth century by Guilia-
made Amontons. From his studies of the thermal properties
of air he concluded that the volume of a mass of air is propor-
tional to the amount of heat it contains and that there must be
a minimum low temperature where the air would be drained
of all heat and have no volume at all.

Nearly a century passed between the early work of Amon-
tons and the modern law of the thermal expansion of gases
established by J.A.C. Charles and J.L. Gay-Lussac. They dis-
covered that the volume of a gas varies linearly with tempera-
ture—that is, if the temperature is halved, the volume is
halved as well, provided the pressure is constant.
This result implied the existence of absolute zero, as Amontons had previously guessed. Plotting the volume versus temperature for a variety of gases yields a zero volume for a specific temperature. From Amontons' work, a value of minus 248 degrees Centigrade for absolute zero could be determined. The accepted modern value is minus 273 degrees Centigrade. This was advanced in 1848 by William Thomson, later Lord Kelvin, using theoretical arguments rather than experiments.

Heat and temperature.

As thermometers were improved, experiments measuring heat flow were possible. Much of the pioneering work was performed by Joseph Black (1728-1799), a Scottish M.D. and chemist, who was a professor at Glasgow and then Edinburgh. It was during the period from 1759 through 1762 when he was at the former institution that he made most of his discoveries about heat.

In one of his lectures Black made clear the fundamental importance of the thermometer to his work. "An improvement in our knowledge of heat, which has been attained by the use of thermometers, is the more distinct notion we have now than formerly of the distribution of heat among different bodies." He then discussed experiments where bodies at different temperatures were allowed to exchange heat and observed: "We find that, when all mutual action is ended, a thermometer applied to any one of the bodies undergoes the same degree of expansion. Therefore the temperature of all of them is the same. No previous acquaintance with the peculiar relation of each body to heat could have assured us of this, and we owe the discovery entirely to the thermometer."13

Black insisted that heat was related to, but distinct from temperature. In addition, he visualized heat as a measurable quantity and performed experiments on that basis. Around 1760, he introduced a unit of measure for heat, the calorie, which was the amount of heat required to change the temperature of one gram of water by one degree C. This definition is quite independent of any theory of the nature of heat, and is still in use today.14

Black performed definitive experiments which proved that a given amount of heat, added to different substances, causes their temperature to increase by differing amounts, these indicating differing "capacities for heat." We still define the "specific heat capacity" of a material as the number of Calories (capitalized—the calorie is an inconveniently small unit of measure for many purposes)—which must be added to one kilogram of it to raise its temperature by one degree C. None of this work threatened Black's belief in the caloric theory, and indeed he interpreted the results as supporting it.

The first serious attacks on the caloric theory were mounted by Sir Benjamin Thompson, later Count von Rumford (1753-1814), a British-American who fought for the King during the American Revolution but nevertheless founded a professorship at Harvard in his will. Although the caloric theory was widely accepted in his time, he came to believe that heat was motion and set about performing as many experiments as possible to disprove the caloric theory. "Rumford
stated very clearly in 1798 that his concept of heat was that it was generated by internal vibrations of the material being heated . . . “"15

His most celebrated work came in conjunction with his position as Minister of War in Bavaria. In this capacity, he was in charge of boring out cannon, and was impressed by how much heat was produced in the process. Although it was well known that friction produced heat, calorists explained this as caloric being squeezed out of the surfaces which were being pressed together. Rumford devised an experiment in which the heat was absorbed by a water bath, and demonstrated that as long as the boring tool was turned in the cannon blank, heat continued to appear. The amount of heat produced seemed to be “inexhaustible” and could not, he reasoned, be attributed to any material substance in either the cannon or the boring tool.

Rumford not only persuaded some scientists to abandon the caloric theory, but he came very close to describing the conservation of energy: “More heat may be obtained by using more fodder for the support of the horses.”16 Thus even before the term “energy” had entered the scientific vocabulary, Rumford had some sense of the process of chemical energy which resulted from food being converted to motion by the horses that turned the cannon on the boring tool, and thence to heat by the friction of the tool in the cannon.

Thompson-Rumford was a flamboyant and complex man, variously described as “a soldier of fortune,” “supreme self-confidence,” “spy,” “scoundrel,” “benefactor of the poor.” “Ingratiating himself with important people was his special talent. His second marriage (1805) to the wealthy, witty, and irrepressible widow of Lavoisier was a short-lived disaster. He was fond of growing roses and she was fond of pouring boiling water on them.” Rumford believed he had earned a place in history as well as one for his wife. He wrote in a letter, “I think I shall live to drive caloric off the stage as the late M. Lavoisier drove away Phlogiston. What a singular destiny for the wife of two Philosophers.”17

By the late 1860s, the modern understanding of heat and its relation to temperature was well established. Temperature measures the average motion-energy of the molecules which comprise a body: the heat of the body is the sum of this energy of motion plus any internal motions. For liquids and solids, interactions between the constituent atoms or molecules can store energy and contribute to the storage of heat by the material, so they are more complicated than gases (which cannot), but qualitatively no different. When the nature of heat was finally made clear, many of these details of the atomic structure of matter were still unknown, but the new understanding of temperature and heat contributed to the next phase of the study of matter.

The thermometer played an essential role in this progression, permitting measurements to be taken which were crucial to the proof of developing theories. And at the same time, it was working a quiet revolution in a host of practical matters, allowing a new level of control over many aspects of human life, including candy-making. A good cook lives in the constant presence of thermometers.
Measuring the Motion That Is Heat

Notes


3Edwin Kiester, Jr., *Science* 84, 5 (November 1984), 168. This fact was established by experiment: placing ailing lizards in an elongated enclosure which was cool at one end and hot at the other.


8It is accepted in the field of thermometry (that is, the measurement of temperature) to call a physical property that changes in a way which reflects the temperature a thermometric property, and a material which possesses a thermometric property a thermometric substance.

9Roller, p. 12.

10The velocity of a sound wave is equal to the product of the frequency of the signal and its wavelength. That means if the velocity goes up, the wavelength will decrease for a source of fixed frequency. To measure the velocity of sound, one might accurately determine the distance from, say, a cannon to a point of observation. When the cannon is fired, a timing device is started at the observer’s location; the length of time it takes the sound of the cannon shot to reach the observer is measured. The distance traveled by the sound divided by the time elapsed gives the velocity of propagation. In order to get an accurate determination of the velocity and in turn the temperature of the air the distance between the cannon and observer must be great enough to provide precision in both measurements. This means that this sort of thermometer would be quite large and not at all portable. If one elected instead to get at the velocity by measuring the change in wavelength, equally inconvenient methods would be required.

11To compute the Centigrade temperature from the Fahrenheit scale, subtract 32 and multiply the result by five ninths. Thus 98.6 degrees F converts to five ninths of 66.6, or 37 degrees C. To go the other way, multiply the temperature in degrees C, by nine fifths and to the result add 32. The temperature scale often used by scientists is that devised by William Thomson who eventually was made Lord Kelvin. The temperature in degrees Kelvin (degrees K) is obtained by adding 273 to the Centigrade temperature. Zero degrees K. corresponds to “absolute zero,” the minimum temperature attainable by matter—a temperature where substances have no more extractable energy.

12That is, for an analogue device. If a digital indication of temperature is required, the interface between the thermometric property and the presentation of the data may be quite different in form.

13Roller, p. 20.

14The dieter’s calorie is actually 1000 of Black’s calories, that is, a kilocalorie. To distinguish between the two, the kilocalorie is usually abbreviated with a capital “C”. The BTU or British Thermal Unit is another measure of heat, defined to be the amount needed to change the temperature of one pound of water by one degree F. A 6000-BTU air conditioner will cool the average room. One thousand calories equals about 4 BTUs.


17Brown, p. 268.
The House at Annaghmakerrig

Lorna Tracy

Duty Free
In 1979 Malcolm Bradbury said of England that "what many writers really need—and it is a serious lack in our culture that we do not have it—is something after the fashion of the American writers' colonies, where writers may go, and write . . . ."

For the next six weeks I’m putting myself and the theory of the writers' retreat to the test of practice, though not at Yaddo or any of those American places. In County Monaghan in the Republic of Ireland, the Tyrone Guthrie Centre at Annaghmakerrig, the late theater director's family house, will be my all-providing home; Bernard and Mary Loughlin my buffers against persons from Porlock, while I work full-time on my fiction. My only duty will be to my next book.

Irish Attitudes
No one at Dublin Airport takes the slightest interest in the contents of my luggage or the color of my passport or the nature of my business in Ireland. Yet for the English authorities an hour before, whose country I was temporarily leaving, I’d had to fill in a meddlesome pink card accounting for sex, date and place of birth, purpose of visit to Eire, hour of anticipated return to Her Majesty's jurisdiction. Who needs to know all this? Not the Irish. Welcome, you with your two bags full—of Kalashnikov rifles, for all we know or care. So I saunter unchallenged through Customs and wheel my trolley away to the bus stop, a writer on my way to a writers' retreat, overweight with notes and drafts, the raw materials of the purpose of my visit.

The driver of the airport bus knows he’s who I’m needing even before I know. He hoists my impossible fardage aboard, gives me advice and information and, at Busaras,* leads me to the coach that’s about to depart for Co. Monaghan. I haven’t had to lift those bags once. Not that there are ever any porters about, but strong, cheerful, willing bus drivers seem plentiful.

The Irish attitude to ferrying me is certainly the least punitive I’ve ever found anywhere, the usual view being that if travelers insist on going about with luggage then good luck to them. "Sure, they thought you were a rich American," says the slightly cynical Dublin painter I will meet at Annaghmakerrig. But people here do seem truly neighborly—even towards their neighbors. "You’ll learn guile from us Irish."

*The Dublin depot for long-distance buses.
warns the painter, who has that compulsion, evidently universal, to defame the locals when talking to foreigners. Speak ill of the Irish, admire the English, envy the Americans, cater for the Germans, imitate the Spanish—at least, imitate the clichés of Spanish architecture. Is this the formula?

Guile, the painter says, where I’d say subtlety. The Irish mind is tactful and devoted to the avoidance of boredom. Is this the result of so much rurality? The long way around may also be the scenic route. Irish indirection, like the Grosse Fuge, is devoted to the avoidance of tonic—too nimble to be caught in anyone’s formula.

It’s probably as well that in Dublin I was taken to Busaras and put on a state-operated bus. Instructions sent from the Centre had advised me to use “Roe’s bus,” a much cheaper service leaving Dublin daily from O’Brien’s Hotel in Parnell Street. However, a Dubliner who travels that way says one has to know that O’Brien’s Hotel isn’t officially called O’Brien’s and that the red coach, only to be found parked along a curb a good block away, isn’t officially called Roe’s bus. I never did discover what the hotel’s formal name is, but McGillicuddy’s Coach Company is what they’ve painted on the side of the red bus.

The Happy Castaway
Residents come to the Tyrone Guthrie Centre at all ages and stages of development. Annaghmakerrig is not simply the preserve of persons with grand reputations in the arts. If it were, I wouldn’t be here. Nor do they need to be from Ireland, although it seems I’m the first from England. Enabling the creative work of others was what Tyrone Guthrie had in mind when towards the end of the 60s, with both himself and his wife in failing health, he began to consider what to do with the family estate in County Monaghan. The Guthries were childless. It was not entirely obvious how best to dispose of the property. In the end the lands were left to the steward of the estate, a man of local Catholic stock, and the twenty-room house itself was earmarked to become an international retreat for writers, artists, musicians. After the Guthries died, within a year of one another early in the 70s, plans went forward for the creation of the Centre. It’s taken ten years to sort out the legal and financial problems, because of the Centre’s unique character: it belongs both to Ulster and to the Republic, just as Tyrone Guthrie always felt he did. The Centre, geographically equidistant from Dublin and Belfast, is jointly administered by the two arts councils of Ireland and has been open for just under two years.*

My first view of the house at Annaghmakerrig is from below, in darkness, approaching through woods along the road beside the lake. There’s a blaze of tall lighted windows, some of them patterned with ornate mullions. The impression is of a medium-tonnage cruise ship, tall in the dark, its upper decks festive. The vision implies linen, crystal, china, wine and fresh sweet water, feasts and warming airs. And so it proves—for the most part. Mary Loughlin shows me where my suite is, gives me some supper.

*at the time of writing.
A Moonshine Scenario
It's midnight and very still and the moon's light falls dimly upon the sensitive surface of the lake, which is the view from my study window. This is true darkness, nothing like the urban English night I've had to be content with for so long, smearing my walls with its sulphurous yellows. I pretend to be entirely alone in this big, dark, silent house (no lights at all show now from the other rooms) but through the open window a human-like cough comes up from outside, from somewhere very near.

Who's there?
Do people—can people sleep through this? Such nights should not be entrusted to the dreams of mere sleep when life is given us only once.

Resting my back on the folded shutters I settle upon the window-seat I've made on the low, fat, efficient radiator; as warm to sit on as a Russian pyeshka. In the Chekhovian dimness everything seems to grow not brighter but clearer. Moonlight makes the sky blue again and blackens every shadow. Makes the grass—not green again, but ghost-of-green; the pale road pale ghost-of-road. A forest seems to surround the house with carbon foliage. The air's not warm, not cold.

Whatever's visible is all profile; the implied mass of things packed, blanked, with charcoal. The huge tree near the front of the house is a dome of black leaves, denser than its great shapeless shadow spread before it on the grass. There's more than enough lawn to contain both. A distant motor passing behind the hill leaves only a haze of sound.

The lawn seems to extend to the shores of the lake. In one corner a marble sarcophagus glows blue-white. A shadow-cow purposefully crosses in front of the house and halts under the smaller tree, its moon-shade. The lawn is rough with tussocks; the shining tussocks and their shadows form binary star systems. The lake glows in its streak of light, and the hill behind it puts up its spines against illumination rising out of some farm or hamlet beyond. One side of the sky burns almost orange with moonfire; the other side shows all its stars.

The water smokes; the smoke swells, shrinks, moves on mysterious keels in the motionless air. What moves it? Mist drifting about the lake like blots in an over-exposed photograph, the blankness of too much light. Is this what the space between stars is like? Silence and spectral light; variations on dimness, not utterly dark, not utterly empty.

The mist stretches itself and roams, eating up the hill. Now it is coming for the house. The trees on the shore are already disappearing into its ectoplasm; the lake's quite gone. The sky remains clear.

The moon with a rainbow around it is about to step behind a projection of the house. It's stretched that round tree's shadow longer than ever now, and bowed it as well. The mist kneels down upon the lake and reveals the little hill again.
Free-Range Bathtubs and 
a Ship of Stone

After moonlight, morning. Daylight separates the single tree-line into individual cupolas and spires and species, into spouts and gushes of foliage. None of the leaves are black. Many trees wear vests of ivy. Autumn’s a warm cup slowly cooling. Among the green woods spots of fatal yellow show.

Now I see the other native North American at Annaghmakerrig, a towering young redwood from California. It strikes me as like something drawn by Beerbohm, having exactly that degree of exaggeration vis-à-vis its surroundings, one foot turned out just so, dandified, impeccable, at ease. Five thousand rooks can vanish without trace into its accommodating heights. Behind it, all along the edges of the woods lesser conifers, half-uprooted by gales, lean into the arms of better-founded neighbors, like guests at the end of an Irish wedding.

This ship of a house is now a pile of stern gray stone. Its Victorian exterior is narrow, peaked, pointed, with twisty Tudor chimneys, a few gothic touches, and long, thin, Scottish finials that positively implore the lightning. The leaves of the Virginia creeper, thin as chipped beef and greasy-looking, are exactly the same scarlet as the paintwork. The ”great lawn” I invented between the house and the lake is a cow pasture, and the lake is made of water, not smoke or light. It is also somewhat nearer than it appeared to be last night. The hill behind it is lower.
Last night's marble sarcophagus is actually a free-range bathtub. Every pasture has one—long, custard-yellow and white cast-iron tubs that stand on alligator legs and look thoughtfully straight ahead in that ruminative way free-range bathtubs have, down among the ruminants. And I soon find it's no trouble at all to spend an hour or two observing the cows. Their work, after all, so like one's own: continual, internal, boring to watch unless one feels the affinity. Then the eighteen cows become eighteen writers—some black, some white-and-black, some livid, some red-and-white, some solitary, some clubby. But all of them thinking "milk" and every one of them with four stomachs to fill. They'll prove even more industrious than I am, for through the open window at midnight I will hear them still tearing at the grass when I go off to do my dreamwork.

**Four Armies, Three Governments, and One Soviet**

The artist from County Cork, out on the Annaghmakerrig bicycle sketching aspects of County Monaghan, keeps being stopped for questioning by military and civil authorities. The Newbliss village policeman, a fellow cyclist, questions him today. The artist is beginning to feel persecuted. The policeman divulges he's "seen women" today. One of them must be me; there are only three females in residence at the moment. I've been out to look at the pre-Famine sod house melting into a nearby field. I came back through some woods. By late afternoon on a warmish day these fill with the spicy bluish fume that is breath just on the edge of visibility, the subliminal respiration of trees. The Dublin painter hopes to represent it on canvas somehow.

Parts of the forested hillsides are nearly free of undergrowth except for bracken, grass, patches of shamrock, uprooted stumps. Other parts, with thorned blackberry, seem impassable. The little sharp tracks of the bambis show the way through that. The conifer branches, like long fins, paddle in the light breeze—tall fish holding place in the current. Only this small breeze is moving the air, but, simultaneously entering the tops of so many trees, it tells of the wind's great compass and its true size.

Returning, I pass between the modest white cast-iron estate gates, domestic as a pair of bedsteads.

The sterility of the border—a permeable membrane—broods over the county. The Dubliners around the refectory table at dinner say that the present troubles do really seem, for people down in Dublin, to be happening to someone else somewhere else altogether. There are claims that the Irish are really indifferent to politics. The playwright, who does not live in Dublin, remarks that during one week in 1922 Dublin had three governments and four armies. One of them was Liam O'Flaherty's soviet.

I realize now that I know absolutely nothing about the Irish.
An Ideal World

In the midst of my walk today, a blizzard of rain—it goes by on the horizontal—then the rainbow shines against the departing dark-blue clouds, its colors unusually well-defined. Along come three little cream puffs to bisect the rainbow just above the tree-line. Instant Art Deco. The bow’s colors don’t stain the little white clouds one whit.

The rain’s stopped, except in the wood. A well-surfaced track lures me in. Followed to the end, it ends like all such Irish roads—in three heaps of coarse gravel.

After the storm, pink-topped cumuli stand in the sky like one of Mary Loughlin’s stupendous puddings. Then a spectacular sunset brushes a strip of the most brilliant and theatrical gilt onto the tops of the larches on the hill.

I feel I’m leading here the sort of life men lead: responsible to their work alone and all services laid on. Men may object to this description of their lives (they do object) but I think it’s generally accurate insofar as men’s work equals income equals power to purchase services, many of which are provided by women whose economies are very often still founded on the concept of barter. No doubt society, and with it economics, will gradually shift onto some other basis as the human race writhes through its protracted crises and internal contradictions, century after century.
The fact is that for a woman who has regular domestic duties and who is also a writer or painter or composer, a stay at Annaghmakerrig offers the guilty joy of being let off that self-catering holiday that is her daily lot. At Annaghmakerrig is the tranquility of one’s dreams. No clock, no television, no radio [unless you bring your own]. The day has no fixed points at all except for dinner en famille in the evening, cooked to perfection by Mary Loughlin, notified by gong. The noise the lake makes, five thousand excitable crows at dusk, the odd passing tractor, all remind me of something Jack Trevor Story has said in another connection: “It’s like those rare days when you feel well. There’s nothing to notice, yet you notice it.”

The days are so full at Annaghmakerrig. There’s all the writing, of course—nine or ten hours of it every day of the week. I’m sometimes so engrossed as to grudge an hour’s walk. Certainly I grudge every moment I spend so soundly, so uselessly asleep. Still, there is plenty of time to experiment with the work and if two day’s efforts finally fail it does not produce that irrational desperation in me that would be the case at home, where a couple of days might well be my whole fortnight’s ration of writing time. There’s a great hoard of hours at Annaghmakerrig. I’m shedding years of frustration; feel relaxed, tireless. I amaze myself. Who is this cheerful, tousled person who hasn’t sworn once, who hasn’t even wanted to swear? Can this be Honest Snarl, the Scold of Newcastle-upon-Tyne? Not a bad thing, to discover one is quite a decent person after all—at least when inhabiting an ideal world. Bliss for the mind not to be pestered with bells and meals, but only with the problems of fiction. They are sufficient.

When Charlotte Perkins Gilman remarried in 1900 she made sure to live in a flat that had no kitchen.

Unself-conscious Ireland
Everyone Irish agrees that County Monaghan is one of the few remaining parts of the Republic that deserves to be called unself-conscious. Its rather grim, prim little communities with their ugly, spiky churches stuck up on hills to signal like rigid banners nevertheless prove cautiously hospitable. In this part of Ireland—count on it—every face has been logged. Annaghmakerrig’s residents are insulated from the [to put it mildly] inconvenience, suspicion, tension, and fear that must strain the social fabric of the county. But life goes on—don’t they always say that?—except for the dozen or so people just north of the border who will die violently within the next fortnight.

The nearest “center of population” to Annaghmakerrig is a village three or four miles over the green drumlins. A resident who grows desperate for the sight of a street, especially a street with a pub in it, can walk, cycle, or catch a lift into Newbliss easily enough. Needing less excitement than Newbliss provides, I opt for a mile’s walk with the Dublin painter to the farm and post office known as Doohat. Our way passes a farmyard, sour with the smell of muck and defended by two of the biggest dogs in the world. The Cork artist tells me it’s easy to make friends with these dogs but I won’t put it to the test. If they are athwart the road and I’m alone I take a Falstaffian view of valor and decide to return home.
The Dublin painter, a fearless four feet nothing and the mother of eleven, with a cat's circumflex, indented mouth and huge eyes spreading purple shadows, marches right past the dogs talking about the wonderful expressions that cross the face of the playwright. She relishes the way he slaps the table with the flat of his hand when he considers the talk has got too hifalutin. She calls him "a dote," which I learn is a sweet-heart, a darling, a pet. Last night he confessed that for fifteen years he ate the same dinner every day: a chop, a packet of instant mashed potatoes, and a bowl of stewed prunes. I wish his color were better. It's yellow, and the bones of his face show through. Everyone says he's one of the best playwrights in Ireland.

I've been to Doohat once before to buy some stamps from Mrs. Hall and give an account of myself. I stressed how much work I was getting through at the Centre, but she was not convinced that work is what goes on there. She commiserated with me about the rain, saying it must be spoiling my holidays. I told her I was not on my holidays. Quite the reverse. That I was bending over my desk day and night so that my neck sounds like a ratchet, my eyes grow puffy from late hours and not quite sufficient light. She assured me that in "Mr. Gawthrie's day" the people who came to stay at Annaghmakerrig were all there on holiday. They fished or rowed or swam or walked or went on picnics or played croquet, but they did not work. Well, I said, we do.

My purchases came to fifty-one pence. I gave Mrs. Hall a punt because I had no change. She gave me five ten-penny pieces, saying something off to one side about "the penny." In my usual arithmetical confusion I didn't know whether she owed me the penny or I owed her. I registered some inequality in the transaction, something minimal, and she had indicated she wasn't bothered about it, whatever it was. But what was it, exactly? It took me most of my walk back to work out that I owed her the penny. Today I buy a few more items, obtain a good bit of change for my punts. Before Mrs. Hall counts out the change she says, "You're the American lady," as if by the way. "You don't know how the money works here, do you?" To cover us both I say that I'm finding it pretty confusing (not giving away the fact that I've lived in England with the same system of money for the past thirteen years). She explains that the money's really just like it is in America—there are one hundred pennies in the punt, the same as there are one hundred cents in the dollar. She adds that Mr. Guthrie had suggested, when Ireland was about to go decimal, that it should adopt the American style and call pennies cents. This is my chance to "remember" that I owe her one of those cents. Or pennies. "Haven't you got a good memory!" she says. It is as if she had forgotten, yet not quite forgotten, about that previous business. She counts out into my hand the exact change for my day's purchases. I wait for her to take back the penny I owe and see that she is waiting for me to offer it, and so the thing is done that way around. A tacit understanding between two foreign states has successfully taken place in the Irish style.

*punt: the Irish pound.*
Walking home this time I wonder if moral accountancy works the same way here. I wouldn’t want to ask the Dublin painter about this outright, but I’ll find a way to let the subject in on a convenient tangent sometime. Of course if I were Irish I’d provide the tangent as well as the question.

Eyelashes
"Is the tea wet?"

The actor and the monk think well of this expression, found, they say, in a play of O’Casey’s and new to them. The playwright says that there are many Tracys in the West of the country where he lives. I want to believe that among them are kin of mine. No grounds exist for believing this, which makes it an ideal subject for belief.

Thirty years ago and stage-struck, I would have been insufferable with self-importance to find myself living in a famous theater director’s house. The little Idaho girl who wanted to be “in” with theater people, who knew the Guthrie name was starry in New York, Minneapolis, Ontario. My delight at being here now has quite different sources. I hope they are more authentic. At least at last I’m not just showing off, and with my mind on nothing but my writing I don’t put on make-up until dinner, nor mind who happens to see me without it before then. Age is beautifully relaxing, and the writer luckier than the actor, who has appearances to keep up.

This house is full of theatrical memorabilia. One corridor wall’s a solid collage of actors in their Guthrie-directed roles—stage actors whose fluent, unpreservable art is reduced to these static, silent, grimacing shadows.

Undoubtedly the house is more comfortable to live in now than it ever could have been in Guthrie’s time, when dampness, drafts, and dilapidation were the rule and electrification was a novelty of the late 50s. Today the interior comfortably combines gracious period features with essential modern conveniences. Most of the bedrooms have open fires as well as central heating and bathrooms. It is a personal place, still a home, homely. The atmosphere is familial, created and carefully preserved by the Loughlins. They impose no sense of “institution” or formality upon the house.

Almost every door here has behind it an understudy, like an American screen door, covered in nappy green baize. After all the green baize doors I’ve read about in English fiction (Why baize? Why green baize?) here they actually are, absorbing sound to keep our privacy quiet. (Baize: plural of bay, hence “green.”)

Not all the things in the house are as theatrical as the first Tyrone Power’s playbills; there are military ancestors in the family as well (here are their swords), theological ancestors (there are the sermons), and all the common bric-a-brac of seashells and photographs that every household harbors.

The most pathetic sight at Annaghmakerrig: those few wiry mostly crumpled and bent eyelashes left on the delicate stag’s head mounted beside the fireplace in the dining room—inch-long coarse hairs sheltering dim, downcast, brown glass eyes. Tyrone Guthrie’s own commanding and genial head in
bronze, with lashless eyes is mounted on a bracket in the stone-flagged hall and lacks any trace of pathos. The stag's descendants, at least, still haunt the woods here. I see them most days.

At the Tyrone Guthrie Centre it's hard to avoid copies of James Forsyth's 'authorized biography' of Tyrone Guthrie. Authorized by whom? It's badly organized and very carelessly edited. A first casual leafing through turns up the fictitious "Abraham Velikovsky," alleged author of Oedipus and Akhnaton. One won't find Abraham Velikovsky in the index, nor Immanuel Velikovsky either, who is the man the author meant. I lose confidence in the text, and with it all interest. I choose some modern Irish fiction from the house library instead. If it's fiction I'm going to get, I might as well get the best: Anthony Cronin's Life of Riley's a good starter.

The bust of Sir Tyrone Guthrie, outside the drawing room.
Chicken Gulag
They say that all the farms here keep batteries of hens. Annaghmakerrig's no exception. So those beautifully fresh eggs with the orange yolks are not, after all, from free-ranging birds. I'm living on, condoning, a chicken gulag.

The tin in the kitchen labeled "FLOUR" actually contains cookies. I have discovered this after two weeks. "That's Ireland," says someone. "Don't believe what anything says on the outside." Memories of Roe's bus, O'Brien's Hotel.

I shall miss reading The Irish Times when I return to England. I have confidence in it. Even its typos aren't so much accident as inspiration. The last line in a Falklands campaign story referred to "the right of the islanders to choose their own destruction." "Ersatz Israel" is an entity discussed in one of Conor Cruise O'Brien's columns. Proofreaders on any other paper, except perhaps The Grauniad, would have carelessly emended that to "Eretz Israel," since that is what the author intended—or at least it would be what he intended until he can see what an improvement in definition has silently been wrought here.

Red Phone Boxes
Without rancor, talk at dinner turns to the Rev. Ian Paisley and his numerous Canadian supporters, for, alleges the monk, the reverend often goes over to Canada to record batches of talks for the radio there. Broadcast at regular intervals, these help keep the cash flowing to Northern Ireland Protestant organizations. In my mind I set this assertion next to allegations that Nor-Aid in New York funds the other side. The Centre Director remarks that there's a Paisley-ite church in a nearby village. It's his impression that the people there don't like it much. I reflect upon the taxi driver's intimate knowledge of Canadian accents.

The actor, who is Irish, has only to speak a single word to expose an accent "not Irish." He is routinely stopped both sides of the border. He creates a diversion. There are sometimes too many bottles of Ulster whisky in his car. He leaves the surplus with Customs to collect on his next return from a drive north. Whisky, cigarettes, petrol all cost less in Ulster. About the only thing in the Republic that's cheaper than its northern equivalent is a pint of milk.

The unit of British soldiers presently on border duty near here is newly posted, looks pitifully young and nervous. The soldiers have the next three months to get used to it. Normally here a soldier's rifle is pointed at the ground. At night, waiting in a car to cross the checkpoint south of Armagh, I notice marksmen crouched motionless in dark front gardens. Some others are in a churchyard, their weapons aimed at the space just over the top of the car. It seems I'm too stupid to be afraid of a gun, but a frightened soldier can scare me. Everyone in the world appears to be used to the sight of grubby urban streets swarming with military men and vehicles. What's so sinister here is the lush rural landscape with such things in it.

Smaller country roads wander freely across the border without checkpoints. You only notice you're in another nation when the call boxes have turned from green to red.
Locals here, like locals everywhere, chafe under the discontents of being locals. Tied down to one place, anywhere else looks better. A retired farm laborer with a fine estate cottage, garden, family of gnomes for his doorstep, lamented that there were not frequent buses to take him somewhere else. The drumlins, puddled with lakes, close in; views are usually plugged before they can become vistas. Every bend in the road entirely blocks the sound of approaching vehicles. A car appearing around a curve suddenly thrusts its noise at the surprised walker and just as suddenly tows it away again around the next bend. But ordinary conversation carries perfectly across the broadest field.

Vain Superfluity
The virtue of our hundred-acre lake is the way it interrupts with its plain of water the ubiquitary tilting of the land. A nineteenth-century photograph shows that the wooded hill behind it was not always wooded, that the plantation there improves it, gives it more clout as a geographical feature, and indicates how inconsequential in that respect an unassisted drumlin can be. If one could skim over the drumlins very low and fast wouldn’t one go whump-whump-whump the way the water skiers do when they cross the speedboat’s wake?

At certain hours on windless, overcast days the waterski ramp ceases to be a low, unlovely wedge of blue-painted boards balanced on red barrels and, leached of all color, seamlessly adding the shape of its shadow to its mass, becomes an ebony-and-silver sculpture on the water, scaled perfectly for its setting. And when the heron perches on one edge to read the water, it adds an almost vain superfluity to the elegance of the piece. And the passing azure of a kingfisher smites one with disbelief.

Sometimes, in pink water at dawn, under mauvish scrollwork clouds rolled partway back to show the blank baby-blue shield behind them, a pair of non-denominational, non-sectarian swans makes a progress up the middle of the lake, accompanied by seven cygnets. I didn’t know swans had such large families—but of course this is Ireland.

The only time one hears raised voices at Annaghmakerrig is when a resident is trying to use the telephone, which cranks. Presumably this alerts a switchboard in Newbliss in someone’s front parlor on the only street in town. At half past eleven tonight a resonant, penetrating, damnably clear voice fills the main part of the house. It contains a note of tension that is certainly not hysteria, nor yet quite alarm. It keeps reiterating “I said . . . .” and then flows evenly on through a lecture or a monologue. It is the actor making a telephone call in the cupboard under the stairs. For successful communication the Irish telephone is about as useful as a smoke signal after dark. Advice from the Dublin novelist: if you really need to get a message through you’re better off to write a letter.

Not Swans
As sporting events go, a fishing competition makes quite the nicest noises. One morning I see what appear to be bundles of old clothes disposed around the shoreline, and two spots of white on the opposite banks of the lake. I think they must be
the swans taking a day off. Or nesting. No, no. It’s October. In
the afternoon I saunter down to the boathouse and sneak a
look around the corner of it. A man is sitting there attached to
a rod. The air is dead still. So is the man. I tiptoe away. When
I stand quietly the air’s a fine mesh of insects that my head
catches in.

Exactly at half past four the sound of a gunshot caroms
around the hills. Some yelling follows but it stops after a few
minutes, and soon, no more old clothes. The white spots that
are not swans disappear into the woods. The reflective lake
continues to grow trees, and fish continue to jump in the tops
of them. From the calm dock I watch the image of the boat-
house where the parallel lines of its corrugated iron engage in
tangled intimacies that geometry calls impossible. The “neces-
sary ripple” is there.

The next morning the old clothes are back. Earnest gulls
converge offshore on something invisible to me. Occasional
soft male voices drift across the lake. A froggy eructation inter-
mittently repeats itself. There’s the pop-plop of something. The
water itself speaks in sips that vary in tone, pitch, timbre
according to its own responsive drum-skin surface on which
today’s small breeze raises numberless tiny blisters. On the
lake path I stop among the saplings and rhododendrons and
wait for the distant snapping of a string, the remote ringing of
an ax. I hear a chainsaw. Quite near to me a fish is hooked,
hoiked from its innocent element, dragged flopping and with-
out ceremony across the surface to the shore.

THE
TYRONE
GUTHRIE
CENTRE

Tyrone Guthrie (1900-1971), one of the foremost directors
of his time, was hooked by the theater at the age of seven,
when he was taken to a production of Peter Pan. His
career began at BBC radio in Belfast, and spanned several
continents. Guthrie directed for the Scottish National
Players, the Old Vic, Sadler’s Wells, The Abbey in
Dublin, the Habimah Theatre of Tel Aviv, and the
Metropolitan Opera in New York, and he was associated
with the Festival Theatre at Stratford, Ontario and the
Guthrie Theatre in Minneapolis, Minnesota. Although
born in England, Guthrie had a strong attachment to
Ireland, where he spent most of his school holidays as a
child. His will provided for the establishment of The
Tyrone Guthrie Center, which is intended to carry on his
enlightened interest in the arts and in the economic and
social life of Ireland.
Watching Cows
And what would the cows be doing, one may reasonably ask, that one should be watching them? Why, nothing out of the ordinary way of cows. That’s what’s so interesting. When will one of them lie down? When will she get up again? Who will be the next to go for a drink of bathwater? How long will that one’s cud last?

Seeing these beasts constantly pestered by flies, rubbing their cheeks in the grass, tossing their tails, flapping their ears, stamping their feet, one realizes with sharp gratitude what a really good idea two arms are.

And when, twice a day, the farmer leaves the single electrified wire sputting in the grass and the cows file out of the pasture and down the lane, I drop everything to watch them leaving their paddock to the magpies, who spring about on it, and to the rooks, who strut and hop. There the herd goes, off to be milked in their white stockings with dirtied knees, thick ankles delicately angled into dainty black T-strap “sitting shoes.” What will the gossip be today in the milking parlor among the unbred heifers with high udders, who just go along for the conversation?

When the deer ran among them very early this morning, not one looked up from her work.

Keeping the Peace
Eventually the day comes when I’m obliged to get a lift into Monaghan Town in hopes of buying a typewriter ribbon, such has been my industry. In Rock’s Stationery the shop radio plays not rock ‘n’ roll but “Love Me Tender,” raising in me sinister memories of American high school sentimentality from the 50s—sinister because nothing is more callous than sentimentality.

The Cork artist has said that in one of the Monaghan churches is an amazing statue commemorating the Crimean—or was it the Boer War? I ask a sexton who is power-mowing the grass around the locked-up Presbyterian church if he knows where the statue is. He doesn’t turn off his machine and he can’t hear me while it’s running. In this I recognize an Irish solution to enquiries.

What do horny blokes do in County Monaghan—these slab-cheeked, knuckle-faced Presbyterian farmers? Bestiality could be popular, I suppose. There really doesn’t seem to be anything for entertainment. The pub, the occasional ceilidh. Weddings. Television. Being so near to the border all the BBC’s services can be received, as well as all of RTE,* which must help pass the time. The town seems subdued, joyless. It has more pretentious-looking restaurants than any town of comparable size in any country I can remember. Maybe that’s what people do: go to church to get their bigotry perfected and then go out for dinner. But the overwhelming impression these towns convey is of people grimly determined to keep the peace at all costs. The visitor can buy a set of handmade Clones lace in the form of 3-D swans, but he can forget about listening in on the charming local crack: Monaghan people say as little as possible to, or in the presence of, strangers.

*The state radio and television network in the Republic of Ireland.
Closer to Annaghmakerrig everyone talks to you. Everyone's grown used to us odd strangers, and anyone odd seen on the road is credited to the Centre. We all just look that way. For starts, locals tend to wear green wellies and go around on tractors, whereas our monk takes his walks in a track suit of navy blue and kelly green; the Head of Design at the Abbey Theatre dresses in musquash jacket and a skirt of herringbone tweed that nearly sweeps the ground; the American-Canadian goes forth in dark glasses even when it rains; the playwright favors a suit, hat, and black leather gloves; the Dublin painter puts on a pixie cap and stays out all day, painting on location. For almost the first time in her life she's free to paint for hours on end. She comes back glowing with cold, her canvas milling with cattle. How to paint the subliminal breath of the larch woods? And how could I possibly mistake her cows for pigs? Because, I say; I probably haven't ever looked properly at the cows. As Irish answers go, it's an Anglo-American flop. She looks at me with pity and contempt.

It's said that lots of people around here regard the Centre as a first-class, state-supported doss house. In a nation where farming is what most people do for a living it's quite reasonable to assume that proper work will have something to do with milking or muck-spread ing. But the very same attitude is common among urban populations, who have no excuse for it. The comfortable philistine finds it convenient to assume that books should be written and pictures painted in cold garrets by starved clerks with bitter eyes. "It's good for 'em—shows they're at least serious about it. Or crazy." It is still the case that the sort of privileged, country house peace that Annaghmakerrig offers remains the preserve of the rich or, latterly, other social groups that society deems are best kept at a remove. To qualify for a stay in one of them writers would ordinarily have to contract tuberculosis, achieve a nervous breakdown or grow very, very old.

Annaghmakerrig is a thoroughly testing place. With everything provided for the resident except an excuse for not getting on with his work, no one can claim there isn't time. No "progress report" is exacted, no manuscripts or canvases have to be shown at the end of a stay. What Annaghmakerrig tests is the seriousness of the individual without subjecting him or her to punitive conditions. The house at Annaghmakerrig, which has waited ten years for its new era of creative peace to begin, has already become a force in Irish culture, and if the arts have any private, supra-political, reconciling power—which I believe they do—then the Tyrone Guthrie Center will become one of the most potent spots in these isles.

Meanwhile, England continues to lack any equivalent institution.
McElrath

*A selection of photographs by Jim Mitchell*

Born in Detroit, Jim Mitchell grew up in Ravenna, Ohio, where he remembers getting his first camera at the age of ten. It was an old box-type camera using 127 film, and he recalls taking pictures all around the neighborhood. But at the time, "strangely, I never had any of my film developed. Instead, I routinely stored the rolls of exposed film in the basement of our house. My reasons for doing this are not clear to me, but I do remember that there was not much money in our household budget allocated for photographic experimentation."

When he was eighteen, Mitchell joined the army and was sent to Vietnam. There he bought a better camera (a Yashica 35 mm.) and began the serious study of photography, which he continued when he was later transferred to Germany. Back in Ravenna after his discharge, he got a job as a truck driver for the A.C. Williams iron foundry and eventually became official plant photographer. He attended Kent State University, where his studies in philosophy and literature stimulated him to add a new dimension to his photographs—passages of poetry or prose to accompany each picture. He calls this composite art "prosography."

He worked for a while in Hudson and then moved with his family to Houston, Texas, where he spent three years which he describes as "not very pleasant." He returned to Ravenna in 1984 and now works at the General Electric lamp plant there, while pursuing his interests in writing and photography. "One day while visiting my parents," he recalls, "my mother gave me an old roll of film she had found in the basement. It was one of the undeveloped rolls of film I had shot and stored away when I was a child, some seventeen years before. I took the roll of film home and carefully developed it. I was surprised at the quality of the prints I was able to make from them . . . . One was a photograph of my sister, brother, and several childhood friends gathered around a sandbox that we often played in at the time." He decided to recreate the picture; fortunately all of the people in it still lived in Ravenna. The old sandbox was gone, but he replaced it with a bench in exactly the same place, and seated the original subjects in the same positions. The two photographs, printed on pp. 78–79, form the conclusion of his "prosographic" collection entitled "Eyes on Ohio."

The photographs on the following pages, selected from "Eyes on Ohio," focus on the community just outside of Ravenna which Mitchell describes as follows:

Some have stayed, a few have left
The community known as McElrath—
This neighborhood across the tracks
Where nostalgic visitors often come back
To take a look at old artifacts,
Finding some forlorn and others intact.

The poetic captions accompanying the photographs are also adapted from "Eyes on Ohio."
What was the force that brought us here?
Was it pain? Was it fear?
McElrath is full, it seems, of memorabilia and deferred dreams.
Ms. Smiley's grocery store is here.  
Her name connotes its atmosphere.  
Children still come with bits of cash  
to purchase the sweets incased in glass.
Collard Greens
They endure the worst of weather,
improving with frost and snow,
they contain abundant nutrients,
a fact to most unknown.
Give the Irishman his potato,
the Italian his pasta and cheese,
but let me treat my palate
to tasty collard greens.
I will always remember the white barns I saw on winter nights in years past. I often stopped, pressing a glove to my face to clear my eyes that watered; I stood in silence, listening to the strange static buzz of electric wires stretched overhead, that shined like long black ropes from the headlights of automobiles... then resumed my journey along a country road with frozen snow crunching beneath my boots—sometimes turning to take a departing look.
Shoeing Horses in the Jet Age

Ken Roby

Some people think my decision to become a farrier (horse-shoer), a profession in which cuts, scrapes, and backaches are everyday events, was an act bordering on insanity. But I love what I do. Few occupations could offer such a challenge to my mind, my body, and my talent, and still be a good source of income. True, the work is physically demanding: a shoer must bend, reach, and twist under a horse which isn’t usually standing still, while using a wide assortment of potentially dangerous tools. The chance of being kicked, burned, or otherwise injured is ever present. Just last summer a horse kicked me in the ribs, bouncing me off a wall, sending me seven feet down an aisle, and laying me up for several weeks.

Not only does one need to be physically strong, but one must be skilled with one’s hands. Affixing a shoe to a horse’s foot requires that small nails be driven into the outer layer of the hoof an eighth of an inch or less from the interior sensitive structures. The shoer must be able to aim these nails so precisely that they leave the hoof wall at a specific point. A fraction of an inch one way or the other can cause the horse serious injury. Just to make things exciting, the shoer must attempt this on a moving target, and try not to hit his fingers at the same time.

A thorough understanding of the anatomy and physiology of the horse’s lower leg and hoof is essential to good horse-shoeing. Rather than standing on its hoof, the horse is actually suspended in it by thousands of interlocking laminar leaves which attach the coffin bone (third phalanx) to the hoof wall (see diagram #1). In effect, the bony column of the horse’s leg is hanging from the front of the hoof wall, which grows downward from the coronary band at the top of the hoof. Below the coffin bone lies the plantar or digital cushion, and below that the frog, the outer part of which is visible on the bottom of the foot (see diagram #2). To the sides of the coffin bone and plantar cushion are the lateral cartilages containing numerous blood vessels, or venous plexus. The upper third of the lateral cartilages may be felt above the heels of the hoof.

These structures—the laminae, plantar cushion, frog, and lateral cartilages—all serve as a complicated system of shock absorbers. A 1200-pound horse moving at speed exerts tremendous pressure on the relatively small structures of the hoof.
requiring exceptional shock absorption. As the horse moves, he plants the heels of the hoof on the ground first. The bony column of the leg moves downward in the hoof as the weight of the horse is transferred onto the leg. The laminae stretch a fraction of an inch, and the coffin bone compresses the plantar cushion against the frog. This action forces the plantar cushion to spread sideways into the lateral cartilages. The heels of the hoof wall, which are thinner than at the toe, spread slightly. As the lateral cartilages are compressed, blood in the *venous plexus* is forced back up into the leg. This sequence of events occurs within a fraction of a second, with each structural movement serving to absorb shock. The blood-pumping action of the lateral cartilages not only serves as an excellent hydraulic shock absorber, but augments the circulation of blood in the extremities.

In addition to the events occurring within the hoof, the pastern and fetlock joints (analogous to knuckles—the horse walks on its middle finger) flex toward the ground, forcing the tendons, ligaments, and muscles of the leg to bear some of the load. Due to the amount of pressure, weight, and shock involved, the front leg is not attached to the rest of the skeleton with a ball-and-socket joint, but with a number of strong ligaments: a ball-and-socket joint would not hold up. In essence, the front legs are "tied" on to the body of the horse.

The art of shoeing horses demands a skill bordering on that of veterinary surgery. To maintain a working knowledge of the anatomy and physiology of a horse's limbs, not to mention keeping up-to-date on current equine research, requires constant study. I specialize in the treatment of horses with various injuries, diseases, and defects affecting the limbs and hooves. Keeping abreast of new developments in the field is a job in itself.

The majority of cases of equine lameness involve failure or damage to one or more of the hoof structures. The severity of lameness can vary from simple bruises to laminitis, a disease in which the laminae become inflamed and die. Today, laminitic horses are often destroyed.

The farrier's means of treating these problems, whether serious or simple, are largely a matter of removing or adding pressure to various parts of the hoof, and stabilizing cracked or broken parts. A bruise may often be pared out with a hoof knife and, if necessary, protected with a shoe and a pad. A disease such as laminitis can involve complicated procedures including the removal of the front of the hoof wall and the making of special shoes to support the coffin bone via the frog. Such work is often done in conjunction with a veterinarian, the farrier acting as a technician. Many farriers, including myself, routinely work with veterinarians in diagnosing and treating ailing horses.

Despite recent technological advances in the farrier's world, I find that this trade still provides some of the simple pleasures of life: satisfaction in one's work and the opportunity to be creative. I often encounter problems that require me to design special shoes, procedures, or equipment, and I am forever searching for better ways to do things.

One of my first major innovations was my shoeing rig: instead of building my workshop on the back of a truck like
most farriers, I built it on a tandem axle trailer pulled by a Toyota four-wheel-drive truck. This has turned out to be tremendously efficient: where a large pickup truck might have a capacity of 2,000 pounds and get six miles to the gallon when loaded, my truck-trailer system has a capacity of 3,500 pounds and allows me around eighteen miles to the gallon. And the trailer can be disconnected at any time, allowing me to use my truck for other purposes.

The trailer contains my tools, anvil, coal forge, welding equipment, drill press, grinders, saws, power drills, and supplies, which include about 100 pounds of various horseshoes, different sizes of steel barstock, nails, spare equipment, and first aid and medical/veterinary equipment. The trailer is wired like a house, complete with lights, outlets, floodlights, stereo system, and cooking appliances. I simply park the trailer where I want to use it, open the doors, which form a roof over my head, plug the trailer into the nearest outlet, and set up shop for the day. In the winter, two four-foot by six-foot panels form a small room around the rear of my trailer to keep me sheltered and warm. In the summer, fans keep me cool and discourage the ever-present flies.

I was originally told that such a truck-trailer system would not work because it would get stuck in the winter and is difficult to back into tight places. This has not been the case: in the three years since I have been using my rig, I have never gotten stuck, and the trailer is very maneuverable, actually fitting into some tight spots where a larger truck could not go.

Aside from the “Super Trailer,” as I affectionately call it, most of my innovations have been relatively small items designed to address a particular problem. For example, I sometimes fashion a small aluminum plate, shaped to the contours of the individual hoof, to treat severe hoof cracks. By placing the plate across the crack and screwing it into the hoof, the crack is immobilized and left to grow out. Though the concept of putting a plate across a crack is not entirely new, the way in which I “premanufacture” the plates and apply them is. In the past, some farriers would make such plates from old aluminum shoes or scrap metal, which can be very time-consuming. But by taking 1/8” thick aluminum sheets and cutting them into 1” by 3” plates ahead of time, I save a substantial amount of time when I need to apply one.

Designing special shoes is almost a daily occurrence, but there are some that stand out in my mind. I once constructed an experimental shoe to treat a terribly lame horse with chronic bone degeneration in its foot. The shoe was designed with a steel bar welded across the heels of the shoe with the intention of relieving concussion on the bone area and easing flexor tendon strain on the bone. I applied the shoe with a leather pad and injected silicone rubber under the pad. At the time I put the shoe on, the horse could hardly stand. Four days later I saw the horse again: it was cantering with a rider on its back.

Inventiveness does not always mean coming up with a completely new idea. Some of my best ideas have simply been finding a new use for something that already existed. A good example would be hot-melt glue guns, which are available in almost every hardware or department store. After seeing a
friend using one of these guns to make Christmas wreaths, I wondered if I couldn't find a use for hot-melt adhesives in hoof repair. I bought a glue gun and started experimenting; the next thing I knew, I was repairing damaged hooves in a matter of minutes at a cost of about $0.16 each, where earlier methods required as much as several hours, and cost up to $40.00. The versatility of the glue gun is almost unmatched: the glue hardens in a matter of seconds, but can be reheated and reused indefinitely. Since its application temperature is around 380 degrees Fahrenheit, it is also a sterile medium. Unlike the heavier, messier hoof repair compounds, the hot-melt adhesive can be injected into small openings, such as old nail holes, to seal them. In the past, old nail holes would often collect dirt, moisture and bacteria, leading to weak and rotten hoof walls. By filling these holes with hot-melt adhesives, a procedure which takes about a minute, the problem is eliminated.

Another example is the wood joiner. I found that if I cut the extra length off the points of a Scotch-brand wood joiner, it can be driven into the hoof wall to stabilize a crack in much the same manner as the aluminum plate. The wood joiner, unlike the aluminum plate, also helps to physically close the crack, is much cheaper and quicker to use, and does not require as much skill to apply.

I was blessed with a creative environment to grow up in: both my parents are artists. Over the years, their open minds and encouraging attitudes helped me to develop the self-confidence and creativity to pursue whatever I chose. But why horseshoeing? Neither my mother nor my father were ever equestrians. Though I did have a great-great-grandfather who was a blacksmith in Illinois during the Civil War, I never had much exposure to the trade as a child. My decision to become a farrier was a somewhat impulsive development of my love of animals and my love of tools. Though the actual decision was impulsive, I spent many years preparing to make that decision and to appreciate its consequences.

My father teaches art at a private school in Gates Mills, Ohio, so I was lucky enough to receive a good prep-school education. Though the school work was demanding, I learned how to think and how to learn. I am very aware of the practical as well as the intrinsic importance of an excellent education. The ability to look at something (whether tangible or intangible), to think about it, and possibly to understand it, is a tremendous gift. When faced with a problem, I will often sit and think the subject to death. My friends are perturbed by this habit, but it is the way I try to solve problems. There is no doubt in my mind that my ability to think, cultivated by a good education, is the basis of my success as a horseshoer, and indeed my foundation as a person.

When I was a child, we would frequently load up our old van and spend the summer months camping around the country. Because of these trips, I cultivated an interest in days gone by: the old West and the heyday of the railroads. I came to appreciate the way of life led by the people of the 1800s and the early 1900s. We visited many museums, and I saw a number of working blacksmith shops. The blacksmith shops must
have had a significant impact on me: I can remember heating stovepipe wire in our campfires and pounding it out on a rock with a carpenter’s hammer. (I should note that, technically, blacksmiths are iron workers and do not normally shoe horses. Farriers are specialists in shoeing horses and do not often do a great deal of general ironwork. However, most people use the term blacksmith to refer to both trades.)

There has always been a sense of magic associated with the blacksmith’s trade—for example, the nailing of a horseshoe over a doorway to keep out the devil. Nomadic Arab tribes held farriers in such high regard that, after a battle, the winning tribe killed all members of the losing tribe except the farrier, who was taken by the victors and treated favorably in return for his services. Even in our own country as recently as World War II horseshoers were exempt from the draft. The blacksmith has always been a symbol of strength and skill. The Roman god Vulcan was a blacksmith so skilled that he forged his own handmaidens of gold. Thor, the strongest of the Norse gods, carried out his deeds with a red-hot hammer which brought forth lightning when it was used. I am proud to be a part of a heritage so rich in tradition and legend.

I cannot even remember when I picked up my first hammer. I started pounding things, whether or not they needed pounding, at a very early age. I was given my first power drill when I was very young, and I still have it today, although it has been retired. I grew to love tools, and now I have tools I don’t even know what to do with.

If there is a specific tool I like more than any other, it is the hammer. I use more hammers to shoe a horse than any other farrier I know: a 14 oz. square face driving hammer for cutting clinches on old shoes; a 12 oz. round face driving hammer for driving nails; a brass hammer for cutting hot steel; a small ball peen for center punching and setting rivets; a large ball peen for pulling clips on a hot shoe; a cross peen for punching nail holes; a modified 2 1/2 pound rounding hammer for making handmade shoes; a 1 1/2 pound rounding hammer for light shoes; another 2 1/2 pound rounding hammer for basic smashing; a 3 pound, short-handled drilling hammer; and another 12 oz. driving hammer for affixing pads to shoes. Each hammer has a different feel to it, and I have grown accustomed to using each one for a specific task. Many farriers manage with only two or three different hammers; I use eleven.

A blacksmith must often make his own tools to fit a particular task. I like to design and make small, simple ones such as tongs, hoof testers (large pincers for locating pain in a horse’s hoof), punches, pritchels (pointed tools for enlarging nail holes) and skewers.

A tool is only an extension of the hands. It’s a wonderful feeling to use a tool almost as well as my own hands. To my clients, only the finished product counts. But to me, the process and the skill with which it is accomplished is just as important. I am proud that I can hold the head of a nail and drive it almost all the way in without ever touching my fingers. Of course I’m not perfect: when I do miss and smash myself, I develop a whole new way of handling the English language. Tools allow me to take the unwieldy elements of fire, steel, and water and transform them into useful objects.
My love of animals was undoubtedly another major factor in my decision to become a farrier. I have always been a bit of a loner, and animals have been a wonderful, simple way to fill all the lonely times. Sometimes I wonder if I don’t care more about animals than I do about people. Animals have taught me to care without expecting something in return, they have taught me how to communicate with just a touch of my hand or the tone of my voice, and they have taught me to have great patience. As a farrier, I am of course literally in constant contact with the horses I work under. It is amazing how well they are able to perceive what I am feeling: if I am upset or angry, they sense it immediately and get very tense. If I am relaxed and in a good mood, so are the horses. By the same token, I surprise myself at my ability to sense what is going on in a horse’s mind. Through experience, I can usually tell by the feel of the muscles in a horse’s leg when they are about to panic or do something dangerous.

So it is easy to see why I became a farrier. But how does one prepare for this trade? Where does an aspiring farrier learn the necessary skills? Unfortunately, in America any half­wit can buy a set of tools and call himself a farrier: there is today no required certification, evaluation or standardized education for horseshoers. Because of this, there are many practicing horseshoers who shouldn’t be. I often find myself being called in to repair damage done to horses by inexperienced or incompetent shoers. Despite a push by the American Farriers’ Association, a voluntary membership organization, towards certification of all horseshoers, the problems with poor workmanship will continue as long as there is a lack of a sound educational system.

But anyone who has the desire to excel in the field has the opportunity and the resources available to do so. For those who choose to excel, the rewards come in the form of a good reputation, a choice clientele, and good fees. Those who choose to be just good enough to slap some shoes on old Dobbin will find themselves facing a reputation as just another horseshoer trying to turn a buck.

In the past, horseshoers learned their trade from their fathers in a long apprenticeship. Today, there are horseshoeing schools in almost every state, which turn out new shoers in a matter of months. While these new shoers lack the experience that was provided by the old apprenticeship system, they usually have a sound academic background. Those who want to excel will usually work for another practicing farrier for up to several years after they graduate from shoeing school. The combination of formal schooling and practical experience under an established professional has the potential to produce excellent farriers. But many aspiring farriers are in too much of a hurry to start their own businesses and do not bother to gain any practical experience. While this is not advantageous to the farrier, the one who really loses is the horse.

I chose to acquire a formal education in farrier science, as it is now called, at Montana State University in Bozeman, Montana. The course was taught by Don Gustafson, now president of the Texas Professional Farriers’ Association. It was one semester long, five or six days a week, eight or more
hours a day. On a typical day the first half of the morning was spent listening to lectures, studying anatomy and physiology, doing leg and hoof dissections, discussing different types of shoes and their applications, going over treatments for various lamenesses, and learning about running a business.

The second half of the morning was spent doing forge work. The vast majority of horseshoes are made of mild steel, while others might be made of aluminum, plastic or rubber. Most of today's horseshoers use premanufactured shoes (commonly called keg shoes), but handmade shoes are still a necessity requiring the farrier to be proficient at working steel in a forge. For this reason, much time was spent learning the fundamentals of making shoes, modifying them, and experimenting with the infinite variety of corrective shoes.

The latter part of each day was spent in actually shoeing horses. Each of the twelve students would do only one hoof a day; it had to be done right. Today, I usually shoe a horse in one to two hours. In school, it took roughly four hours for four students to shoe one horse.

After a long, hard semester, we were told that we had only scratched the surface, and that it was now time to go out and really learn something.

After returning to Ohio, I spent the winter and spring working with a farrier whom I had worked under before going to Montana. This provided me with direct experience in the everyday life of a prominent show-horse farrier. I learned not only new skills, but I learned there were certain things I did and did not want as part of my own business. Through practical experience in the field, I was able to choose which direction I wanted to take my business, what kind of clients I wanted to have, and what general kind of work I preferred.

As it has turned out, about 60% of the horses I work with are what I call "backyard horses" (that is, pleasure horses or trail horses), plus a few polo ponies, hunters, and jumpers. Most are owned by clients who have only one or two horses, although I also service a few large stables with as many as twenty or thirty horses. My business comes almost entirely from word of mouth among horse owners and veterinarians. I have found that I don't like working with show stables: the atmosphere is too high pressure. My preference is to specialize in problem horses. There is a real satisfaction in diagnosing and devising treatment to suit a particular horse and solve a particular problem.

As I would in any other field, I continue to learn. I will never know all there is to know about the delicate and beautiful structure that is a horse's leg. And as long as the world continues to have a use for horses, I will have a chance to enjoy my work.
Woodrow Wilson’s Miracle

Gary Webster

In the early hours of the morning on Wednesday, November 8, 1916, Board of Elections workers in California began the arduous task of hand-counting ballots which would decide the outcome of Democratic President Woodrow Wilson’s bid for re-election against Republican Chief Justice Charles Evans Hughes.

Living as we do in an age of punch-card ballots tabulated by computers and sophisticated statistical methods which enable television networks to project winners with astounding accuracy after only a tiny fraction of the returns have been counted, it is difficult to imagine an era when the nation was forced to wait nearly two full days before learning the identity of its next chief executive. Not until almost noon on Thursday, November 9, was the final California ballot counted.

By a scant 3,773 votes, Wilson captured California’s 13 electoral votes and won a second term in the White House. Because a Republican victory in California would have given Hughes a bare one-vote majority in the Electoral College, and thus the Presidency, the forty or so hours a curious nation was forced to sit on its hands and wait for word from California must rank among the most tense and dramatic in American political history. Lost in the drama has been the vital role played by Ohio in Wilson’s successful re-election bid.

Had Wilson not upset Hughes in Ohio, which was thought to be a rock-solid member of the Republican camp, the results from the far West would not have mattered. A victory in Ohio would have permitted Hughes to spend the two days following the election preparing his inaugural address rather than agonizing over the situation in California.

Of the 266 electoral votes required for victory in 1916, Ohio cast 24. With only California still to be heard from, Wilson’s tally stood at 264, Hughes’s at 254. Had Hughes pocketed Ohio’s 24 electoral votes, as had been anticipated when the campaign began, his total would have swelled to 278 and the White House would have belonged to the Republicans, despite Wilson’s lead of nearly half a million ballots in the popular voting. The Democrats had held little hope for the Eastern states, where Hughes, who had also been governor of New York, was extremely popular. Besides Ohio, New Hampshire was the only state east of the Mississippi and north of the Potomac that Wilson carried. With the loss of Minnesota, on which the Democrats had counted, it turned out that the
surprise victory in Ohio was what really put Wilson in a position to reclaim the presidency with his narrow win in California.

Historians have termed Wilson's triumph in Ohio a miracle. Not since 1856, when James Buchanan carried the state (and the modern Republican party was born) had a Democratic presidential candidate won in Ohio in a two-party race. Ohio had supported Wilson in 1912, but his 41% of the vote was considerably less than the combined 48% polled by Theodore Roosevelt, carrying the banner of the Progressive (or Bull Moose) party in an effort to earn a third term in Washington, and incumbent Republican William Howard Taft, a native of Cincinnati.

Wilson's unexpected victory was the result of Ohio's shifting political mood during the early years of the century. Progressivism, the crusade to cleanse the country of corrupt politicians and businessmen which began sweeping the nation at the close of the nineteenth century, got a late start in Ohio. Powerful business leaders such as Marcus Hanna of Cleveland, who masterminded Ohioan William McKinley's successful presidential bids in 1896 and 1900, shared with political bosses firm control of the state's political machinery as late as the first year of the new century.

The reform movement began to gain momentum in Ohio with the election in 1901 of the legendary Tom L. Johnson as mayor of Cleveland. As fellow progressives in other parts of Ohio followed Johnson's lead, businesses were gradually subjected to long overdue government regulation and the bosses lost some of their hold on state politics.

Ohio's progressive movement peaked during the administration of Governor Judson Harmon, a prominent reformer elected in 1908 and considered a shoo-in for a third term in 1912. Harmon, however, declined to seek re-election, hoping his reputation as a reformer would catapult him toward the Democratic presidential nomination. The Democrats, while impressed with Harmon's credentials, selected as their standard bearer another governor who had earned a nationwide reputation as a reformer—Woodrow Wilson from New Jersey.

Harmon's successor, James M. Cox (who, ironically would in 1920 receive the Democratic presidential nomination that Harmon was denied), pledged to keep the spirit of the Harmon Administration alive and succeeded in pushing several key reforms through the state legislature. Despite these accomplishments, progressivism lost momentum during the Cox years, and voters rejected him in 1914 in favor of Republican Frank B. Willis.

Cox, along with the whole reform spirit in Ohio, was probably victims of progressivism's nationwide decline. Hoyt Landon Warner notes that even Teddy Roosevelt, renowned as a "trust buster" during his eight years in the White House, and the Progressives' Presidential nominee in 1912, had grown weary of the crusade. "The people," Warner quotes Roosevelt as declaring bluntly, "are sick and tired of reformers and reform." [Progressivism in Ohio, 1897-1917, 1964].

Ohioans in 1914, it appears, shared the sentiment. After enjoying significant gains during progressivism's heyday, controlling the governorship and both houses of the legislature...
during the Harmon and Cox administrations, the Democrats were swamped in a 1914 Republican tidal wave. The G.O.P. captured the governor's mansion and the legislature, swept Democratic incumbents out of every important state office, and sent thirteen of its candidates to Congress in Washington. Hughes and the Republican national committee can hardly be blamed for feeling, at the outset of the 1916 campaign, that Ohio was in the bag.

But cracks in the Republican position were becoming evident. Willis's performance as governor pleased almost no one, paving the way for Cox to launch his bid to return to Columbus in 1916. Wanting desperately to keep their man in office, Ohio Republicans made Willis's re-election their top priority, to the consternation of Hughes and national party leaders.

Republicans on the national level were experiencing difficulties of their own. The wounds created in 1912 when Roosevelt and his supporters bolted and effectively sabotaged Taft's re-election bid hadn't fully healed. When the Republicans convened to select a challenger to Wilson, the progressive wing again backed Roosevelt. Conservatives, however, wanted no part of the old hero and decided that Hughes was the only man capable of reuniting the party's warring factions. A threat by progressives to break ranks a second time was averted when Roosevelt announced he had no intention of launching another third party candidacy and pledged his unequivocal support for Hughes. Some of Roosevelt's followers, however, threw their support to Wilson, finding his liberal philosophies more to their liking.

The major issue of 1916 was the escalating conflict in Europe. Though Wilson's strategists quickly adopted the slogan—ironic in retrospect—"He kept us out of war," Wilson himself was making no such promises, at least privately. "It begins to look as if war with Germany is inevitable," Wilson confided during the late spring of 1916. He told a reporter [who, for reasons unknown, failed to take advantage of the scoop], "We ought to be in [the war] now, for the conditions are getting desperate for the Allies, and it is possible we may come in too late" (Merlo J. Pusey, Charles Evans Hughes, 1951, I, 356).

"He kept us out of war" had become the Democrats' rallying cry, and Wilson had little alternative but to adopt it, though he knew it was a promise he could not keep.

Hughes attacked Wilson's foreign policy as a disgrace, insisting a nation as powerful as the United States should not tolerate the indignities inflicted upon it by Germany, most notably the sinking of the British liner *Lusitania* in May of 1915, when 115 American lives were lost. Still, Hughes was aware of America's strong isolationist sentiment and stopped short of pledging to send American troops to Europe if elected.

Roosevelt's attacks on Wilson's foreign policy were considerably more vitriolic than those of Hughes. When the President took no action following Germany's invasion of neutral Belgium in early August of 1914, Roosevelt exploded, demanding an immediate declaration of war on the Central Powers. He reiterated that demand several times during the 1916 presidential campaign, seriously damaging Hughes's already slim chance of erasing the lead Wilson had built in Ohio.
Woodrow Wilson's Miracle

During the waning days of the campaign Roosevelt and his entourage marched into Ohio, hoping to inject new life into Hughes's sagging effort to capture the Buckeye State. At each stop on the tour, Roosevelt bellowed as only he could about the deplorable timidity of the Democrat in the White House and renewed his call for war on Germany. Included on Roosevelt's itinerary was a November 2 visit to Cleveland, where he told a packed house at the Armory that Wilson's Secretary of War (and former mayor of Cleveland) Newton D. Baker preferred that America's armed forces spend their time knitting socks to preparing for conflict.

Despite the rousing reception he received in Cleveland, Roosevelt's inflammatory rhetoric did not sit well with most Ohioans. Middle America wanted no part of the war across the Atlantic, a fact Roosevelt either failed to recognize or simply ignored, as he crisscrossed Ohio in search of votes for the Republican ticket.

While Roosevelt was attacking Wilson's foreign policy, Hughes concentrated on the President's record in domestic affairs, particularly Wilson's opposition to high tariffs. The prosperity the nation enjoyed in 1916, Hughes argued, was the result only of the production of war materials for sale to the Allies. "A cablegram announcing peace in Europe," one of Hughes campaigners told a Painesville audience, "would throw one million of the best paid American workmen out of employment in 24 hours."

But Ohioans didn't care to analyze the reasons behind the prosperity they were enjoying. They were working, and they believed Wilson was the man responsible.

In order to get the country moving in the right direction, Hughes declared shortly after receiving the nomination, Congress would have to repeal virtually every piece of legislation passed by the Wilson Administration. This declaration was to prove Hughes's undoing in Ohio, particularly Cleveland and the northeast, since the Democrats had produced several bills favorable to labor, the most notable being the Adamson Eight-Hour Act. Enacted just two months before the election to avert a nationwide strike, the Adamson Act cut the working day of railroad employees, thousands of whom lived in northeastern Ohio, from ten hours to eight without a corresponding decrease in pay. By condemning the Adamson Act, Hughes committed political suicide.

Hughes, of course, viewed himself and not his opponent as a champion of the working person. Aware of their candidate's need to mend fences with organized labor in northeastern Ohio, Hughes's supporters purchased large amounts of space in both The Plain Dealer and The Cleveland Press during the campaign's final days to make a final desperate pitch for the blue collar vote. One of the advertisements noted the support given Hughes by unions (which were not identified) in Chicago and Philadelphia. The ad quoted "prominent labor unionist Thomas Williams" as stating "the working man will vote next Tuesday for the Republican ticket because he will then vote for his own material welfare." In closing, the advertisement listed labor reforms instituted by the state of New York during Hughes's two terms as governor.
Unions in Chicago and Philadelphia may have supported Hughes, but laborers in Cleveland and throughout Ohio were solidly behind Wilson. So cool to the Republicans were most unions in Ohio that an East Liverpool labor leader refused to greet Hughes when he visited that Ohio River community to make strikingly clear his union's opposition to the judge's domestic policies.

As the campaign headed into its final week, Ohio's Democratic machine seemed to be hitting on all cylinders. With the day of decision almost at hand, both The Plain Dealer and Press jumped on the Democratic bandwagon. The Press recommended Wilson on October 30, saying that the President's reelection would ensure a continuation of "peace and prosperity" while a vote for the Republican ticket was a vote for "war and sorrow." The Plain Dealer denounced the Republican platform as a "program of destruction," insisting that Hughes, if elected, would try to "destroy the Federal Reserve and currency system, child labor laws, and, most importantly, the Railroad Eight-Hour Act."

On the morning before the election, The Plain Dealer called Hughes "a fault-finder with no policies of his own and no courage of his own." The charge that Hughes had no policies of his own stemmed from a widespread belief (or fear) that, should the Republicans win, Hughes would defer to Roosevelt in matters of foreign policy. Many Americans were convinced that Hughes would serve as a figurehead in the White House while Roosevelt called the shots behind the scenes.

Though Wilson was doing well in Ohio, he appeared to be losing ground nationally as the election approached. Hughes's campaign gained momentum, and, while newspapers across the country forecast the closest vote in the nation's history, Hughes seemed to be leading. Recognizing the real possibility of defeat, Wilson devised an unprecedented plan for allowing Hughes to assume the Presidency almost immediately should the Republicans win the election. Aware of the dangerous situation in Europe and believing that as a defeated president he could not truly speak for the nation in the event of a crisis, Wilson formulated a plan which he detailed in a letter to Secretary of State Robert Lansing dated November 5.

Should he lose the election, Wilson explained to Lansing, he would, with Lansing's permission, offer the position of Secretary of State to Hughes. Upon acceptance, Wilson and Vice-President Thomas R. Marshall would resign effective immediately, thus enabling Hughes to move directly into the White House. The letter was placed in an envelope marked "most confidential," sealed with wax, and delivered to Lansing, who Wilson fervently hoped would not have cause to open it.

Among those who believed the president would be denied a second term was his wife, Edith. Her biographer Alden Hatch notes that Mrs. Wilson spoke often during the summer and early autumn of 1916 of her plans for herself and her husband after they left the White House. "What a delightful little pessimist you are," Hatch quotes Wilson as gently chiding his wife a few days before the election. "One must never court defeat. If it comes, accept it like a soldier, but don't
anticipate it, as it destroys your fighting spirit” (Edith Bolling Wilson, First Lady Extraordinary, 1961).

On election day, as anticipated, Hughes piled up sizable victories in the East, and a Republican landslide seemed a distinct possibility. Newspapers in New York City quickly declared Hughes the victor. As the bad news continued to pour in, Wilson was forced to admit that “it begins to look as if we have been badly licked.” But he told Edith, “I won’t send a telegram of congratulations to Mr. Hughes tonight, for things are not certain” (Arthur Walworth, Woodrow Wilson, 1958).

Thirty-two years before the Chicago Tribune committed its notorious gaffe of declaring Thomas E. Dewey the victor in 1948, Clevelanders awoke on November 8, 1916, to find a large picture of Hughes, bearing the caption “The Next President of the United States” on the front page of The Plain Dealer. No doubt other newspapers across the country made the same mistake. At press time, Hughes seemed to have victory in his hands, with only the final margin to be determined.

It appeared that Hughes had defied the experts and captured Ohio as well. Early returns gave the Republican a 9,000-vote lead over Wilson, with better than 2,900 precincts having reported. The Ohio Republican chairman, Hatfield, jubilantly predicted that Hughes would defeat Wilson by 34,000 votes, Willis would retain the governorship by 60,000 votes, and Herrick would be elected to the Senate by an 85,000-vote margin. But Hatfield failed to note that of the 2,900 precincts which had reported, 471 were from traditionally Republican Hamilton County. Only one precinct from Cuyahoga County, the Democratic stronghold, had been heard from.

By nightfall, however, as the final Ohio ballots were counted, it was the Democrats who were celebrating. In the governor’s race, Cox avenged his defeat of two years earlier with a hard-fought 6,600-vote victory. Helped no doubt by a ringing endorsement from the President, Pomerene held off Herrick to retain his senate seat.

The big winner, however, was Wilson.

Though he fell far short of the 200,000-plus vote plurality his overly enthusiastic supporters had envisioned, Wilson’s margin of victory was nonetheless substantial: 604,161 votes (51.9%) to Hughes’s 514,753 votes (44.2%). For the first time in 60 years, a Democrat had carried Ohio in a two-party race. Wilson had done the seemingly impossible.

At first, Hughes’s stinging rebuff from Ohio voters appeared to be nothing more than a momentary setback on the road to the White House. But suddenly, by noon on November 8, just as it had in Ohio, the tide began to turn against the Republicans nationwide. Informed by his daughter that the New York papers which the night before had predicted a resounding Hughes victory were feverishly printing special editions reporting a slowing of Republican momentum and indicating a probable Democratic upset, Wilson gleefully accepted the news and spent the day on the golf course, working off pent-up energy and hoping the results from the west which were slowly trickling in would result in victory.

Wilson’s triumph became official late on November 9, when the results from California were certified amid rumors that Hughes would demand a recount. He did not, but the
bitterly disappointed Republican did not concede defeat and extend the customary congratulatory telegram to Wilson until November 22.

Having watched Wilson sweep every section of Ohio except Hamilton County, the state's Republican leaders wondered how the party machinery could have broken down so completely after capturing every state office from governor to dogcatcher just two years earlier.

Irving Stone asserts that "at the very instant he accepted the nomination, Charles E. Hughes defeated himself." Stone believes that simply by accepting the Republican nomination, after vowing for four years and insisting until the moment the Republican convention began in 1916 that he was not a candidate, Hughes destroyed his credibility (They Also Ran, 1943).

Hughes blamed his defeat in the pivotal Ohio race on his inability to attract the support of organized labor. Roosevelt's vocal support also hurt Hughes. The justice had hoped to gain a sizable percentage of the German-American vote, since many German-Americans found Wilson's policy of neutrality toward the war in Europe decidedly pro-ally. Yet how Hughes could possibly have hoped to receive any votes from the German community after Roosevelt had called for war against the Central Powers defies logic. Perhaps Hughes, aware that a pledge to send American troops across the Atlantic would cost him hundreds of thousands of isolationist votes, cleverly permitted Roosevelt to do his dirty work. Or it is possible that Hughes simply couldn't control Roosevelt and cringed each time Roosevelt called for Kaiser Wilhelm's head. Whatever the case may have been, it was assumed that Roosevelt spoke with Hughes's blessing. Hughes failed to disavow any of Roosevelt's statements, including his demands for war with Germany, which frightened an overwhelmingly dovish electorate. "He kept us out of war" sounded much more appealing to most Americans.

Finally, Hughes felt betrayed by Ohio Republicans who decided that keeping Willis in the governor's mansion was more important than putting Hughes in the White House. Hughes was convinced his bid for the Presidency was put on the back burner by a state Republican party which devoted most of its energy to Willis's unsuccessful re-election campaign. Many influential Ohio Republicans incurred the wrath of national party leaders by endorsing Wilson while also supporting Willis. The few progressives remaining in Ohio were turned off by Hughes's apparent disdain for reform and joined the Wilson forces.

In retrospect, it can be asked if the voters of Ohio really did Wilson much of a favor by enabling him to narrowly win re-election. Many historians have labeled 1916 an election in which, in the long run, the winners actually lost while the losers emerged having laid the groundwork for future success. Wilson's second term was doomed almost from the moment it began. "He kept us out of war" had been a catchy slogan, and on its strength Wilson had been awarded another four years in the White House. But American participation in the war in Europe, which Wilson knew could be avoided only so long, finally came to pass on April 6, 1917, scarcely a month after Wilson's second inauguration.
Although the presence of American troops turned the tide in the Allies' favor and brought about the defeat of the Central Powers in November of 1918, the folks at home quickly grew weary of the war and its attendant sacrifices. Seizing this golden opportunity, the Republicans orchestrated what soon became a loud chorus of nationwide dissatisfaction with Wilson and the war, while ignoring the fact that their designated mouthpiece of 1916, Roosevelt, strained his voice to exhaustion calling for war while Wilson searched vainly for methods of avoiding it.

Heartened by the hero's welcome given him by the people of France upon his arrival at the Versailles peace conference, Wilson optimistically unveiled his fourteen-point peace plan which he sincerely believed could, if agreed to by Great Britain and France, provide the foundation for a just and lasting peace. But Wilson's idealistic peace plan was largely undermined by the vengeful policies of Lloyd George and Clemenceau, while at home Congress refused to ratify the Versailles Treaty with its provision for the League of Nations, of which Wilson was principal architect. Ignoring his advancing years and frail health, the President took his case to the people, embarking on a nationwide speaking tour to seek support for the Versailles Treaty and the League of Nations. His impassioned pleas were largely ignored.
An exhausted Wilson returned to Washington and declared the 1920 presidential election to be a national referendum on the League of Nations issue. Sensing victory, the Republicans nominated Ohio Senator Warren G. Harding, whose record as a legislator was undistinguished but whose promise of a "return to normalcy" hit a responsive chord with the electorate. Cox, who had ridden Wilson’s coattails to victory in the 1916 gubernatorial election, won the Democratic Presidential nomination. What little chance the Democrats had against the Republicans was all but destroyed by Wilson’s “referendum” proclamation.

Americans at this moment seemed to want no part of Wilson, Cox, the Democrats, or the League of Nations, and delivered one final blow to their ailing leader by granting Harding a landslide victory. Wilson was crushed.

After having collapsed from exhaustion while on his League of Nations tour and subsequently having suffered a debilitating stroke, Wilson found Harding’s overwhelming victory a last straw. Weary and disillusioned, he left office in March of 1921, with many of his goals and dreams for the United States and the world left unfulfilled. He died three years later at the age of sixty-seven.

Wilson knew that the months following the Presidential election of 1916 would produce events which would alter the course of history. He yearned for, and was granted, the opportunity to lead the United States during that turbulent period. His responses to the challenges and crises which confronted him are still matter for debate by scholars and historians.

Those same scholars and historians can only speculate as to how Charles Evans Hughes might have handled those crises and challenges. Hughes, too, longed to lead the United States during that turbulent period, but the voters of Ohio helped to deny him the chance.
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