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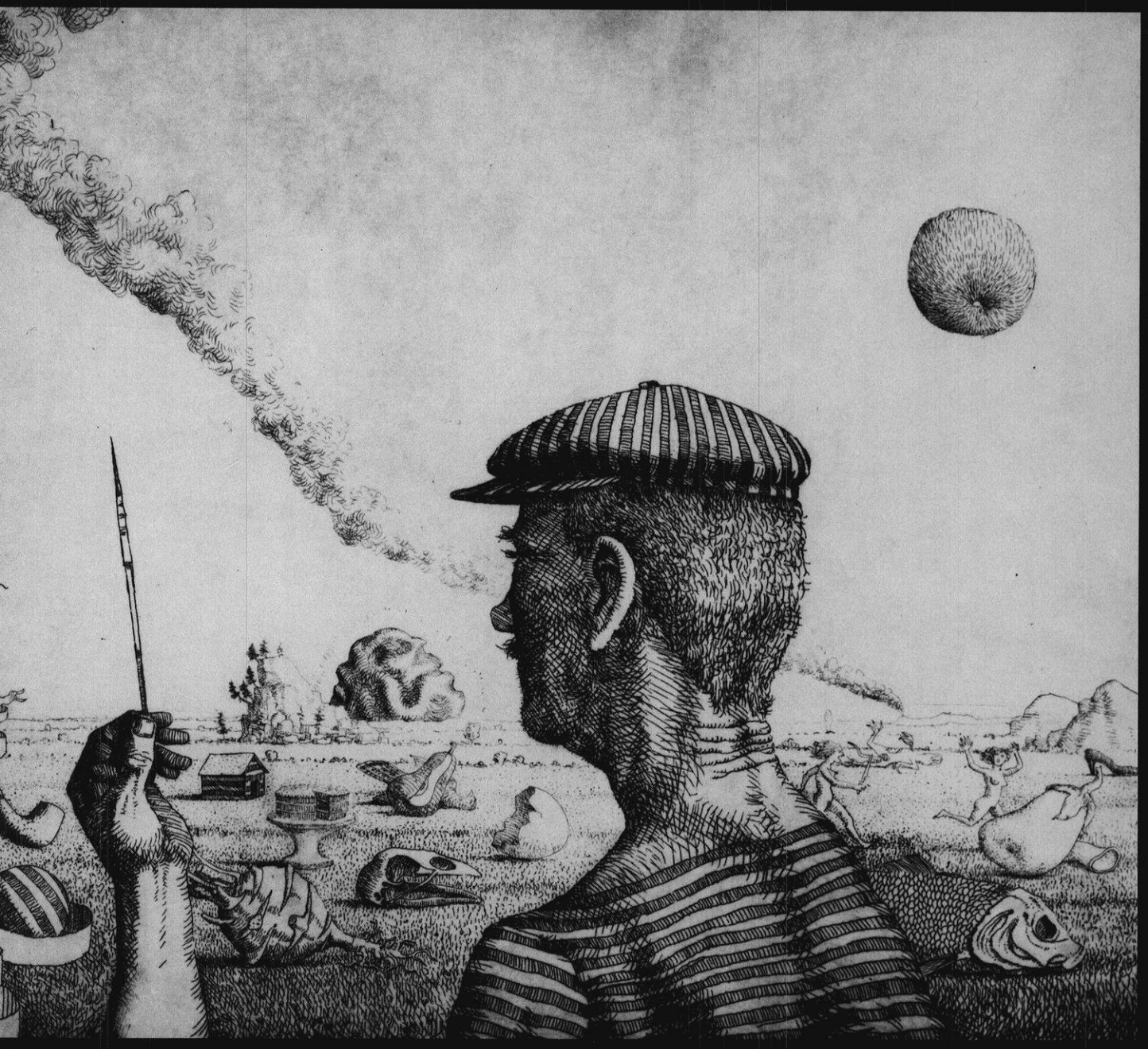

John Wilde

September 1985
Volume 31, Number 4

Wisconsin Academy of Sciences, Arts and Letters

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On the Cover: To benefit the Academy art gallery artist John Wilde has offered the proceeds from the sales of a signed and numbered limited edition of the etching shown. This will be printed on arches cover by Mantegna Press and available after September 15.

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Editing magazines is one of many professions that keeps you constantly out of time sync with your environment. I think of retail buyers for clothing stores selecting fashions a year in advance and displaying wools and furs in the heat of July and of the staff of a general magazine constructing the Christmas issue in the summer. Now in June, I'm putting the finishing touches on the September *Review* copy and consulting with authors about December copy on water quality and the March 1986 copy on Wisconsin art history and the dispersal of Wisconsin art traditions across the country. By the time an issue of the *Review* is mailed to readers, I've not worked with it in so long I can look at it anew. This June brought me most welcome contacts with both March 1985 and June 1985 issues.

In June the "Wisconsin Survey: Three Dimension Art Today" opened its Wisconsin tour in Madison at the UW Memorial Union gallery. Although I'd looked at slides and photographs for a year, I was unprepared for the actual sculpture. Scale often surprised me (the dimensions listed had not become part of my mental picture), but so did textures and the way objects looked from different angles. Sometimes the juxtaposition of two works startled me into noticing something new. The gallery setting provided a completely new experience of the art from the March *Review*, and so did the chance at the reception to meet so many of the artists I had talked to and corresponded with. Now that I think of it, the artists didn't always correspond to my visual expectations either.

The publication of the June issue was preceded by the exhibits on the UW-Madison campus of the rural artists (1936–60), John Steuart Curry, and Aaron Bohrod, then punctuated by the opening performances of the American Players Theatre. On the Saturday evening I attended with guests from Los Angeles, the theatre was completely filled and the excitement of the APT staff walking around in tuxedos infected the audience. The sprinkles that became a downpour in Madison thirty-five miles away passed over Spring Green.

These events gave the articles in that issue an unwonted solidity. As a person inclined to take much delight and comfort in words, I need the periodic satisfaction of seeing the linear expand to three dimensions, of seeing a magazine come alive, of seeing words coincide with experience.

Patricia Powell

Authors and Artists

Robert M. O'Neil has served since February 1, 1980 as the president of the University of Wisconsin System and professor of law, UW-Madison. A graduate of Harvard College (1956) and Harvard Law School (1961), he also holds a master's degree in American history from Harvard, where he was a teaching fellow in history. After graduation from law school he served in 1962–63 as law clerk to Justice William J. Brennan, Jr. In fall 1985 he becomes president of the University of Virginia.

Christopher Kleinhenz received his Ph.D. in Italian at Indiana University. He is currently chair of the Department of French and Italian at UW-Madison. His special interests are medieval and early Renaissance Italian literature, especially Dante, Petrarch, and Boccaccio.

Fannie John LeMoine received her Ph.D. in Latin at Bryn Mawr College. She teaches in the departments of classics and comparative literature at the UW-Madison, has served as chair of the University Committee, and is currently associate dean in the College of Letters and Science. Her special interests are the late ancient and early medieval periods and the authors of Roman North Africa.

Since 1979 Fannie LeMoine and Christopher Kleinhenz have led several study tours to Italy under the general auspices of the International Seminars program of the University of Wisconsin-Extension. Together they teach a semester-long course on "Rome: the Changing Shape of the Eternal City" sponsored by the Medieval Studies Program. They are planning another study tour to Italy in the summer of 1986.

James Alexander is professor of English at UW Center-Marshfield/Wood County. He had had a decade-long romance with the Espada Mission in San Antonio and has been searching for a way to tell its story. Alexander has published on Polynesian syntax, on English phonology, and on Chaucer's dramatic techniques.

John Stark is a legislative attorney for the state's Legislative Reference Bureau. He has a Ph.D. in English and a J.D. both from UW-Madison. He taught English at UW-Eau Claire and Kent State University and has published on American and British literature.

Cheryl Krueger received a B.A. in art history and an M.A. in French from UW-Madison. She continues her studies with an art history minor as she works on a Ph.D. in French. She is also a free-lance writer and translator. This combination of interests made her a natural choice to translate articles and describe Christian Lahanier's reconstruction of the Lascaux cave.

Christian Lahanier is head of the Laboratoire de Recherche des Mu-

sees de France, working in the Louvre in Paris. He is active in international organizations dedicated to museum conservation projects and consults frequently in this country and Canada. He is assisting the J. Paul Getty Museum in Los Angeles, for example, to set up a conservation department. Lahanier was in Madison December 3–5, 1984, to arrange for a heavy ion accelerator to be built by National Electrostatics Corporation (NEC) for the Louvre. He happened to walk past the Academy one unbearably cold morning and stopped in to inquire about this combination of sciences and arts, his particular interest, which is rare in most countries. We expressed enthusiasm for his work, and he sent us some French articles to make known in this country the work of French museums.

R. Creighton Buck is Hilldale professor of mathematics at UW-Madison. Following his degree from the University of Cincinnati, he spent five years as a Junior Fellow of the Harvard Society of Fellows, taught at Brown University, and in 1950 joined the math department at UW. His particular research interests are in history of mathematics and functional complexity and approximation. For personal amusement he writes science fiction and composes music.

James R. Johnson, a ceramic engineer and retired executive of 3M Corporation is a pioneer in ceramic design and application. He now acts as consultant and adviser to UW-Stout, MIT, and Ohio State University and received the OSU Distinguished Alumnus Award. This year he was named Fellow of the Academy. A long-term resident of northwest Wisconsin, he currently lives in River Falls.

Michael Hartoonian is supervisor of social studies education for the Wisconsin Department of Public Instruction. He received his B.A. from Lawrence University in Appleton and his M.A. and Ph.D. from UW-Madison. Hartoonian has written articles and books on social studies education, the social sciences, ethics, and the development of thinking and reasoning skills in children.

Faith B. Miracle came to the Madison area from Milwaukee late in 1980. Since 1982 she has been administrator for the Wisconsin Library Association, where she edits a monthly series of Wisconsin book reviews for state newspapers. She is project director for "Let's Talk About It In Wisconsin," which is part of a national book discussion program involving libraries, adult readers, and the humanities. She was a student of Renée Lang and has known her for many years as a friend.

Robin S. Chapman lives and works in Madison. She has recent poems in the *Christian Science Monitor*, *The Poetry Review*, *Northeast*, and *Country Poet*.

Robert Schuler holds an A.B. from Stanford University and M.A. from the University of California, Berkeley in comparative literature. He teaches English at UW-Stout. Juniper Press has published three collections of his poetry and Spoon River Poetry Press has published three, including *Music for Monet* reviewed in the December 1984 *Review*.

Michael Finley lives in Milwaukee with his wife Rachel and daughter Daniele. He works as director of communications at Sacred Heart School of Theology in Hales Corners. Finley was awarded a $5,000 fellowship from the Wisconsin Arts Board for his novel *The Usable Book* in 1985.

Had Manske, retired communications executive of Sentry Insurance, lives on an old farm on the Plover River in Portage County. Graduate of the University of Notre Dame, he continues his education through literary activities at the UW-Stevens Point. His work has appeared in *Barney Street, Northeast, Poetry Out of Wisconsin, Wisconsin's Poetry Calendar*, and *The Country Poet*.

Doyle Wesley Walls is a candidate for the Ph.D. in English at the UW-Madison. In May, 1985 he received the English department's award for distinguished teaching by a teaching assistant. His poetry has appeared in *Sou'wester, Bits, The Madison Review, Negative Capability, Descant*, and others and is forthcoming in *Poet & Critic*.

Charles Cantrell has new work in or forthcoming in *New Mexico Humanities Review, The Oxford Review, Southern Poetry Review, The Spoon River Quarterly*, and the 1985 *Anthology of Magazine Verse and Yearbook of American Poetry*. His manuscript, Casting Under and Into the Stars, was a finalist in the Brittingham Prize, sponsored by the UW Press.

Joan Rohr Myers teaches at UW-Eau Claire. Two of her plays have been produced by Wisconsin Public Radio, and her poems have been published in magazines and anthologies.

Mark Randolph Golbach has a B.A. from St. John's University, Collegeville, Minnesota, and an M.F.A. from Washington University in St. Louis. He has been employed as a security officer by UW-Madison since 1977. He has shown his woodcuts in recent shows at Sunprint Gallery, A-Space Gallery, Elvehjem Museum of Art, and Center Gallery.

Arthur Hove is assistant to the chancellor at UW-Madison and director of information services.

Warrington Colescott is Leo Steppat professor of art at UW-Madison and is vice president for art of the Academy. His prints and paintings are in collections throughout this country and abroad.

The Role of the Wisconsin Academy

By Robert O'Neil

Annual Conference Address

One of the special pleasures of life in Wisconsin is having such an organization as the Academy to enrich our lives. My own association with the Academy has been regrettably limited. Soon after coming to Wisconsin, I was urged to become a member—indeed, was threatened with ignominy and ostracism if I failed to do so—and early realized the importance of having at least that tangible tie with this remarkable group. Since then I have read the publications with keen interest and only wished that I could have been a more active participant in the general effort.

My other role has been that of chairman of the committee to nominate Fellows of the Academy, a modest assignment which I have carried out for the past four years. This pleasant duty has been enhanced considerably by the group of people—many of them Fellows of the Academy in their own right—who have agreed to serve in this role. When I come before the council to submit nominations, I do so on behalf of a group which truly reflects the wisdom and experience of the Academy in its broadest sense. The Fellows reflect those qualities of intellect and achievement for which Wisconsin is so widely acclaimed.

For my last involvement with the Academy, Joyce Erdman has invited me to offer a few brief and entirely personal thoughts on the role of the Academy itself.

First, it seems to me the Academy is and should be a special guardian of the quality of education in Wisconsin—the quality of higher education, of course, but quite as much the quality of elementary and secondary education. Within the membership of the Academy are persons whose views on education would be uniquely valuable—touching such issues as the preservation of foreign language study in the schools, adaptation to new technologies, strengthening library collections, and many others. Occasional studies by the Academy on various facets of education quality would, I suspect, carry great weight in the legislature and among others who shape state policies.

Second, I would suggest a special concern for the balance between the liberal arts and professional studies at all levels of Wisconsin education. We have recently completed a detailed survey of humanities programs within the University of Wisconsin System; we were relieved to find that the decline in the humanities has been less pronounced here than in many other state universities. Yet we are not entirely sanguine as we face increasing student and employer demand for business and other professional skills, to the detriment of the traditional liberal arts. Those pressures are also felt in the secondary schools. The views of the Academy might provide a valuable antidote to some of the persistent efforts to deemphasize the arts and sciences in our schools and colleges.

Third, the Academy may offer a kind of common ground for closer entente between public and private education at several levels. While I have known few if any states in which those relations were more cordial—at least in higher education—I fear that current trends in federal financial aid and other areas will create new strains in the years ahead. The potential for a neutral force such as the Academy in mediating some of those tensions could be helpful here, and equally so, I suspect, in elementary and secondary education as well.

Fourth, I know the Academy does much, and might be able to do even more, to encourage private foundation and corporate support for the arts and sciences across the state. Wisconsin lacks a large foundation devoted to such goals, comparable to Indiana's Lilly Endowment, Minnesota's Northwest Area and Busch Foundations, Illinois' MacArthur Foundation and similar private support sources found in many other states. Moreover, Wisconsin has until recently ranked at or near the bottom in per capita state support for the arts, although the governor's biennial budget proposals would improve the level somewhat. Under these conditions, the role of a private group such as the Academy in tapping additional support sources seems to be an especially vital one.

Finally, and in a quite different vein, let me suggest that the Academy could be the medium by which to attract to Wisconsin more national meetings of learned societies and academic groups. The largest associations, like modern language, psychology, law, and medicine, simply cannot be accommodated anywhere in the state and are thus lost by default to Chicago, Los Angeles, Atlanta, Washington, and a few other cities with large convention facilities. But there are a host of similar groups that could be accommodated even in La Crosse, let alone Madison or Milwaukee. While I appreciate that such a suggestion might to some smack of hucksterism, I do not think it unseemly for an organization of this kind to draw to the state scholarly conferences and symposia that would enrich the host community intellectually quite as much as economically.

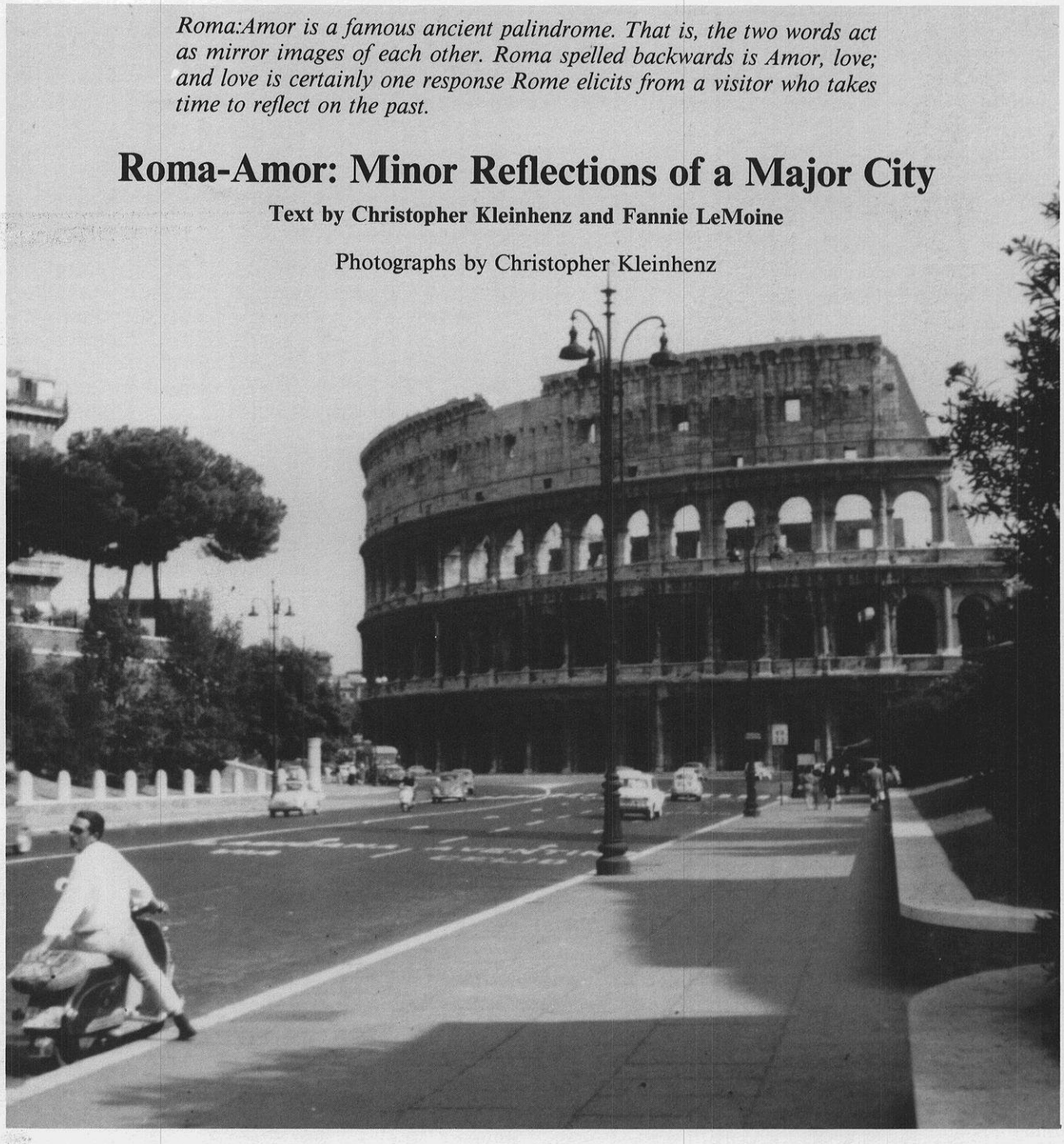
These modest suggestions may well go no further. They may also repeat points that were made this afternoon and have been made on many other occasions by members and friends of the Academy. But since a valedictory was invited, I offered these thoughts in precisely that spirit. □

Roma:Amor is a famous ancient palindrome. That is, the two words act as mirror images of each other. Roma spelled backwards is Amor, love; and love is certainly one response Rome elicits from a visitor who takes time to reflect on the past.

Roma-Amor: Minor Reflections of a Major City

Text by Christopher Kleinhenz and Fannie LeMoine

Photographs by Christopher Kleinhenz



For the past 2,000 years Rome has inspired visitors with awe—awe occasioned by what the city is and what the city has been. So great was Rome's presence in the Western world that she was frequently called *caput mundi* and pictured as a regal woman with crown, staff, and magisterial dress. When the city was sacked in 410 by Alaric and the Goths, dismay and disbelief swept through the empire. Jerome heard the news of Rome's fall in Bethlehem; he records his numbing sorrow in the Prologue to his *Commentary on Ezechiel* as follows:

After the brightest light of all the lands was put out, the very head of the Roman Empire cut off and, to speak more truly, the whole world buried in the fall of one city, "I was dumb, and was humbled, and kept silence from good things: and my sorrow was renewed." (quotation from the Vulgate, Psalms 38:3)

Although Rome declined as a political power, the city increasingly became the spiritual center for Western Europe. The bishop of Rome took over many of the responsibilities formerly performed by the civil authorities, such as the repair of the aqueducts and the provisioning for the poor and the homeless. When Charlemagne was crowned Emperor by Pope Leo III on Christmas Day in the year 800, Rome had increasingly become a sacred city, a city of popes and martyrs, as well as a city of emperors.

Rome was viewed as a place of wonders, a site of pilgrimage. Some medieval guidebooks to Rome had as part of their title *Mirabilia*, the "Wonders" of the Eternal City, and this notion of wonder found frequent expression in medieval literature. For example, in *The Divine Comedy* Dante describes his arrival in the celestial Paradise as similar to the amazement experienced by the barbarians upon entering Rome:

> If the Barbarians . . ., When they beheld Rome and her mighty work, . . . were wonder-struck, I, who to the divine from the human, to the eternal from time had come, and from Florence to a people just and sane, with what amazement must I have been full!
> (*Paradise*, 31:31-40)

The physical presence of Rome has continued to exert a powerful influence on its visitors. In the eighteenth century, for example, Edward Gibbon was moved by the sight of the Capitol to undertake the writing of his monumental *Decline and Fall of the Roman Empire.*

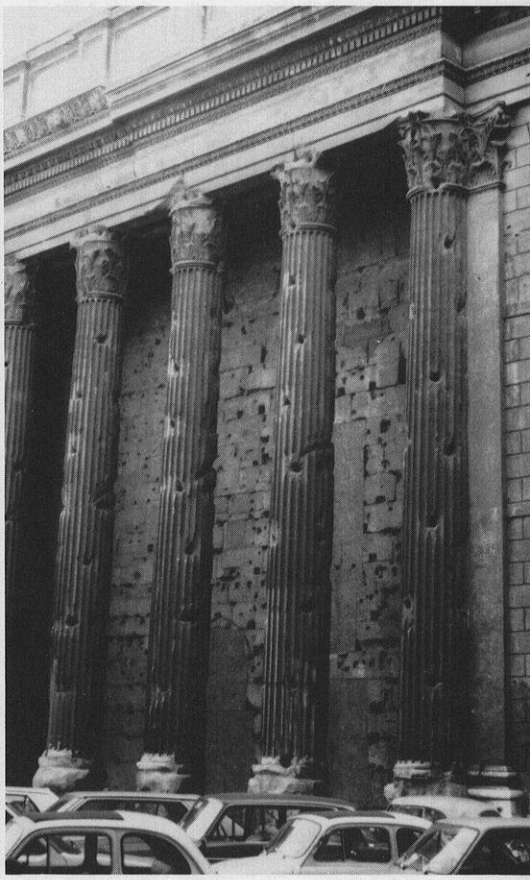
The awe that inspired Gibbon arises, in part, from the contrasts between past and present which Rome inevitably brings to mind. As early as the first century B.C. Virgil linked that quality of temporal contrast with the city. In the eighth book of *The Aeneid*, Virgil describes Aeneas' visit to the future site of Rome. What Aeneas sees is the humble, rural settlement of Evander; what readers in Virgil's day and in our own see is the contrast between the humble beginnings and the future greatness of the city. The contrasts between poverty and power and between past and future are only the most obvious of those reflections which magnify the great monuments of the city and make them special mirrors of our cultural heritage.

In this article we wish to discuss reflections of the great monuments in a slightly different sense. All visitors are familiar with the Forum, but how many look at the other *fora*? All visitors know the Appian Way, but how many have ever traveled down the Via Nomentana? A stop at the Trevi Fountain is a must for all visitors to Rome, but how many pause to admire the many lesser-known fountains which dot the *piazze*? Through an examination of some of these "minor" reflections of major monuments we hope to suggest the multi-dimensional quality of Rome in *both* time and space.

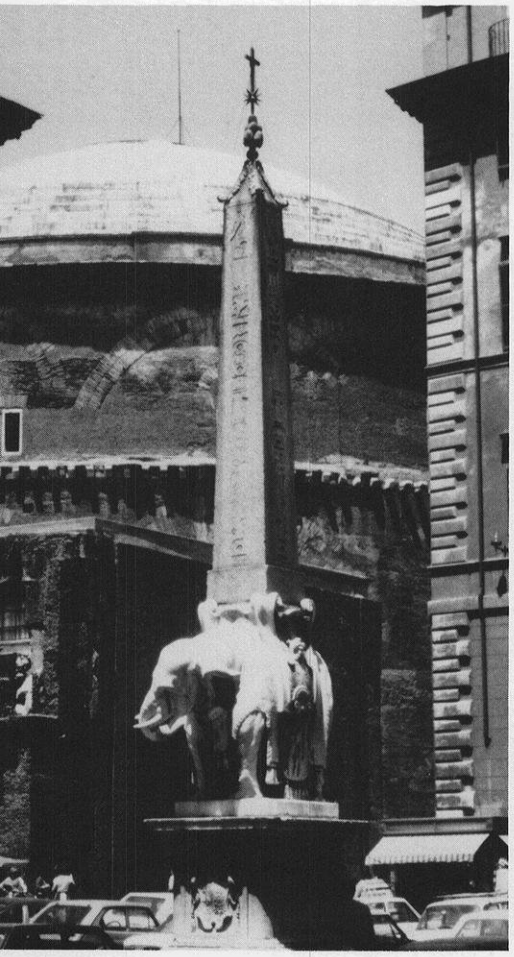
Rome is first and foremost a *city*, which makes its presence felt through monuments erected as memorials, as commemorations of an emperor's generosity or a martyr's death. From Augustan and Hadrianic Rome all the way to the monolithic creations of the fascist state and, more recently, the masterpieces in concrete by Pier Luigi Nervi, Rome remains a magnificent and enduring collection of civic artifacts from all periods over the past two and one-half millenia: apartment buildings and palaces, pagan temples and Christian churches, imperial fora and open markets in the *piazze*, and the like.

It is a city of contrasts, in which the remnants of the so-called Servian Wall (fourth century B.C.) stand beside the modern train station, the Stazione Termini (1950). Rome is also a city of continuities, a place in which the visitor obtains a sense of the passage of time, of the progression of history. It is virtually impossible to dig anywhere in Rome without uncovering some artifact of the Roman past. The excavations undertaken at the church of St. Clement provide an excellent example of the cultural layers present throughout the city. Yet continuity and coexistence do not have to be dug up, there are visible signs of them at every turn. Coexistence may be seen in the eleven Corinthian columns of the Temple of Hadrian (145 A.D.) which form part of the wall of the seventeenth-century palace now housing the Borsa (Stock Exchange). Continuity may be observed in the Pantheon. This great building which served as a pagan temple dedicated to all the planetary deities was Christianized in 609 by Pope Boniface IV and functions as one of the major churches of Christendom still today, some 2,000 years since its construction.

In antiquity Rome was viewed as the center of a great wheel of roads. On the famous Peutinger Table, a map showing all the major roads of the Roman Empire, mostly as they



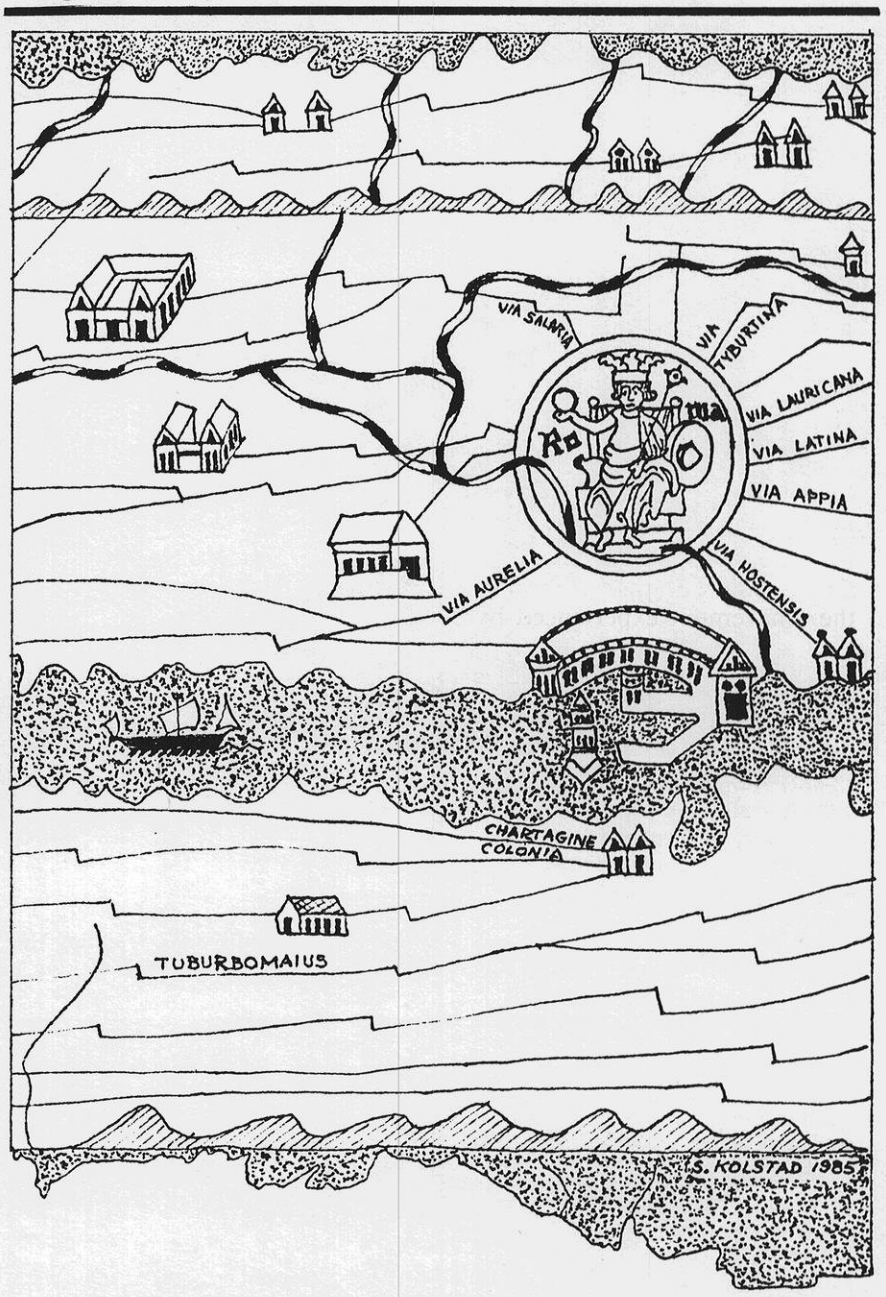
The 17th-century building now housing the Borsa incorporates the ancient columns of the 2nd-century Temple of Hadrian.



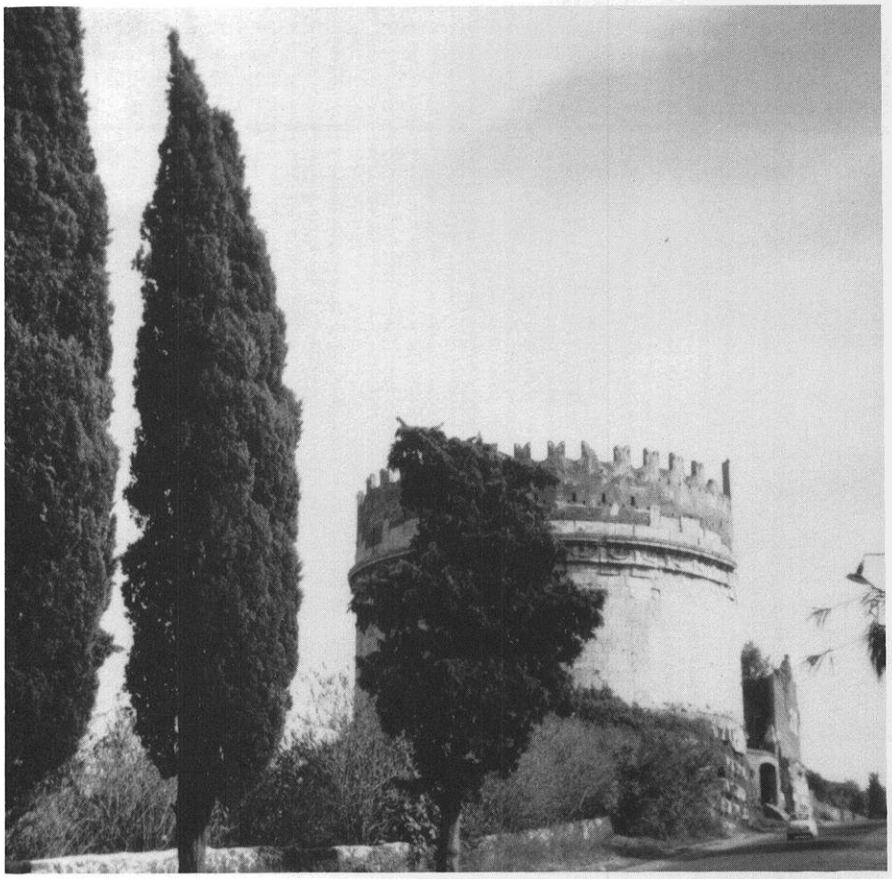
In the square in front of the Church of Santa Maria sopra Minerva—the only Gothic church in Rome—stands this interesting combination of a 6th-century B.C. Egyptian obelisk, which Bernini placed on top of a marble elephant, sculpted by Ercole Ferrata in 1667. The back of the Pantheon is visible in the background.

were known before 500 A.D., Roma is pictured as a regal queen with crown and staff. Her throne sits at the center of a great circle. Around her, like spokes radiating from the hub, are the famous roads of Rome. The schematic rendering of this part of the Peutinger Table given here shows the names of the Via Appia, the Via Latina, the Via Salaria as well as sketches for other routes leading to all parts of the Roman world.

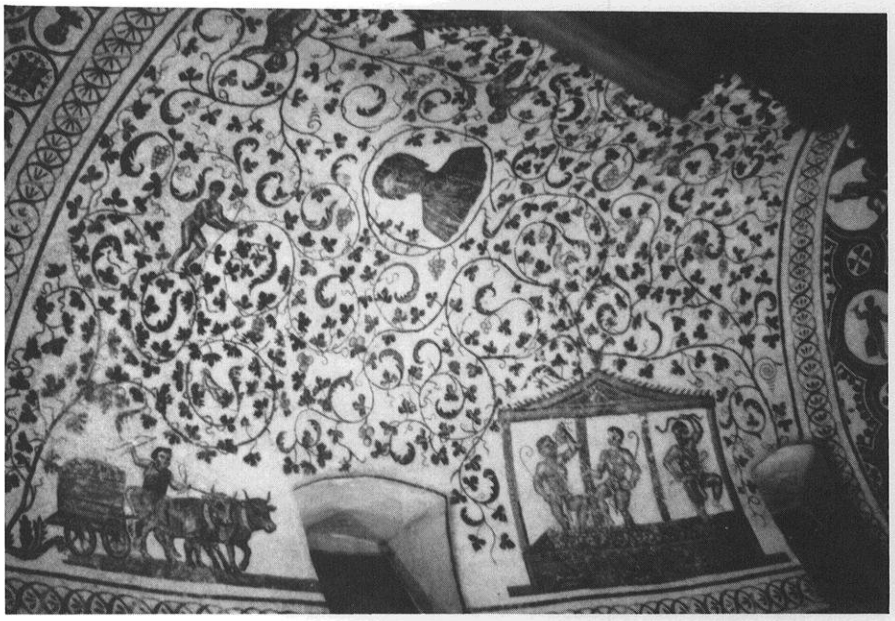
Most visitors to Rome are familiar with the Via Appia, the "queen of roads" as the first-century Roman poet Statius says. Built by the censor Appius Claudius in 312 B.C., it first ran to Capua and was later extended to Beneventum and Brundisium. In antiquity this was the most important consular road and an extremely effective means for assuring Rome's control of the south and access to the east.



This schematic rendering of part of the most famous ancient Roman map, the *Tabula Peutingeriana*, was drawn by Sheila Kolstad. It shows personified Roma with crown and scepter, seated at the center of a circle from which the major Roman roads begin. The *Tabula Peutingeriana*, named after the German collector Konrad Peutinger of Augsburg (1508–47), depicts the Roman world as it must have been known before 500 A.D., although a few local corrections were entered later, in the 8th and 9th centuries. The map is long and narrow; it covers twelve sheets which record trading centers, mineral springs, pilgrimage sites, and distances from place to place throughout the Empire. The map shows no concern for perspective or proper scale of land to sea. Here, for example, the Mediterranean Sea appears no wider than a river separating Italy from North Africa.



Via Appia Antica. The Tomb of Caecilia Metella was used by the Caetani family in medieval Rome as a fortress. The Ghibelline crenellations around the top also indicate the political affiliation of the family.



Church of Santa Costanza. Mosaic floral designs and scenes depicting the harvesting of grapes and the making of wine.

In the sections close to Rome the road was lined by ancient patrician tombs, and the most famous of the Roman catacombs are also found on this route. The tomb of Caecilia Metella, daughter of the conquerer of Crete, is probably the best known to the modern visitor. It served as a fortress during the medieval period and thus stands as a constant reminder of the contrast and continuity so characteristic of this city.

Less well known but still of considerable interest is another consular road which ran north-east of Rome to Nomentum. Today the Via Nomentana stretches from the high arch of the Porta Pia, fashioned by Michelangelo for Pius IV in 1561, through an area of public buildings, palaces, and beautiful villas and gardens. Along this route, for example, may be seen the garden of the villa which Mussolini used as his private residence. The gardens and the villa itself rest upon Jewish catacombs of the second or third century. Although these catacombs are not well preserved, the Catacombs of St. Agnes, found further along the Via Nomentana, are among the best-preserved catacombs in Rome.

Linked with these catacombs are two of the most interesting churches in Rome, and both illustrate beautifully the commemorative quality of so many of Rome's great monuments. Sant'Agnese fuori le Mura was probably built between 337 and 350. The building of the church is credited to Constantia, either the daughter or the granddaughter of Constantine depending on the date assumed for the construction. Constantia had the church erected over the catacombs in which the celebrated first-century martyr Agnes was buried. Close to this church is the mausoleum of Constantia and perhaps another daughter of Constantine, Helena. Today this lovely round building is known as the church of Santa Costanza. Inside, the church is decorated with some of the most charming early Christian mosaics in the city of Rome.

Roman Forum. Behind these two statues which stand around the atrium of the House of the Vestal Virgins stands the Basilica of Maxentius, initiated by the emperor in 306 and completed by his successor Constantine. As all Roman basilicas it served as a court of law and for business transactions. A good example of late imperial architecture, the three high-vaulted aisles of the basilica were probably modeled on the baths of Caracalla and Diocletian.

Not far from the Via Nomentana is another of the oldest of the Roman roads, the Via Salaria. It takes its name from its connection with the salt trade between the Romans and the Sabines. The area has associations with the earliest legends of the city and the confrontations between Sabines and Romans under the leadership of Romulus. The road itself was constructed in the Republican period. After it had been destroyed by Totila and the Goths, it was rebuilt by the Byzantine commander Narses. Along its border lie the oldest and most intriguing catacombs in Rome, the catacombs of Priscilla. Some of the most famous early catacomb paintings are found here, including the earliest known painting of the Virgin and Child. In short, as these brief descriptions have attempted to suggest, the roads which lead to Rome are almost as interesting and varied as the city is itself. They themselves stand as monuments and reflections of the special union of past and present which is one of Rome's greatest glories.

The heart of ancient Rome was the Forum, that low-lying marshland between the Palatine and Capitoline Hills, which was drained by the Cloaca Maxima (Great Sewer) as early as the second century B.C. or even earlier, according to the Etruscan legendary account, which attributed the work to the Roman king Tarquinius Priscus in the sixth century. In the Forum were located most of the great public buildings, temples, and monuments. Traversing the Forum from east to west is the Via Sacra (Sacred Way) on which triumphs passed on their way to the Temple of Jupiter on the Capitoline. With the exception of the well-preserved arches of Titus, Constantine, and Septimius Severus, most of the Forum lies in solemn fragments of fluted columns and elaborately carved friezes.

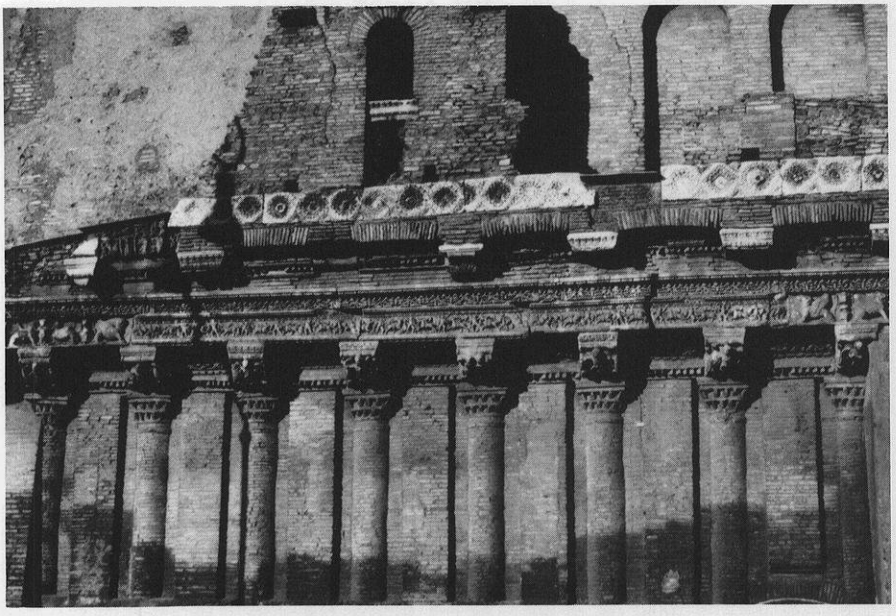
The Forum of Trajan is a minor reflection of the great Forum. It is separated from the Forum by what might be called a new "via sacra," the Via dei Fori Imperiali (Street of Imperial *Fora*, dedicated to modern nationalism and sanctification of the state rather than ancient nationalistic, religious piety. This broad avenue, which connects the Colosseum with the monument to King Victor Emmanuel II, was bulldozed by Mussolini through and over a number of important archaeological sites. The Forum of Trajan allows the visitor to glimpse the overall plan of an ancient forum as a commercial, judicial, and commemorative center.

For many people the Colosseum stands as the symbol of Rome's capacity to endure. Used for centuries as a quarry, the Flavian Amphitheater—so called because it was initiated by Vespasian of that family—was built on the site of the lake in the gardens of Nero's Golden House (Domus Aurea). It was designed with a distinct political mes-

sage, namely that Vespasian and his family cared for the people, while their ruthless predecessor Nero cared only for himself. In its capacious interior some 50,000 spectators could view animal hunts, gladiatorial combats, and even naval battles. Standing in the Colosseum, a visitor with a vivid imagination can even transform the thousands of stray cats which make their home there into the terrifying, bloodthirsty felines of ancient Rome.

Renaissance palaces are a familiar feature of the Italian cityscape. In Rome one of the finest sixteenth-century *palazzi* is the Farnese, begun (1514) by Antonio da Sangallo the Younger, continued by Michelangelo, and completed by Giacomo della Porta. Once the residence of Cardinal Alessandro Farnese who became Pope Paul III, the Farnese Palace is now the seat of the French Embassy. On a much smaller scale is the House of Crescentius. It stands adjacent to one of the oldest places in Rome, the Forum Boarium (Ox Market), near the remains of the first stone bridge (Pons Aemilius) over the Tiber. The House of Crescentius is a late eleventh- or early twelfth-century private dwelling—perhaps originally a tower intended to protect the passage over the river. It was embellished by its owners with bits and pieces of friezes and columns from classical buildings. The external wall of the house has imitation columns formed of bricks. The inscriptions on the House of Crescentius denote the owner's pride of ancestry and desire to restore and share in the grandeur of ancient Rome. This classicizing attitude manifested by the Crescentii accords well with the widespread movement of the mid-twelfth century to revive the Roman Republic and to recapture the greatness of the classical past. Indeed, in 1143 the lower classes rebelled against the nobility and established the Roman Commune, reinstituting the Senate, and minting coins bearing the legend S.P.Q.R.

The Palazzo Venezia was built for the Venetian Cardinal Pietro Barbo who became Pope Paul II (1464–71). The Palace served as the Venetian embassy from the mid-16th century until 1797 when it became the residence of the Austrian ambassador to the Vatican. It was returned to Italy in 1916. During the fascist era Mussolini would harangue the crowds from the balcony overlooking Piazza Venezia. The Palace now houses a fine art collection.



House of Crescentius. Located adjacent to the Forum Boarium and across the street from the medieval church of Santa Maria in Cosmedin, this house has been the subject of numerous popular legends. According to one, it belonged to Pontius Pilate; according to another, Cola di Rienzo, who proudly traced his ancestry to the famous Crescentii family, once lived here. Note the embedding of fragments taken from classical buildings and the columns fashioned out of brick.

The late Renaissance Fountain of the Turtles (1581–84), executed by Taddeo Landini, is located in a small, secluded square near the heart of ancient Rome. The four youths are lifting the turtles to the upper basin where they can drink.

Rome is rightly famous for her fountains, most of which date from the baroque period. They capture the dynamic nature of that era in the intricate interplay of the jets of water with the sinuous quality of the plastic forms. The Trevi Fountain is the largest and best known, and tourists continue to make a pilgrimage there to cast their coins into its clear waters, in order to ensure a return trip. Yet, there are many, lesser-known fountains which are found in virtually all Roman *piazze*; one of our favorites is the late sixteenth-century Fountain of the Turtles in Piazza Mattei (near Largo Argentina). The fountain shows four youths, each holding a dolphin one one hand and lifting a turtle with the other.

In an ancient city which had water provided by a system of aqueducts one would hear the water running continuously. In one of his earliest dialogues St. Augustine describes lying awake and listening to the water gurgle and bubble through the drains of the house in which he and his friends were staying not far from Milan. In Rome the aqueducts brought water in enormous quantities because it was both necessary and a source of public pleasure and private honor. In almost every town in the Roman Empire rich citizens vied with one another in the lavishness of their benefactions. Baths, markets, statues, and a host of other contributions to the public welfare attest to their generosity, their pride, and their desire for renown. In Rome the emperors were clearly capable of doing far more than even the wealthiest private citizen, and the monuments they have left behind show how willingly they fulfilled the honor and obligations of their office. The public baths of the city offer a prime example. Of the seven major sites of ancient baths, the Thermae Antoninianae, the Baths of Caracalla as they are known in English, are by far the most frequently visited. The scale upon which the Baths of Caracalla were constructed is truly impressive, for 1600 bathers could test the temperatures of the various pools of cold, tepid, and hot water at one time. In addition the buildings included *palaestrae*, a stadium, a picture gallery, Greek and Latin libraries, and rooms for speeches, meetings, and conversation. These baths, which the Emperor Antoninus Caracalla began building in 212 A.D., now serve as a magnificent stage for operatic productions.

Santa Prassede. This early 9th-century church is dedicated to the sister of St. Pudenziana and contains fine mosaics. The one presented here, contemporaneous with the founding of the church, is found in the ceiling vault in the Chapel of St. Zenone. It shows Christ in a medallion supported by four angels.

The baths of Diocletian serve a different modern function. They were built between 298 and 306 by the emperors Diocletian and Maximian and are the largest of all the ancient Roman baths. During the fourth century more than 3000 people would have been able to enjoy them at one time; in the sixteenth century a Carthusian convent was built from the ruins. At the request of Pius IV Michelangelo converted the *tepidarium* and the huge central hall of the baths into one of the more famous churches dedicated to Mary, the church of Santa Maria degli Angeli.

Of course, new churches were also built for the Virgin. The most famous in Rome is the fourth of the great patriarchal basilicas, Santa Maria Maggiore. Built in the middle of the fourth century A.D., it stands on the summit of the Esquiline. The vast and well-proportioned interior reveals a mixture of ancient and medieval in its harmonious blending of mosaics from

the late antique period and mosaics from the thirteenth century. The fifth-century mosaics above the arches of the nave lead the eye down to the magnificent thirteenth-century mosaic in the apse which depicts the coronation of the Virgin.

Near the Church of Santa Maria Maggiore are two other churches of the late antique period which house less frequently visited but no less arresting mosaics, the church of Santa Prassede and the church dedicated to her sister, Santa Pudenziana. The church of Santa Pudenziana is one of the oldest in Rome. Formerly it was believed to have been built on the site of the house of the Senator Pudens, where, according to tradition, St. Peter had stayed. During the late fourth century, the older church was rebuilt by Pope St. Siricius (384–399). At that time (390) a mosaic showing Christ with an open book and saints Pudentiana and Praxedes offering crowns was placed in the apse. Although the mosaic has been damaged, it is still one of the more interesting examples of the late antique mosaicists' art because of the distinctly Roman, magisterial quality which has been given to the figures and the entire composition of the scene.

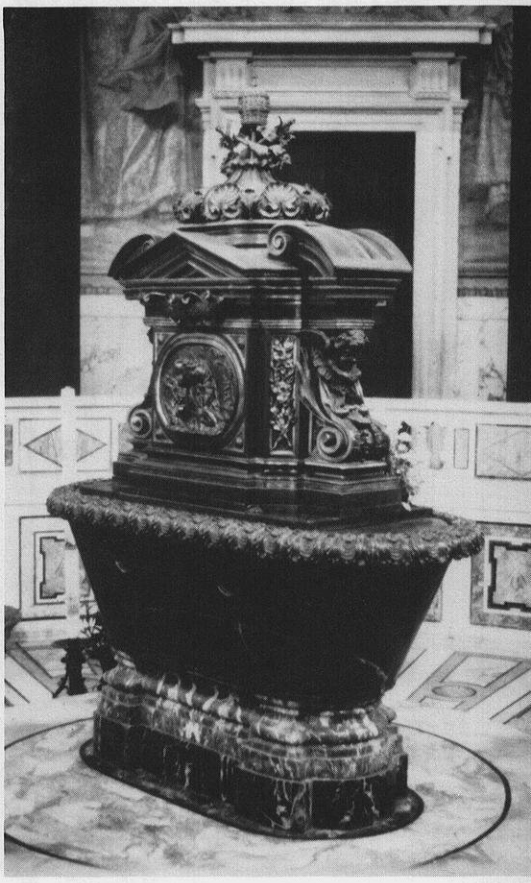
The church dedicated to Santa Pudenziana's sister, Prassede, stands on the site of a fifth-century oratory. St. Paschal built the present church in the early ninth century. In the south aisle of the church is the Chapel of Zeno which St. Paschal built as a mausoleum for his mother. The entire chapel is covered with extraordinarily beautiful mosaics which not only attest to St. Paschal's devotion but also to his financial resources. Although mosaics were common in the ancient world and are reintroduced from southern Italy in the twelfth century, they are quite rare in the early Middle Ages. Less expensive frescoes take their place.

The mosaic ornamentation of Roman churches is complemented by the frescoes that one finds, for example, in the Raphael rooms in the Vatican Museum and in the Sistine Chapel. Michelangelo's monumental work on the ceiling of the Sistine Chapel is currently the subject of intense critical reexamination. The recent cleaning and restoration efforts have freed his frescoes and those of other artists from centuries of soot and grime. The colors now revealed are so vivid that art historians are reevaluating much of the received opinion concerning Michelangelo's artistry.

Another fresco cycle, not nearly so well known as the biblical scenes in the Vatican, is that found in the Church of the Quattro Coronati. The excellently preserved mid-thirteenth-century cycle in the Chapel of St. Sylvester represents the legend of the Emperor Constantine. According to the legend, Constantine was afflicted with leprosy. One night he dreamed of Peter and Paul and subsequently sent messengers to Pope Sylvester at his retreat on Mt. Soracte. The pope instructed Constantine to pray before icons of

St. John Lateran. The facade, designed by Alessandro Galilei in 1735, is capped by 15 gigantic statues—Christ, John the Baptist, John The Evangelist, and the Doctors of the Church. From the central balcony the pope blesses the crowd on the Feast of the Ascension. Adjacent is the Lateran Palace, the late 16th-century edifice built on the site of the earlier residence of the popes from the time of Constantine.

St. John Lateran. This baptistery was built by Constantine, and legend has it that Pope Sylvester baptized the emperor in the green basalt urn.



the two Apostles and cleansed him of his disease through baptism. In gratitude, the emperor gave the papacy the Lateran Palace, the city of Rome, and all western lands including Italy. From this legend comes the so-called "Donation of Constantine," a major source of contention between church and empire throughout the medieval period.

The Donation of Constantine has an especially close association with the Church of San Giovanni in Laterano. The church takes its name from the patrician family of Plautius Lateranus, the original owners of the property which Constantine eventually acquired. Between 311 and 314 Constantine gave it and an adjoining property to Pope Melchiades as the site for the see of Rome. The octagonal baptistery of the basilica was built during Constantine's reign and was traditionally, though incorrectly, identified with the baptism of this first Christian emperior. Although Constantine was not baptized here, it was in this same baptismal font that Cola de Rienzo, the "Tribune of the People" who led a popular uprising in Rome in the middle of the fourteenth century, bathed himself with all appropriate ceremony as part of the ritual of becoming a knight.

From the time of its original foundation until the late fourteenth-century, the Lateran was the official home of the papacy. Although damaged by fires and earthquakes over the centuries, the basilica and palace remained the single most important religious center in Rome for over a thousand years. Here, for example, Pope Boniface VIII proclaimed the first Jubilee Year in 1300. The present-day Lateran Palace replaces the ancient residence of the popes which had been destroyed in the great fire of 1308. The present basilica has a spacious dignity which accords well with its position as the "Mother and Head of all the Churches of the city and of the world" (*Omnium urbis et orbis ecclesiarum Mater et Caput*).

Together with the Colosseum the towering dome of St. Peter's basilica is one of the identifying landmarks of Rome. The present edifice was begun in 1506 on the site of the fourthcentury basilica, which Constantine had erected over the tomb of Peter the Apostle, near the scene of his martyrdom supposedly in the circus of Nero. St. Peter's is one of the most important pilgrimage shrines in Christendom, and annually millions of visitors—pilgrims and tourists alike—throng the basilica and its grottoes to pay homage to Christ's first vicar. In recent years excavations have been undertaken under the present church to determine the nature and extent of the earlier basilica and to attempt to identify the precise location of Peter's tomb. It is a remarkable and moving experience to wind one's way through these subterranean passageways lined with pagan and Christian tombs and, eventually, to come face to face with what historical and archaeological evidence strongly suggests is the actual resting place of the apostle.

The archaeological investigations at St. Peter's may be paralleled by another dramatic example of the historical continuity so characteristic of the city of Rome. It is the church dedicated to the fourth bishop of Rome, Saint Clement. The church of San Clemente consists of an upper church, a beautiful medieval basilica begun in 1108 by Pope Paschal II, and a lower church built in 385 and destroyed during the sack of Rome by Robert Guiscard in 1084. A fourth-century staircase leads from the lower church down to a Mithraeum, a Mithraic temple of the late second or early third centuries, and an apartment house of the late first century. The apse of the lower church was built above the Mithraeum. On this lowest level a long, narrow passage divides the temple area from a building of large tufa blocks constructed after the burning of Rome in the time of Nero. On one side is the Mithraic *triclinium* with its rows of benches for the initiates which run on either side of a central altar on which Mithras is seen sacrificing a bull; in the house right adjacent lived the prominent Roman family of T. Flavius Clemens. Leader of the Roman church at the end of the first century, Clement was a member of the distinguished Flavian *gens*. His house would obviously remain a place of significance for the early Christian community in the city.

Nothing gives a visitor to Rome a surer sense of Rome's passage through time than a descent down the stairs of St. Clement's. Time seems to take shape and make the short walk from the breathtaking twelfth-century mosaic in the upper basilica to the statue of Mithras in the second-century *triclinium*. The mosaic in the upper church is itself an attempt to present an ordered vision of the entire tree of life which springs forth from the tree of Christ's sacrifice. The *schola cantorum* in the upper basilica, the frescoes in the lower basilica, the tomb thought to be that of St. Cyril, apostle to the Slavs, and the mosaic floor and stuccoed vaults of the lowest level offer a wealth of material for the eye and the imagination.

The same may be said for the city of Rome itself. Not built in a day, Rome cannot be adequately appreciated in a lifetime. In this brief account we have tried to suggest how the more familiar sites in Rome become even more interesting in the context of the entire city. We have paired roads and catacombs, the Forum and *fora*, churches devoted to Mary, baths, palaces and medieval houses, and the churches of the bishop of Rome in order to indicate the depth of Rome's cultural richness. Moreover, we have attempted to highlight some of the well-known, yet distinctive qualities of this city which literally rests upon the past and incorporates the past into its present reality. Rome is indeed a city in which the pleasure of the present depends upon our ability to recall the past and, in so doing, to reaffirm the future. A belief in continuance, a hope in the power of human memory, underlies much of the city. It appears in the major monuments and in their myriad, minor reflections.□

On Forgetting the Alamo

By James D. Alexander

In the Southwest the tourists come and go, seeking out San Antonio. Shoppers go to be dazzled by the city's miles of redeveloped riverfront, once a pachuco hideaway but now a waterside showcase. Honeymooners find their way to the top of the 750-foot Tower of the Americas to sit and sip strawberry daiquiries and watch the red-roofed city revolve below them. Others head for the city's center to tour the Alamo, now a museum. The Alamo was originally a Spanish mission, later turned into a stronghold where the freedom fighters Bowie, Bonham, Travis,

The little stone church at Espada Mission is one of the two original structures which still stand. It has the plain design of a Spanish outpost, with one flamboyant feature, its Moorish doorway. No crowds like those at the Alamo swarm over Espada's grounds, but the mission is a rich repository of Hispanic history in America.

and Crockett held out against Mexican forces. But the City Fathers insist there are other Old Spanish Missions that help make San Antonio "one of America's four unique cities."

The few visitors who get around to the smallest of the San Antonio missions,the one tucked away in the city's South Side, may become aware that things are still happening there. Mission San Francisco de la Espada did not freeze into an historical artifact, as the Alamo did in 1836. It continues to serve in a fundamental way the purposes intended by the Spanish for their missions in the American Southwest.

For one thing, it is proselytizing the natives. For another, it is standing as a bulwark of Spanish interests against encroachments from the North. Those encroachments once came in the form of the aggressive French, or the marauding Apaches and Comanches. Nowadays they come in the form of the enterprising Anglos, largely, and it took me a visit and a close look to find out how Espada is sustaining itself.

Espada is small, the size of a softball field, and has only the bare essentials for a Spanish New World mission. There is a church with its rough-hewn pews; with its life-size statues carved from wood and garbed in real clothing; with its outside facade molded in typical mission style, topped with two tiers of bells. There is an enclosing wall, now reduced to foundations, with various dwellings and utility rooms embedded in it, some restored to use. The missions in this area were also intended to be military compounds and, with the aid of the tilled fields and the water networks from the San Antonio River nearby, were meant to be self-sustaining.

Aside from its postcard size, there are only two things of note about the Espada construction. One is a church doorway that seems to have been designed by a wayward Moor, homesick for the alleys of Algezir. The other is a twenty foot-high round tower, punctured with holes for guns and cannon emplacements.

Later I sensed how much the landscape had swallowed up the mission. The foliage itself is an East Texas combination of desert punitive and tropical lush. I could see mesquites, gnarled trees with fern-like leaves, whose wood is excellent for barbecuing; light green *huisaches*, whose ferns burst into a tender yellow to announce the coming of spring; bushes of oleanders, with flowers like drops of blood; yuccas with their tall leaves that could be the overgrown crowns of pineapples. A plant with an upward thrust of swordlike leaves ending in spines is called a *maquey*. The Indians used the spines for sewing and for making weapons; they wrapped its leaves around burns to heal them, and from its roots they made tequila.

I wouldn't have known any of this if I hadn't attached myself to a man who said he cultivated herbs on the mission grounds, indigenous plants given to him by the area residents. The man, dressed in civvies, seemed to know a great deal of local history. It was some time before I realized that he was not the curator, but the curate. He carries on all the activities of a pastor here and was at present taking a census of his parish. Already he had tallied over 600 families, more than the Espada Mission in its eighteenth century heyday ever accommodated.

So Espada continues to serve the religious needs of a native population. Late in the afternoon when the heat subsided, I attended a religion class given to thirty neighborhood children, aged six to nine. It was held in the mission church, where it was cool. This was now the summer vacation time, but religion classes continue. Faith is a year-round exercise. Sister Gregorio catechized the children, partly in English, partly in Spanish:
"What has God given us?"
"Life, the sun, the clouds, the moon, our bodies, His love."

I looked into the children's faces and observed the Indian features.

In the evening there was a specially requested commemorative mass for a deceased parishioner. Family members in a tight-knit congregation of twelve attended in the mission church. The ceremony and the sermon were in Spanish, and so was the warm conversation afterward in the courtyard, minus the usual Texas boisterousness I had come to expect.

The mission lives. Whereas Espada was built in 1731 to Christianize the Indians and to maintain the faith of the Spanish settlers, it has remained to serve as a spiritual focal point, a parish center, to the descendants of those same peoples. Now the population is larger, and so Espada may be more successful in the twentieth century than it ever was. And the curate is in that tradition that reaches back to the Texas missionaries of the early 1700s, since he too is a Franciscan. Only now, like that maquey outside the church, he is homegrown.

Then I began to find out something of the charm of Espada. Latin-American, or *charro*, weddings are held regularly at the church, the bride in a resplendent white lace veil, the groom dressed like a Mexican cowboy, and a horse and buggy waiting to whisk them off from the Moorish door to their honeymoon. Painters especially like to come and use the mission buildings as their subjects; some of their work graces the walls of the rectory. In the evening, engaged couples, or *novios*, come to walk undisturbed in the privacy of the mission grounds. All of these things testify to the romance of those Spanish missions whose moonlight and chapels and bells are the stuff of American popular songs.

Espada is the only one of the five San Antonio missions to have authentic Spanish artifacts out of the eighteenth century, when the missions were founded. There are gifts from the Spanish royal family. One is a pyx, a holder for the Eucharist, of inlaid gold. Another is a small case containing mass vessels, genuine silver cruets shaped like tiny tea kettles, sent from the Queen of

Inside the stone church at Espada, one can see the combination of Spanish and Indian decorative styles. A Spanish ceramic statue of St. Francis stands above the altar. The Indian carved statues flanking the altar are life-sized and are clothed in real garments.

Spain in the 1740s. In the office is a Spanish-English Bible with wonderfully preserved print, dating from 1792 and dedicated to the Spanish King Charles.

I asked, why aren't any of these things on display for the people passing through? Why conceal them in drawers and chests and cabinets, to be disclosed only to a privileged few? Doesn't the public have a right to see these treasures? Why does the mission have no museum area, no display cases?

I was told that these artifacts belong to the parishioners, and their right over them would be infringed if the objects were put on display. Apparently the pastor feels no obligation to make antiquities available to the public. He told me that the archdiocese of San Antonio was struggling to retain its ownership over the four lower missions, not to surrender them to the city, which would convert them into little alamos.

There, at the Alamo, he said, historical data is selected and distorted so that hucksters can flatter the loyalties of Anglo visitors, who are looking for John Wayne stereotypes. Children can walk through the museum and gaze at objects like Jim Bowie's knife, oblivious to the feelings of those people, the largest minority of Texas, on whose forebears it was used. Only when a building is dead can it become a museum. The Alamo is dead, and even as a museum it is only a big cash register.

These are hard words, but back of them is more than just delicate ethnic sensibility. It is a real revulsion against that channel vision of American Southwest history that makes the Anglos out to be the bearers of a libertarian ethic to a politically unenlightened people.

And it is part of a substratal view of the Texas past that takes it back before the time that someone named Austin became a Spanish citizen so he could sign up for some free land.

It is a view of Texas as a stable, though sparsely settled, Hispanic colony, then part of the Mexican Empire, only lately inundated by misfits from the North, whose descendants have whitewashed them over as freedom fighters. And though still anathema to the majority culture, the view is beginning to win adherents. Former Texas State Historical Society President Dan Kilgore holds the heretical opinion that Davy Crockett was not particularly heroic. In his recent book *How Did Davy Die?* Kilgore maintains that Crockett was as big a failure at the Alamo as he was all his life, that his ultimate failure was to be executed after having ignominiously surrendered to Santa Ana.

If Father Manuel would like the Alamo forgotten, it is because he believes that history—as purveyed there—is bunk.

Espada reveals another kind of past. It is one when the dominant language in Texas was Coahuiltecan, and it was up to the missionaires to provide bilingual instruction. On the rectory desk is a photocopy of a letter from Espada written April 8, 1759, by Friar Bartolomeo Garcia, the pastor who a few years later published a Spanish-Indian handbook for his charges. Translated from the Spanish, it reads: "If you, Guardian, are going to send us anybody, send us a minister who can learn Indian languages. Up to now, our native interpreters for the minister who is teaching God's sublime mysteries are telling the people jokes in Indian."

Inside the rectory stands the smooth brown statue of Our Lady of San Juan, her head blazing in a halo of the sun, her feet resting on the upward-turning horns of the moon. I looked closely at her eyes. There are prints of another native devotion, Our Lady of Guadalupe. I could see the Indian features in her face, the Aztec star emblems in her robes, and above and below her the sun and moon again—the Aztec symbols of deity.

This blend of Spanish and Indian makes the Mexican religion different from any other religion. It may be that the church appropriated native customs and turned them to her use. There is a ceremony peculiar to the Mexicans called the *quinceanera*, which can be traced back to Aztec rituals that recognized a girl at the age of childbearing, about fifteen, as the most significant member of the tribe. When the Spanish missionaries came, they added some elements to the ritual and put a new interpretation on it; now it means that the girl is ready for Christian service to the community. The practice of bringing a girl to her fifteenth birthday celebration at the church with fifteen girl friends, one for every year of her life, survives to the present in the *quinceaneras* scheduled at Espada.

It is a curious coupling of values here, one particularly elusive to Anglos from the North who think that everything Mexican is by definition Spanish. It has something to do with the eyes of those madonnas. I could see and hear it in Father Manuel, who like other Chicanos in the area, is half Indian. As with the others, his name and language and religion have been absorbed into those of the Latin colonizers. After 250 years he is what the Spanish mission had strived to achieve—a native clergyman.

"It's a misnomer that these are the old Spanish missions," he told me. The word *Spanish* does no justice to those people who labored to build the walls, learn the trades, and grow the food that supported them and their livestock. "They are the old Indian missions, built by and for Indians." He insists on the claim of the Indians to recognition, culturally, as cofounders of the Texas missions, along with that of the Franciscans, of course, to the title of true pioneers of Texas.

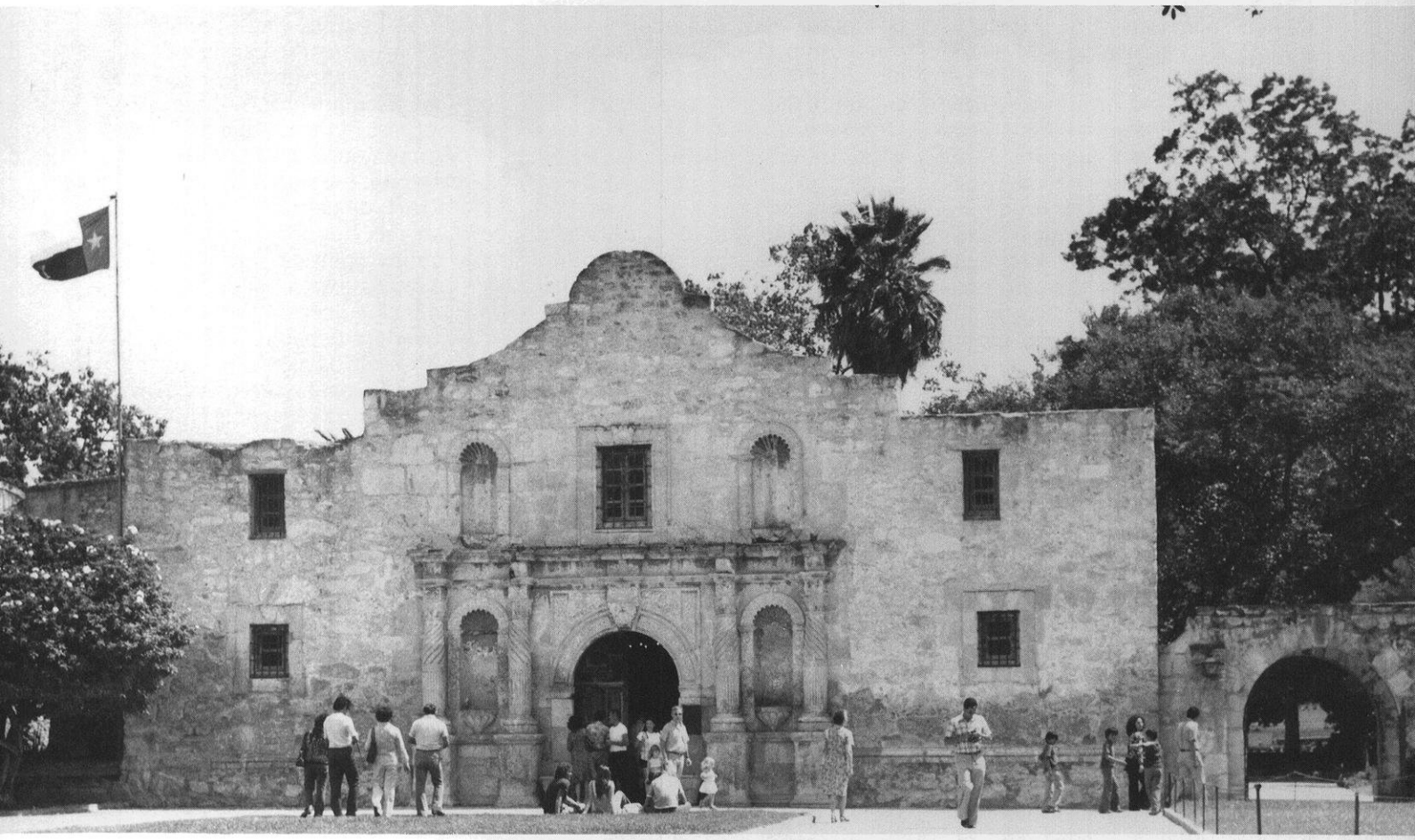
I assented, but there was something troubling here. Doesn't the name of this mission mean "Saint Francis of the Sword"? Doesn't it seem incongruous that this gentle saint, the founder of the Franciscans, should have his name linked with a weapon? Father Manuel conceded that Christianity was sometimes spread by war. Moreover, someone had probably reached back to the earlier life of St. Francis, when he was a soldier, for the allusion because of the special purpose of the Espada Mission.

The mission was, of the San Antonio group, the most remote from the center of population and was probably serving an added function as a military outpost. I recalled the stolid round tower I had seen earlier and remembered reading on the plaque that Espada is the only Spanish-built bastion north of the Rio Grande that is still intact. Hostile Indians were never able to storm the compound successfully. Nor were the Mexicans, for that matter, when Bowie and Fannin and the other American settlers occupied it on their way to the Alamo. Perhaps the Texas patriots would have had better luck if they had stayed at Espada.

And with an image of the Espada bastion tower lingering in my mind, I could see another man embattled. Like his eighteenth century missionary counterparts, Father Manuel is beset by hostile forces and by paradoxes. But they are new forces, new paradoxes. He likes to use the expression, "When Texas was Mexico," and I could hear him holding the line, propping up the Spanish frontier. For the outsiders are the Anglos, those Johnny-come-latelies who have assumed a transitory residence in Texas. This man's loyalties went deeper, to those detribalized Coahuiltecans of old, the cousins of the Aztecs who were the area's original citizens and who deserved merit for first cultivating Texas. He couldn't really reclaim history for the Spanish without reclaiming it for the Indians.

Moreover, the only way for him to get recognition at Espada for Spanish or Indians would be for the pastor to haul out the antiques and archives, plunk all the mission treasures onto display racks for

The most famous of San Antonio's missions is the Alamo, visited by thousands of tourists every day. Now converted into a museum, it no longer serves its original purpose.



strangers to ogle, turn the church into an exhibition hall, and put himself on call as a resident historian.

But this would be to capitulate to a San Antonio chamber-of-commerce value system that is even now converting the area flanked by the four lower missions into a national park. A complex of park-ways will connect the missions so that visitors can easily find the sites. For after all, since its Hemisfair year of 1968, when the missions were "discovered" as attractions, San Antonio has become more of a tourist city, for tourists bring money. Besides, many of the visitors are new citizens, since San Antonio is one of the nation's fastest growing cities.

Now the enemies out there are the investors and developers and merchants and local politicos who see tourism as the best potential of the missions. No matter that the city is half Spanish-speaking. No matter that half the city council is Spanish-surnamed. No matter that the mayor is called Cisneros. All of these people seem to Father Manuel to be arrayed against the mission, ready to sacrifice Espada to the "Alamo City" image.

But was this just another manifestation of that old eighteenth century Espada siege mentality? I went uptown to look at the Alamo. The museum is flanked by dense botanical gardens. Under the city's curatorship orderly rows of plant and tree grow leaf by shoot, brought in from every part of the South, much of it not native to San Antonio. All of this flourishes for Alamo sightseers who, over the last twenty years, have swelled to a tide. But down southside at Espada, at the still forgotten one of the missions, the flow of tourists is a mere trickle. And that maquey within the walls is a friend to its ground, basking in solitude in the late afternoon sun, while the mockingbirds' voices grow richer and bells toll the Angelus and the children are in the church learning timeless truths. □

Thinking Like a Lawyer

By John Stark

At the beginning of each episode of "The Paper Chase" the formidable Professor Kingsfield justified his reign of terror by promising his students that, although their minds were at that time "mush," if they endured they would leave law school "thinking like a lawyer." Kingsfield correctly assumed that lawyers characteristically think in distinctive ways. Because American lawyers' influence has been considerably greater than their numbers, anyone who wishes to understand this nation ought to understand the ways in which lawyers think.

Interest in the law

United States' citizens are allegedly subject to a government of laws, not of personal whims, but it is striking that, in thinking, lawyers take the law seriously. Not only does the law have little influence on most persons' behavior, but flouting of the law has become endemic. In contrast, lawyers, by training and perhaps by inclination, frequently consider the legal ramifications of the behavior, both actual and potential, of themselves and others. They do not always follow the law, of course, as the recent high incidence of lawless lawyers in the federal government's executive branch demonstrates. Nevertheless, lawyers look to the law, just as bricklayers, when asked what ought to be done, recommend laying bricks. The growth in the number of lawyers has some harmful effects, but it also will ensure that more persons take the law seriously. That result would benefit this country, which would be better off if it were in fact, not only in theory, a nation of laws, because then life in it would be less solitary, poor, nasty, brutish, and short.

Public policy

Lawyers have recognized with increasing frequency that, despite the low percentage of human actions influenced by the law, those actions' total effect is substantial. That slow accretion of effects makes it advisable for judges to consider the public policy furthered by their decisions. For example, tort law during the middle of the nineteenth century reduced employers' liability, thus allowing the accumulation of capital that could be used for economic growth. A few decades later judges shaped contract law in ways that facilitated agreements and precluded punitive damages, thereby stimulating commerce. Judges and lawyers differ among themselves about the weight that should be given to policy considerations. At one end of the spectrum are those few who believe that the law is an internally consistent but self-contained system of rules. At the other end are those who believe that statutory interpretation and application of precedents are, and ought to be, a charade perpetrated to effect desired policies, which are the true basis of legal decisions. In any case, a lawyer probably will consider, at least fleetingly, an instance's relation to a larger context and reflect on the social consequences of legal rules.

Procedures

Lawyers' attention to procedures and formalities annoys nonlawyers, who often prefer swift, decisive action. This concern of lawyers is premised on a negative view of human nature and on the corollary of that view: skepticism about leaving persons to act without impediments. Part of this skepticism arises from recognizing that laypersons often deemphasize means in favor of ends, and another part arises from recognizing, shrewdly, that well constructed procedural requirements can make desirable substantive results more likely to occur. From these recognitions flow lawyers' attention to "due process," for example to insistence that even persons who "obviously" deserve a sanction are entitled to notice, a hearing, and certain other rights. Despite the frustration of nonlawyers caused by lawyers' attention to procedures and formalities, that attention serves a useful purpose.

Facts

Whereas lawyers' attention to procedure often seems alien to nonlawyers, their attention to facts usually makes others more comfortable, and it occasionally surprises them. Lawyers seek and ponder facts because even one fact can determine which string of precedents, or even which area of the law, applies to a factual pattern. Because of that function of facts for them, lawyers will often be interested in facts in different ways than are nonlawyers. For example, a lawyer may inquire whether or not a promise elicited a counterpromise. To a nonlawyer, particularly one who believes that a promise is a promise, that inquiry will probably appear to be irrelevant, but not to a lawyer trying to determine whether or not there was "consideration" and thus a contract. Generally, interest in facts increases with legal experience, because law schools do a poor job of teaching students how to gather and marshal facts. Indeed, it is possible to conclude from the heavy emphasis on analyzing appellate court opinions in law school that the law is a domain unto itself, unconnected to the blooming, buzzing confusion of the domain where facts exist. Experienced lawyers know that that is not true.

Abstraction

The steps in legal thinking after factual analysis usually are discarding irrelevant facts and forming a pattern out of the relevant ones, with an eye to determining either which statute or which line of precedents applies and how it applies. Arranging the facts may be a disinterested legal analysis or an attempt to defend a legal position. Whatever the purpose, the result will be an abstract, generalized version of the facts; other-

wise they cannot be connected to a statute or precedents, because the welter of facts would be too complex. Abstracting dehumanizes the facts and wrings from them their emotive components. One can see these results of legal abstraction by comparing Melville's narrative in "Benito Cereno," which is full of human meaning, emotional power and intellectual nuances, to the laconic and pedestrian legal document he inserts near the end of that story. The detriment of lawyers' abstraction is the loss of significant portions of human experience. The benefits are that blocking out those portions facilitates the intellectual work of lawyers and judges, which is difficult in itself and which crowds against the available time, and it spares those persons from continuous exposure to emotionally laden topics. No one could survive psychologically if all the "stories" told in courts were full-blown, emotional dramas. Lawyers' tendency to abstract can also be healthy for clients grappling with emotionally overpowering situations.

Precedents

One aim of this abstraction, discovering precedents, seems at first glance to be an irrational means of arriving at a decision. Some argue that disputes ought to be resolved on their own merits, without considering the resolution of other disputes. One can try to justify that position by claiming that dependence on precedents is too mechanical and that no other intellectual discipline searches for the truth in that way. However, that method is not completely mechanical; if it were, the legal system could be dismantled and replaced with computers. In fact, judges sometimes twist precedents so as to arrive at a desired result. On the other hand, the process is mechanical enough to generate a requirement of any legal system: predictability. Using precedents not only helps resolve disputes but also enhances planning by allowing persons to predict with reasonable accuracy the response of a court to a contemplated action. A legal system that does not use precedents but relies on ad hoc resolution of each case would be capricious and would make planning futile.

Dialectics

Talking with lawyers or reading legal opinions soon reveals lawyers' deeply ingrained dialectical cast of mind. The nature of litigation—two sides in confrontation—encourages that mode of thought, as does the thrust and parry of law school classes: the teacher's posing of question after question to force the student to consider the opposing position. One can see the effectiveness of this training in, of all things, the poetry of Wallace Stevens, an attorney. The body of his poetry is a long, stately dialectic composed of the interplay of opposites, especially reality-imagination. In "Sunday Morning," one of the great twentieth-century poems, he organizes most of the stanzas by stating a position and then finding a flaw in it, as though he were taking both parts in the standard law school dialogue. Lawyerly dialectic is maddening to nonlawyers because it refuses to accept positions and demands to examine alternatives. Those benefits are worth the harassment of being put through one's paces dialectically by an attorney.

Objectivity

Lawyers are often advocates and are perceived as playing that role almost all the time, but many lawyers do not litigate and are often objective analysts. Even those who do litigate must be objective analysts before they can be effective advocates. They must weigh the merits of a position in order to decide whether it can survive litigation and, if they do litigate, must continually reevaluate their position in light of settlement or plea bargaining. Revealing one's concerns to anyone for the purpose of an analysis is useful because of the difficulty that humans have in being objective about themselves and their own affairs. Lawyers recognize that fact about themselves; hence, the continued currency of the bromide that "anyone who is his or her own lawyer has a fool for a client." Lawyers' value as objective analysts is enhanced because situations in which they function in that way cause stress and thus make objectivity even more difficult for the persons involved. The lawyer's role as a hired gun makes him or her more objective. Easy acceptance of a position is self-defeating because tomorrow one may be hired to attack that position. Paradoxically, then, the supposedly conscienceless nature of legal work, which nonlawyers vastly overstate, helps lawyers serve as objective "consciences" for their clients. That function's benefits are not always clear to a client because part of that function is to ignore such reasons for holding a position as self-preservation and self-aggrandizement, which are worth nothing in a court of law but are worth a great deal to a client.

Pragmatism

Lawyers think pragmatically, partly because cases are always resolved, even though some of them take years to reach that point. Lawyers, therefore, seek ways to cause the desired resolution. They treasure that which works, an attitude that makes them look amoral or nontheoretical to others. That view is extreme, and pragmatism is very much in the American grain, for good or ill. The school of legal thought that considers the law itself to be a tool for effecting social policy is pragmatism on a larger scale. Lawyers can use that view of the law in framing legal arguments, although there is some truth to the adage that one argues policy if one has no argument on the facts or on the law. Judges can be large-scale pragmatists, either obviously, by setting out in opinions their policy reasons for deciding a case in a certain way, or not obviously, by consciously or unconsciously allowing policy reasons to influence or even determine their decision. Nonlawyers are more likely to appreciate lawyers' smaller-scale pragmatism, their insistence on problem-solving, which is a major cause of the symbiotic relation be-

tween American lawyers and American business. That symbiosis and the significant role of pragmatism in American culture make this lawyerly trait a congenial one for nonlawyers who deal with lawyers.

Prudence

In his portrait of a lawyer in "Bartleby the Scrivener" Melville emphasizes that character's prudence, which circumscribes his attitudes and behavior to such an extent that he is unable to do much for a character who requires a different response. The law's complexity induces prudence. Vicarious responsibility for clients' welfare, especially combined with awareness of many legal pitfalls, also causes prudence. Lawyers' speech patterns reveal that this trait is deeply ingrained. A typical response of a nonlawyer to the question "did the telephone ring?" is "no," whereas a typical lawyer's response is "I didn't hear it." Their speech is also peppered with "it appears," "one could argue" and other hedges that indicate that they sometimes are in a guise different from that of the zealous advocate. They even have made prudence the measure of conduct sufficient to preclude civil liability: in tort law the standard of care against which behavior is measured is that of a prudent person. In fact, Melville's father-in-law, an influential judge, set that standard shortly before Melville wrote "Bartleby," one of the points of which is that prudence is not in itself a suitable guide to conduct, notwithstanding Chief Justice Shaw.

Incoherence

One characteristic of lawyers' thinking that has less to do with personality type than with intellectual style is incoherence. Probably many persons who begin to study law are surprised that they agree with a high percentage of the legal decisions they read and yet are not very impressed with the intellectual quality of the opinions written to justify those decisions. A frequent flaw in those legal documents is incoherence: scoring point after only tenuously related point rather than constructing an argument that moves forward inexorably, impelled by logical connections, each link in the chain closed up tightly around the preceding link. Despite the vast amount of paper it creates—peeking inside a law library will show that immense amount—the law is to a large extent oral. A listener is unlikely to grasp the coherence of a long presentation, and it is difficult to plan and carry out a coherent oral argument, so in that setting lawyers are not coherent. They carry over their incoherence when they write. The law's complexity—a product of the difficulty of drafting statutes that have clear content and application, of the rapid growth of precedents, of the infinity of facts that may be relevant, and of the challenging task of fitting law to facts—is an important cause of that incoherence. In legal arguments facts rarely can be arranged in a straight line; instead, at any point several sequences of argument are possible. One either doubles back later or, more likely, makes a point, then makes another. Legal argument is not like building a wall from here to there; it is like randomly grabbing weights to toss into a balance pan.

Prose style

The thought of lawyers is not always easily accessible to others, because it is couched in difficult language. Even Learned Hand, a brilliant jurist, wrote of a major monument to the law's obscurity, the Internal Revenue Code:

> The words . . . merely dance before my eyes in a meaningless procession: cross-reference to cross-reference, exception upon exception—couched in abstract terms that offer no handle to seize hold of—leave in my mind only a confused sense of some vitally important, but successfully concealed, purport.

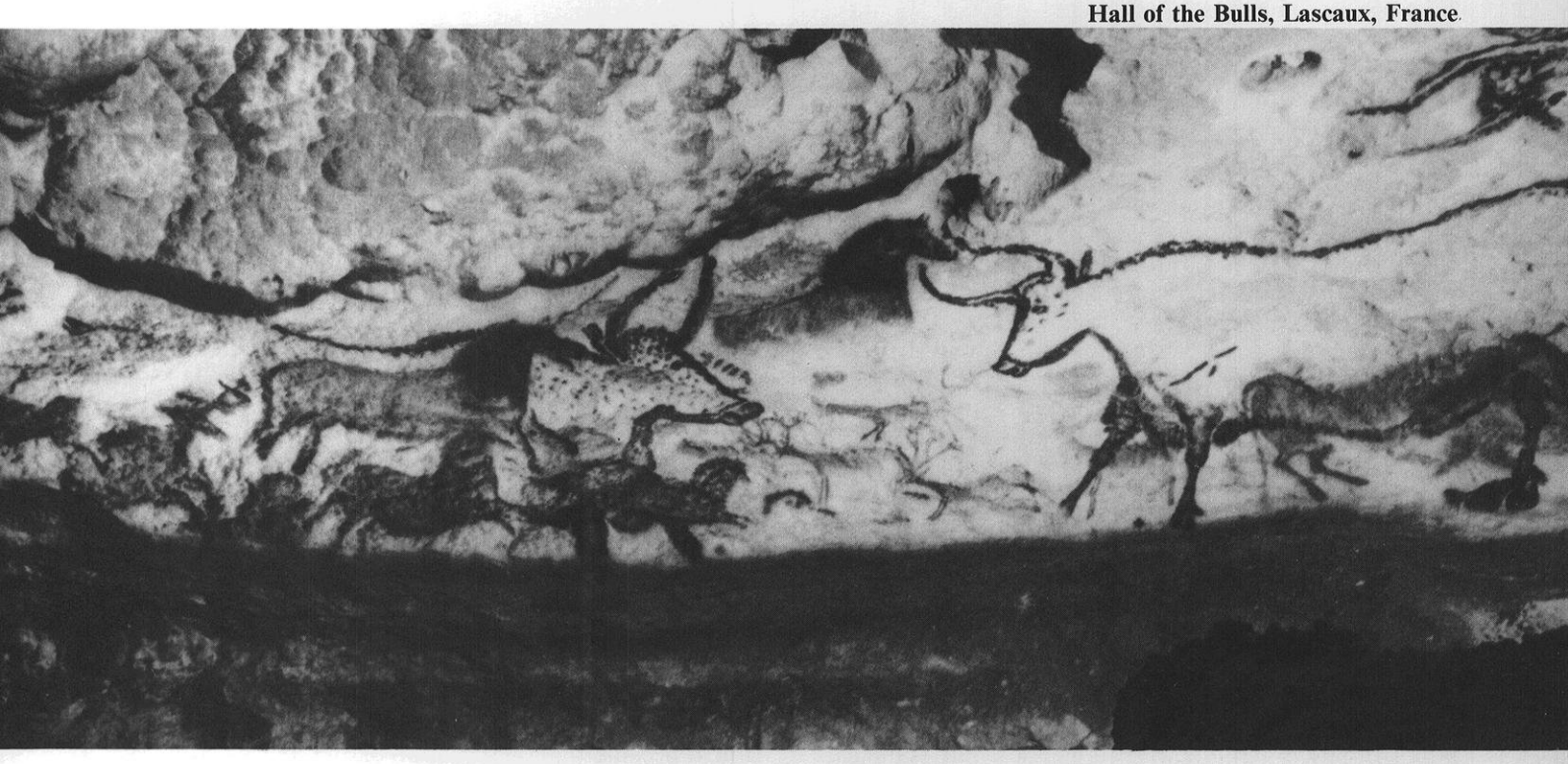
Legal jargon contributes much of the difficulty. Some of that jargon performs a valuable function because it is a usefully condensed version of a long series of legal precedents and thus has a definite meaning. Other legal jargon, however, merely obfuscates. Preservation of jargon and phrasing that has an agreed upon meaning makes the law's language archaic, usually to its detriment because that preservation often replaces thought and prevents literary felicities. Legal prose tends to be ponderous in order to appear impressive; its sentence rhythm, for example, often resembles that of a heavy trunk thudding down a flight of stairs. There is no point in reading legal documents for the prose.

Higher law

Up to this point lawyers seem to be utterly enmeshed in the law, so that the law to a large extent determines their thought patterns. However, they can escape the law and those thought patterns by maintaining a loyalty to a higher law, one that seeks Justice rather than justice. That yearning is derived in part from American culture, where it is endemic, as indicated by a current in American fiction that begins as far back as Cooper's *The Pioneers*. Another source of that yearning is a philosophical, ethical bent that, if not enhanced by the law, is not extirpated by it. For example, Thomas More, a lawyer, conceived a utopia and stood resolute against his king. More, however, also illustrates the danger of leaving aside mundane concerns, such as respect for facts, in order to pursue a greater goal, because, in order to solidify the Tudors' position, he asserted some of the distortions about Richard III that Shakespeare made widespread.

Recognizing the attributes of lawyerly thought is important to both lawyers and nonlawyers. It aides the former by facilitating self-reflection, an activity the importance of which is great precisely because those thought patterns are strong. It aids the latter by allowing them to make more intelligent decisions about whether or not to entrust certain tasks to lawyers and by helping them understand another mode of thought, which will in turn aid their own self-reflection.□

Hall of the Bulls, Lascaux, France



Saving a Prehistoric Masterpiece: Lascaux

Based on articles in French by Christian Lahanier and Jack Ligot

By Cheryl Krueger

Sometmes during the waning of the Old Stone Age, an artist squatted on a scaffold in the dim, chilling chambers of a cave, eating reindeer meat and dropping the bones to the ground as he painted the fluid shapes of bulls on the stone walls above him.

Nearly 20,000 years later, a white-coated technician toiled in a clean, well-lit Parisian laboratory, referring to an elaborate blueprint as he carefully stretched a sheet of synthetic gelatin over a scientifically designed polyester mold.

It seems impossible that these two efforts could share a common spirit, yet in the last half of this century, men and women of science have united with artists of all eras in the interest of keeping art before the human eye.

Nowhere has this shared spirit been more evident than in the case of the once-doomed Lascaux cave, which a team of technicians has partially reproduced in full scale and precise detail so that the mysterious works of prehistoric cave painters will continue to enchant present and future generations.

The reproduction of the Lascaux cave's Hall of Bulls, the largest of several galleries in the cave, made its debut at a major exhibition dedicated to the marriage of science and art, held in 1980 at the Grand Palais in Paris. Nearly 200,000 visitors saw this stunning, full-scale facsimile, a central attraction of "The Secrets of the Great Masterpieces: Science in the Service of Art."

In addition to the Lascaux cave reproduction, the halls of the Grand Palais featured a series of great works of art alongside scores of equally impressive masterpieces of modern technology. Red-figured vases and Merovingian jewels, Rembrandts and Picassos shared the Grand Palais with displays of ultra violet fluorescence and radiography, with neutron activation and thermoluminescence, to name just a few of the modern techniques used to analyze and preserve works of art.

The Lascaux cave reproduction, however, was perhaps the exhibit's most dramatic example of the cooperation of science and art, since the replica demonstrates not merely art alongside science, but art and science united in one remarkable artifact.

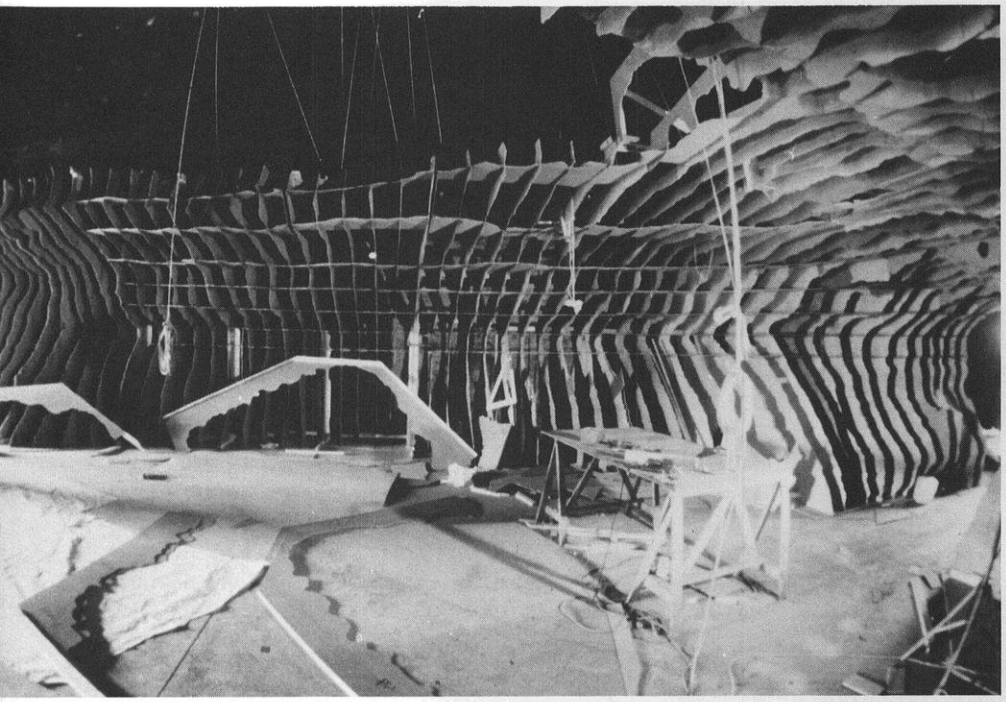
This landmark in the meeting of art and science was the work of four French technical teams, mobilized in 1980 to salvage a detailed reproduction of the Hall of Bulls. The hall, along with several other Lascaux galleries containing paintings from the Upper Paleolithic period, had been threatened with severe deterioration since the discovery of the cave during World War II.

Under the direction of Christian Lahanier, head of the Laboratoire de Recherche des Musées de France, the teams employed an array of modern techniques, including photogrammetric surveys, precision theatrical set construction, and a brand new photographic decal process called *photodécalcomanie*. These efforts may well have preserved for the public a realistic glimpse of what experts have called the birth of art and the information age.

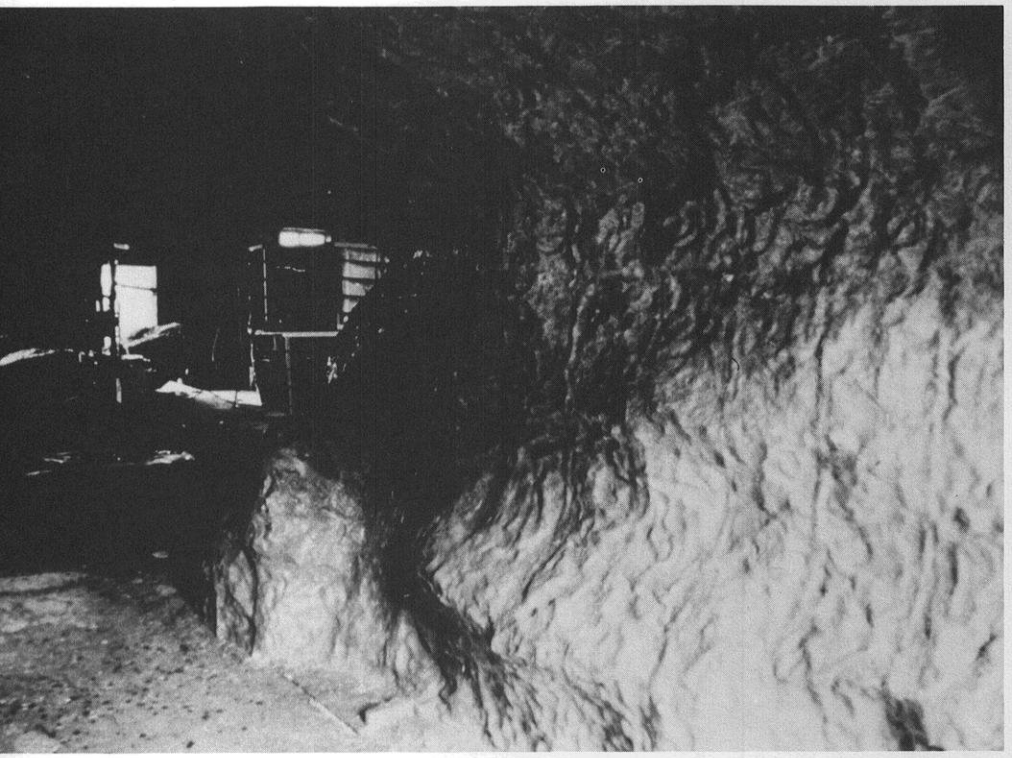
The Lascaux cave was discovered in 1940 by children playing near the village of Montignac in the Perigord region of southwestern France. Finding a hole made by an uprooted tree, the children enlarged the cavity and managed to slide through a tunnel of wet clay into a cave. The sight that awaited them was breathtaking: in a chamber 15 by 30 feet long and 15 feet high, they found themselves surrounded by what seemed to be a swirling stampede of red, yellow, black, and white animals. As their eyes focussed in the semi-darkness, the curved and craggy stone surfaces gave an illusion of motion and constantly changing perspective to an astonishing parade of bulls, horses, deer, and even one unicorn, spanning the walls and ceiling of the cave in what has since been called a "prehistoric Sistine Chapel."

Further investigation revealed this "Hall of Bulls" to be one of eight landmarks in a four-branched cave network about 100 meters long. The cave was also found to contain artifacts including stone lamps, bone lance heads, and artists' palettes. Its walls revealed 1,500 engravings of various animals.

Ceiling of the axial gallery at Lascaux, which was not reproduced in the facsimile.



Interlocking sections of plywood form the skeleton of the cave.



The rough surface of the skeleton was covered with earth to imitate the cave walls.

These engravings, along with Lascaux's 600 wall paintings, provide the richest and most impressive example of a seemingly sudden appearance of cave painting and engraving in Western Europe, dating from the Upper Paleolithic period of the Old Stone Age.

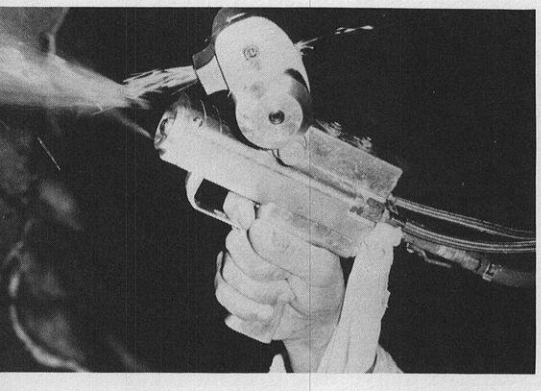
Officially opened to the public in 1948, the Lascaux cave was frequented by a fascinated public for years. But with the public came a damaging disruption of the cave's microclimate, and the paintings which had been preserved unseen for thousands of years began to experience alarming problems.

By 1955, carbon dioxide exhaled by visitors had contributed to serious damage of the water-based pigments of the frescoes. By 1958, an air-conditioning system had eliminated condensation problems, but new complications had developed, including the growth of damaging algae, fungi, ferns, and mosses. Scientists used antibiotics to combat these menaces, but still more problems ensued, and it seemed that the cave's treasury of prehistoric art would be lost. Eventually, experts agreed that the only way to save the paintings was to maintain a strictly controlled climate in the cave.

It was therefore necessary to close the cave, removing it once again—and this time perhaps forever—from the public eye. Since 1963, officials have permitted only a limited number of scientists to enter the cave.

The beauties of the Lascaux cave remained in this paradoxical state—intact but inaccessible—for nearly two decades. Thus the public, in director Lahanier's observation, was deprived of direct emotional contact with a masterpiece of prehistory. It was in 1980, therefore, that Lahanier's Laboratoire de Recherche des Musées de France siezed on the Grand Palais exhibition as an opportunity to remedy this unfortunate state by forming plans for a full-scale replica of the Hall of Bulls.

A spraygun which mixed the polyester resin and fiberglass was used to prepare the surface of the facsimile.

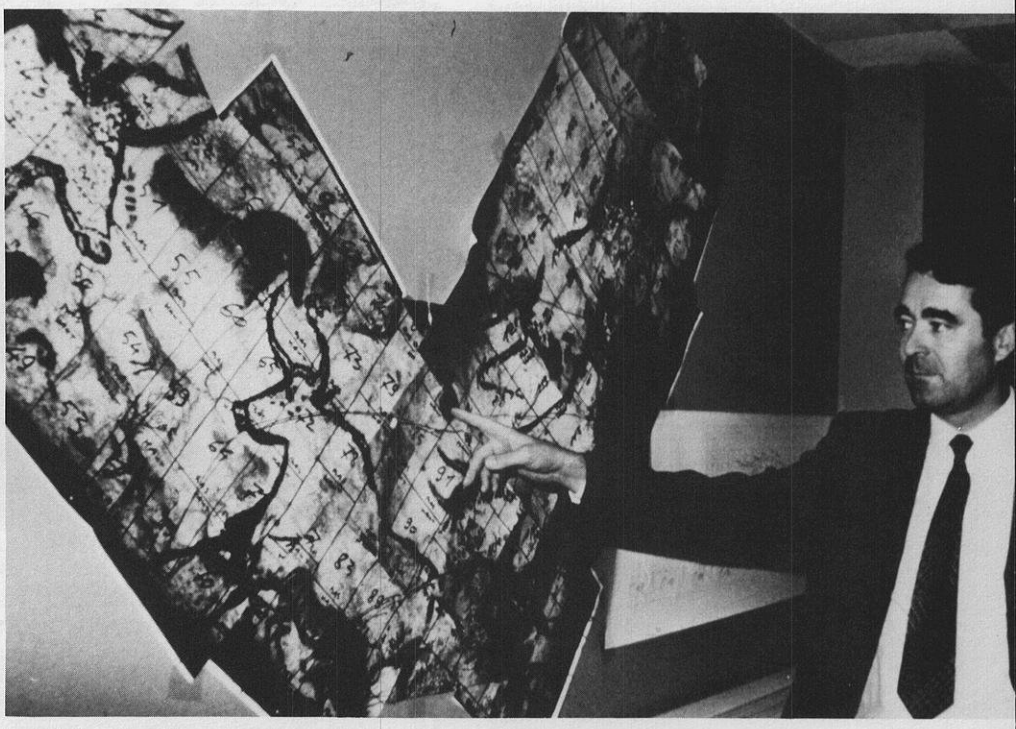


Lahanier's organization moved fast. The project took only eight months from conception to realization. Combined under the coordinating auspices of the Laboratoire de Recherche were the efforts of the Institut Géographique National (I.G.N.), the Kodak-Pathé society, and the Unités Théâtrales et Recherches de Villeurbanne, a firm specializing in theatrical sets.

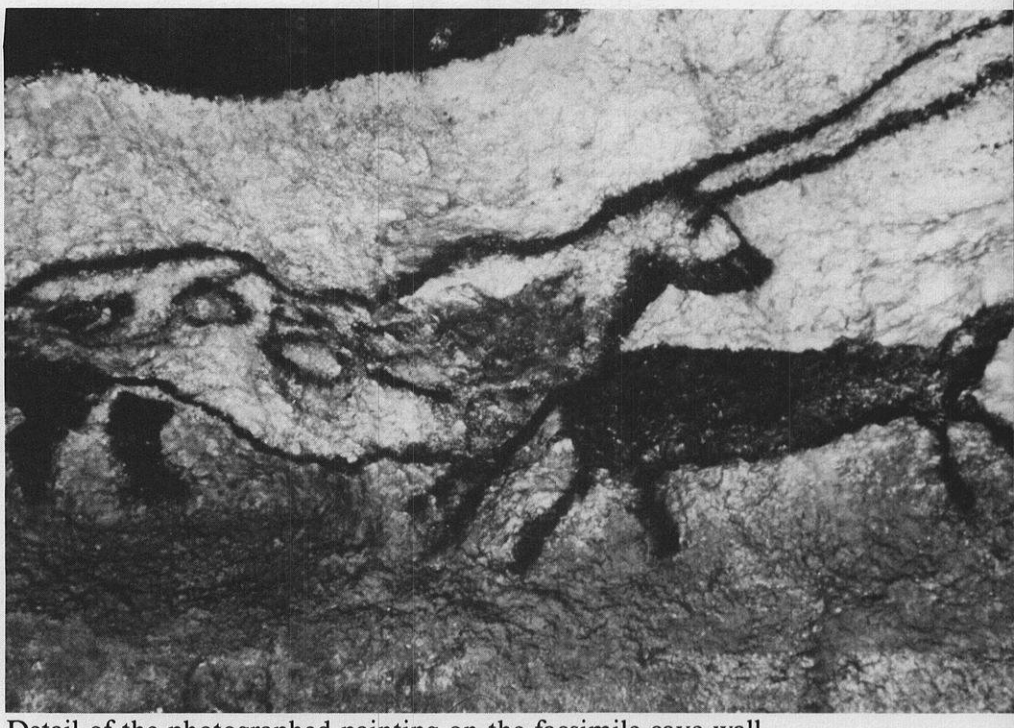
The first requirement of the Hall of Bulls project was to reproduce accurately the relief of the cave's walls.

Fortunately, the I.G.N. had carried out a complete photogrammetric survey of the cave in 1966. I.G.N.'s stereographic cameras had registered images of the entire cave surface, transforming relief features into lines resembling those of a contour or topographic map at one-tenth scale. Lahanier's teams organized the images and enlarged them ten times, to actual scale. The result was a complete and accurate pattern from which the artificial cave walls could be fashioned.

The theater company then consulted this pattern in order to construct a skeleton of the stone walls. Sections of plywood were cut to match the horizontal and vertical contour lines at regular intervals. The interlocking sections of plywood formed a honeycomblike macrorelief skeleton of the cave. Reproducing the microrelief was a matter of filling in the empty spaces between the plywood with expanded polystyrene blocks mod-



M. Lahanier demonstrates the 1/10th scale photographs taken by I.G.N., which were printed at actual scale, cut, and applied to the facsimile cave walls by the photodécalcomanie process perfected in France.



Detail of the photographed painting on the facsimile cave wall.

eled according to the photogrammetric pattern. The polystyrene surface was then painted with latex and covered with a thin coating of polyester resin mixed with fiberglass. This coating conformed exactly to the polystyrene without adhering to it. The surface was then covered with local sands and ochres in order to obtain a surface appearance as close as possible to that of the actual Lascaux cave.

Finally, the polystyrene blocks were detached from their sockets, leaving the plastic shell permanently fixed to the plywood frame.

So far, however, the focus of the Lahanier project was neither on art nor science: the cave itself is after all not the work of art, and the construction of the model cave is not so much an act of science as one of painstaking craftsmanship. Where art and science converged in the Lascaux project was in the photographic reproduction of the cave artists' swirling dance of bulls, horses, and deer.

To begin this reproduction, the I.G.N. photographers had to work under conditions not unlike those of the original cave artists, coping with limited lighting, uncomfortable climactic conditions, and difficult visual angles. They photographed the wall paintings at a reduced scale to minimize distortions. The negatives were then assembled, enlarged, and printed at full scale. To facilitate the *photodécalcomanie* process, enlargements were then cut into 200 rectangles marked to correspond with 60 × 80 cm regions on the reproduced cave wall.

The *photodécalcomanie* process, perfected by KodakPathé especially for the Lascaux reproduction, consists of removing a photograph's gelatinous emulsion (the material containing the color image) from its paper base, then transferring the emulsion directly to another surface.

Technicians from Lahanier's teams first used an organic solvent to detach the photographic image from its support. Each rectangular gelatin image was then transferred in reverse onto decal paper. Both

Science and Art

The "Secrets of the Great Masterpieces: Science in the Service of Art" exhibition included over fifty examples of the scientific techniques currently used in the examination, analysis, and dating of works of art and archaeology.

One of the most useful and well-known methods of examining and authenticating pieces is **radiography**, or the use of **X-ray** cameras to reveal an object's hidden secrets.

An X-ray of a painting may disclose the existance of a completely different underlying sketch, modifications made by the artist, or touch ups added decades later.

If a painting has a wood support—as is the case for most works done before the seventeenth century—the X-ray film may reveal the extent of damages such as warping, shifting or wormholes in the wood. As for later paintings on canvas, the X-ray often reveals the weave, and thus the place of manufacture of the support.

Radiography has also been used to determine the exact location of cracks beneath the painted surfaces of vases, and to study the casting methods used in statues, and the internal structure of musical instruments.

Methods of dating

Microsampling is one of the simplest ways to examine pigment, in that it involves very little equipment and only a tiny sample of paint. The sample is prepared and studied under a microscope and traditional microchemical tests are performed to identify the elements of the pigment.

Nuclear dating techniques are by far the most sensitive and advanced, and they are constantly being perfected. **Neutron activation** is used to detect and measure trace elements found in a sample. The sample is bombarded with neutrons in a nuclear reactor. The now radioactive sample emits gamma rays which are registered as peaks on a graph. Gamma rays of different intensities can be traced to corresponding elements. The gamma-ray "fingerprint" reveals not only the identity, but also the concentrations of the elements present. Analysis and dating of the material is then based upon the levels of trace elements known to be present in that material at a given date.

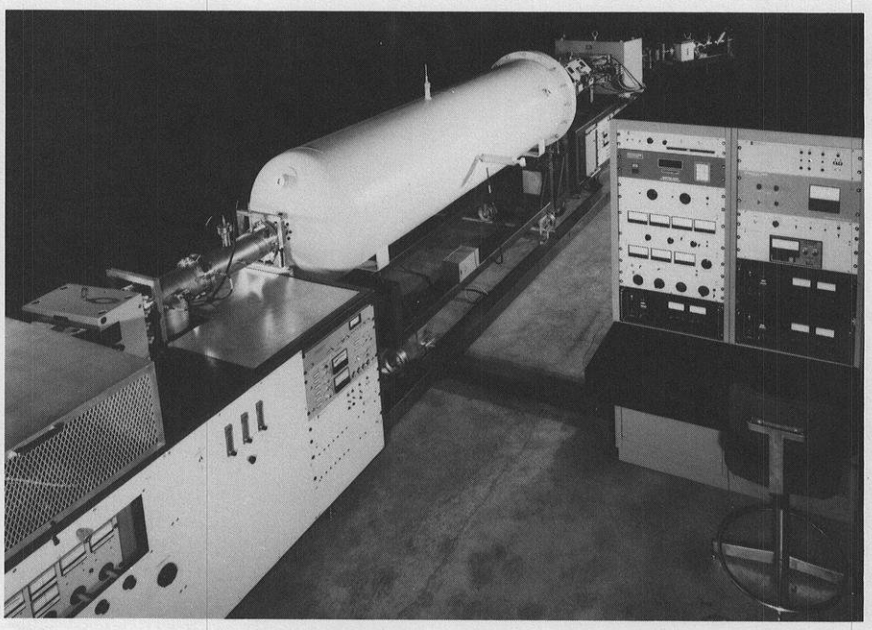
Carbon-14 dating, was developed in the United States after World War II by William Lisby. This method is primarily used for dating organic substances such as wood, textiles, shells, and bones. Every living thing, animal and vegetable, contains carbon originating from atmospheric carbon dioxide. In this carbon, along with stable isotopes C^{12} and C^{13}, is a very small quantity of C^{14}, a radioactive isotope produced in the upper atmosphere by the collision of cosmic particles with nitrogen atoms.

When an organism dies, the radioactivity of the C^{14} it contains diminishes at a rate of one half every 5568 years, the "half life" of this isotope. To determine the date of a once-living substance, scientists measure the residual radioactivity of a sample. Beyond 40,000 years, the radioactivity becomes too weak to be measured, but this method is applicable for dating objects between 2,000 and 30,000 years old with an accuracy of plus or minus 200 years.

Due to industrial and nuclear activity, the quantity of C^{14} in the biosphere has doubled since 1900. The carbon-14 method can thus be used to detect fake paintings fabricated in the twentieth century.

The main problem with C^{14} dating is that it requires a relatively large sample since the measurements must be carried out on one gram of pure carbon. A new technique now available should require only a tiny sample of the object being dated.

Lahanier visited the United States to arrange for this ion accelerator to be manufactured to French museum specifications. NEC of Middleton is one of only two firms in the United States which design and make these versatile accelerators.



This new method no longer involves counting disintegrations to determine the quantity of C^{14} lost. Instead, C^{12} and C^{13} atoms will be separated by ionization and acceleraton in a mass spectrometer, and the quantity of C^{14} remaining in the sample will be directly evaluated. This technique is faster; it permits dating back to 100,000 years; it is more accurate; and most important, it requires smaller samples. The NEC ion accelerator scheduled to be delivered to the Louvre in March 1987 represents the state-of-the-art in carbon-14 dating. The universities of Arizona, Toronto, Orsay (France), and Oxford (England) own NEC dedicated systems uses solely for carbon-14 dating, but the French purchase is the first specifically for use on art objects.

Thermoluminescence has been used for about fifteen years to determine the date of ceramics. It is one of the principal methods of dating objects with no organic vestiges, and it can date objects over 40,000–50,000 years old, the current limit of C^{14} dating.

Pottery and the soil in which it is buried contain low concentrations of natural radioactive materials such as uranium, thorium, and potassium. An annual dosage of cosmic radioactivity also contributes to the radioactivity of the piece.

Radiation ionizes atoms in minerals and some electrons become trapped in crystalline faults. When a sample is heated to 400–500° C, these electrons are freed from their traps, and this released energy is emitted as light, thus called thermoluminescence. The thermoluminescence obtained is proportional to the number of electrons trapped, and consequently to the total amount of radiation received since the last heating of the minerals at a high temperature, that is, since the baking of the piece: every heating eliminates the effect of radiations previously received. The age of a ceramic piece is calculated according to the amount of thermoluminescence it emits.

the exposed side of the gelatin sheet and the wall of the model cave were then coated with adhesive. Each gelatin sheet was then affixed to its designated area on the cave's wall. The decal paper was easily removed with wet sponges. The highly elastic gelatin image was then gently manipulated with supple brushes to insure complete adhesion to the cave's uneven walls.

The use of this process was especially challenging because of the model cave's large and irregular surface. But perhaps the most surprising quality of this process is that the gelatin conforms to the irregularities without suffering either spacial distortion or desaturation of color where the gelatin is stretched.

After some hand-blending and retouching, the only tasks remaining for Lahanier's teams were to achieve realistic climactic and sound effects in the fully assembled cave. The temperature was lowered to a chilly 14° C and a soundtrack was installed to evoke the dripping water and mysterious murmurings of a gallery beneath the earth. In its finished form, Lahanier believes the illusion of the Hall of Bulls replica is total.

After its premier at the Grand Palais, the Hall of Bulls replica traveled to three other exhibitions. The final location of the replica is destined to be the Museum of National Antiquities at Saint-Germain-en-Laye.

Lahanier believes that facsimiles will play a growing role in the presentation of the many otherwise inaccessible works of art that are a part of man's universal heritage. Accordingly, Lahanier predicts that the fruits of modern science and technology will be increasingly employed to meet the challenges posed by the replication of endangered art. Already the monumental reproduction of an Egyptian tomb, complete with frescoes, is underway. The completion of projects such as this and the Hall of Bulls replica should provide timeless evidence that the cave painter and the modern technician are sharers in an enduring human spirit. □

Confidential data storage on computers catapulted the search for prime numbers into the practical sphere.

Exploring the Primes

By R. Creighton Buck

The last ivory tower of the sciences has recently been invaded by reporters; research in mathematics has gathered headlines such as "Age-old problem solved," and accompanying paragraphs mention "primes," "factorization," and sometimes "public key cryptography" and "computer security." All this has been received by mathematicians with mixed feelings. We have become used to blank stares and sudden silences when we mention that we do research in mathematics, and this is not too surprising for, as a group, we have done little to convey the dynamic excitement and the explosion of discoveries that have marked mathematics in the twentieth century. Most laymen, and many scientists, regard the mathematician as a curator rather than a creator.

What *is* research in mathematics, and how does it differ from that of the traditional scientist who uses his skills and instruments to explore nature? One answer is easily given: we follow the same pattern but our "instruments" are often elaborate towers of logical reasoning called "theorems," and the "objects" we study are the abstract structures and concepts that mankind has developed over the centuries in the effort to organize knowledge and give meaning and predictability to the world that surrounds us. Many mathematicians study the topological and geometric properties of complex spaces, whose dimension can vary from three to infinite, while others explore the algebraic and analytic structure of groups of functions and mappings associated with these spaces; some, with interests remote from these, are working with the combinatorics of discrete structures or the intricate patterns of logical reasoning itself.

The "Jest of God," as it has been called, is that so often these discoveries have turned out to provide—sometimes years later—techniques and insights used by physicists in their study of stars and elementary particles, engineers in their development of jet planes, televisions, and computers, and biochemists in their work with DNA. In 1968, the distinguished physicist Eugene Wigner expressed this view most clearly in a famous article, "The unreasonable effectiveness of mathematics in the natural sciences," and an astronaut gave his personal thanks to the mathematician Isaac Newton "for inventing the calculus and the Law of Gravity three hundred years ago, without which we could not have landed on the moon!"

At this point, a concrete example is clearly needed. We take one that will eventually lead back to the headlines quoted in the opening paragraph and which, fortunately, does not depend on highly technical background or esoteric concepts.

The starting point is ancient Greece when philosophers were discovering some of the patterns of regularity and predictability that lay behind the apparent chaos of nature. In mathematics, this began with the so-called natural numbers 1, 2, 3, etc. Imagine the delight—and perhaps the sense of religious awe—of the first person who accidentally discovered the following pattern:

$$1^3+2^3 = 1+8 = 9 = (1+2)^2$$
$$1^3+2^3+3^3 = 1+8+27 = 36 = (1+2+3)^2$$
$$1^3+2^3+3^3+4^3 = 1+8+27+64 = 100 = (1+2+3+4)^2.$$

Undoubtedly, this unknown person must have experimented to see that the pattern continued, and then must have wondered why it was true, whether it really went on forever, and perhaps if it had some hidden significance. (The proof that the pattern does persist is now an easy exercise in high school algebra.)

Such random discoveries as this would have been a reason for examining the ordinary numbers for other properties. A crucial discovery was that not all numbers had the same characteristics. Consider the numbers 61, 71, 81, and 91. Two of these can be factored, that is, written as the product of numbers smaller than themselves: $81 = 9 \times 9$ and $91 = 7 \times 13$. The other two cannot. Numbers that cannot be factored are called "prime," and those that can are called "composite." The significance of this classification came with the discovery that the prime numbers turned out to be the basic building blocks from which all the other whole numbers grew; every whole number could be written as a product of prime numbers in essentially only one way. For example, $148{,}700{,}574 = 2 \times 3 \times 3 \times 11 \times 19 \times 29 \times 29 \times 47$. Figure 1 lists all the prime numbers less than 1,000:

Figure 1

2,	3,	5,	7,	11,	13,	17,	19,	23,	29,	31,	37,
41,	43,	47,	53,	59,	61,	67,	71,	73,	79,	83,	89,
97,	101,	103,	107,	109,	113,	127,	131,	137,	139,	149,	151,
157,	163,	167,	173,	179,	181,	191,	193,	197,	199,	211,	223,
227,	229,	233,	239,	241,	251,	257,	263,	269,	271,	277,	281,
283,	293,	307,	311,	313,	317,	331,	337,	347,	349,	353,	359,
367,	373,	379,	383,	389,	397,	401,	409,	419,	421,	431,	433,
439,	443,	449,	457,	461,	463,	467,	479,	487,	491,	499,	503,
509,	521,	523,	541,	547,	557,	563,	569,	571,	577,	587,	593,
599,	601,	607,	613,	617,	619,	631,	641,	643,	647,	653,	659,
661,	673,	677,	683,	691,	701,	709,	719,	727,	733,	739,	743,
751,	757,	761,	769,	773,	787,	797,	809,	811,	821,	823,	827,
829,	839,	853,	857,	859,	863,	877,	881,	883,	887,	907,	911,
919,	929,	937,	941,	947,	953,	967,	971,	977,	983,	991,	997

It is important to realize that these numbers have not been selected arbitrarily; the choice has been prescribed by the fundamental laws of arithmetic. Thus, the set of prime numbers, of which this table is only a tiny part, is an intrinsic part of nature and not something dependent upon human whim. In a sense the prime numbers are the arithmetic analogue of the chemical elements which are the basic building blocks that compose all the molecules of ordinary matter. If intelligent beings live on a planet of the star Arcturus, they will study the same chemical elements and the same prime numbers.

Since this early beginning, two thousand years ago, an important area of mathematical research has grown. It is called "the theory of numbers," and in the centuries since Euclid and his colleagues in Alexandria, many thousands of articles and books have appeared. Every scientific nation has its group of experts who work in this field; in one year alone, mathematical reviews will list as many as 2,000 new research articles in number theory and its applications.

Some of the questions studied can be explained in nontechnical terms. The oldest nontrivial discovery, perhaps made by Euclid himself, was that there is no largest prime number. (It is interesting that this is done, not by producing extremely large prime numbers, but merely by showing that if a friend of yours produced a prime number, you could show a procedure certain to lead to a prime that was even larger, even if it might take a hundred years for you to carry out the procedure!)

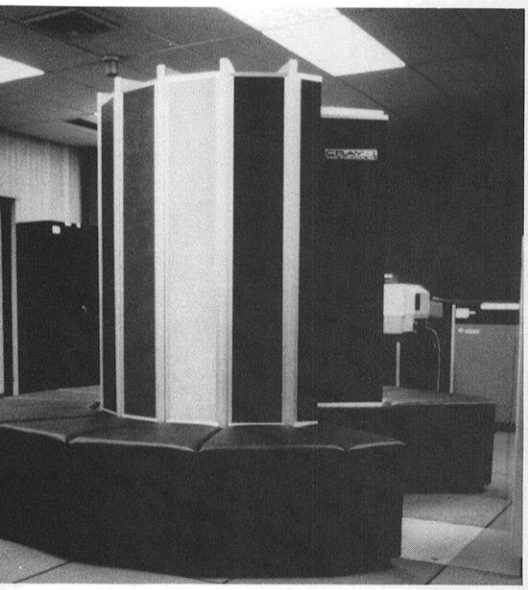
Since there is no largest prime, there must be infinitely many, and any effort to list all of them is futile. The next goal is to find some easy test that could be used to tell the prime numbers from the composite numbers. The sting in this is the word "easy." If N is relatively small, all one has to do is to divide N by each of the numbers larger than 1 and less than $\sqrt{N}$. If none of these divide N evenly, then N is prime. This process is easy enough to generate a short table of primes like that in Figure 1. However, if N is large, the naive method of division can take a long time. Even with modern technology a computer that can do a billion divisions each second could take more than 1,000 years to test a forty-digit number and know that it is prime. For this reason, much research in the last sixty years into the nature of prime numbers has been aimed at the discovery of short cuts which reduce the time needed to test a number to see if it is prime or composite.

Unfortunately, the mere appearance of a number, written in terms of our usual arabic numerals, reveals little about its special character. Thus, one of the numbers 9,999,941 and 9,999,943 is prime; which do you think it is? And the number 8,299,937 is composite, the product of two primes each larger than 1,000.

As we have suggested, it is only recently that this direction of mathematical research has become of interest outside the rather exclusive circle of mathematicians working in number theory. As computers grew in power and usefulness, the concern for confidentiality of data files and other records grew. Technicians in the field turned for protection to the use of special codes and cryptographic techniques. A decade ago people became aware of a widely held belief among number theorists and certain computer scientists that it is inherently much easier to discover two large numbers that are prime than it is to factor the number which is their product. (For example, it would be harder to factor the number 8,299,937 given above than it was for me to generate the two primes, 1669 and 4973 used to produce this number.) Based on this, it is easy to construct computer security methods and several have been proposed for general use—perhaps in banking and credit systems, health records, and other public files which should remain confidential.

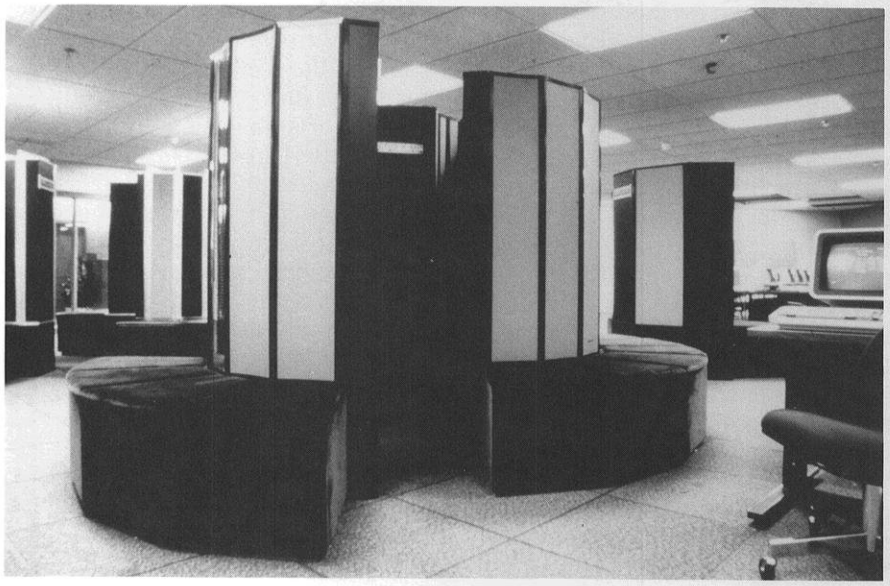
But, science has a habit of moving ahead. Motivated by the intellectual challenge, and also in part by the spotlight, people interested in number theory have been finding new routes by which primes can be identified, and new algorithms by which numbers can be factored. Because of the connections with cryptography and computer security, these efforts have caught the attention of the press. Thus, the *New York Times* publicized the fact that mathematicians at Sandia Laboratories had used a fast computer to factor a special test number of fifty-eight digits, and that two mathematicians in Holland had been able to show that another test number, this time with ninety-seven digits, was in fact a prime. But this is not the record for large primes. Since 1644, certain special numbers have been the targets for prime-hunters because of their simple law of formation. The pth Mersenne number

is 2^p-1 where p itself must be a prime; many of the Mersenne numbers themselves turn out to be prime. The largest known prime numbers belong to this family; one has almost 26,000 digits and another has almost 40,000 digits, and owe their discovery to the CRAY computer, and its inventor Seymour Cray of Chippewa Falls, Wisconsin. Indeed, the CRAY X-MP is the most powerful computer in the world, and it and its predecessor CRAY-1 were born in a building on his farm just outside the city.



CRAY-1, invented on a farm outside Chippewa Falls.

CRAY X-MP/24, the most powerful computer in the world.



For research mathematicians, the prime numbers hide many more secrets, and work on these continues. Many questions can be studied with pencil and paper, or with the help of a small personal computer. For example, one perplexing fact is the apparent irregularity of the primes. It has long been observed that their overall statistical behavior follows a simple law. A quick glance at the tables of primes, which now extend beyond ten million, shows that the primes become sparse as you go out. For example, there are 95 primes between 1 and 500 but only 73 between 500 and 1,000. If N is a large number, say 10,000 or more, the number of primes between 1 and N is about N divided by log(N). The proof that this is indeed true as N becomes larger and larger is one of the gems of mathematical research of the nineteenth century, requiring all of the techniques of complex function theory known at the time.

However, within short intervals, the primes are distributed much more randomly. For example, consider the way they cluster. Moving through the list given in Figure 1, one notices that there are occasional clusters of four primes, spanning an interval of length eight. The first cluster is (11, 13, 17, 19) and the next two are (101, 103, 107, 109) and (191, 193, 197, 199).

Note that these clusters are separated by gaps of the same length:
$101 - 19 = 82$
$191 - 109 = 82$
However, the next cluster of four primes occurs only after a gap of 622, when (821, 823, 827, 829) appears, and the next cluster after that is (1481, 1483, 1487, 1489) with a gap of length 652. The gaps between four-clusters seem to obey no obvious rule or pattern:
82, 82, 622, 652, 382, 202, 1162, 202, 5862, 3562, 2632, 82, 2302, . . .

A brief examination of the list of primes also shows that there seem to be many long gaps *between* successive primes. For example, none of the 33 numbers between 1328 and 1360 is prime. Indeed, it has been proved that there exist prime-free gaps in the integers that are as long as you desire; of course, many of these will be far beyond the extent of any existing table of prime numbers.

The search for the laws that describe the distribution of prime numbers goes on; these laws must exist since the primes do not arise from random or subjective choice but are governed by the implacable laws of arithmetic. Whether an understanding of further properties of the primes will prove useful in everyday life is uncertain, but past experience has shown that abstract mathematics seems to have its own time scale. Some discoveries have become relevant within a decade, while others have had to wait for centuries and others seem certain to wait even longer. Research in number theory now extends far beyond the nature of the prime numbers and the results of the last century and involves both algebraic and topological techniques. While it remains one of the most fascinating and challenging topics in mathematics, as well as one that uses tools from all branches of mathematics, it also has the advantage that the edges of its ocean can be visited and enjoyed by one whose background in mathematics stopped short in high school.□

New Directions in Technology Education

By James R. Johnson

My father was born in a small village in southern Ohio. He died this past spring, having lived through ninety-six remarkable years. One of his favorite gifts from the world of technology was a "music box," a small tape cassette player from which an "amazing amount of music" could emerge. In 1888, the blacksmith in his village forged iron shoes for horses, the source of local transportation. Fifty miles away in Cincinnati many factories running on belts and pulleys driven by steam engines or water power were about to be transformed by electric motors. Long-distance communication was being revolutionized by the telegraph and soon would be augmented by the telephone. My father watched helplessly as his mother died of measles.

And then, like the release of spores from fruiting mushrooms, the latent seeds of a new technological society were cast into the scene. What happened in those ninety-six years to make them so remarkable?

Understanding technology in our society

In a mere century the mechanization of work has hurdled us over factories filled with men and machines to nearly people-empty plants filled with computer-guided robots producing the goods. Voice and image are relayed via satellites for instant worldwide communication. The ancient scourges of small pox, plague, measles, and others have been virtually wiped out or can be treated with miracle medicines. In every corner of our lives we find changes that could not have been dreamed of a century ago.

What is the nature of this new technological society? Perhaps it has moved too fast to have a nature. Things become natural only after they have had time to be accommodated. For some, the miraculous advances are frightening. Alvin Toffler speaks for them: "Stop the world, I want to get off!" For others, living in the third- and fourth-world nations and unable to share the benefits of technology, these advances are a source of bitterness.

But most of us who can choose to enjoy all the privileges born of technology. We want to know better the nature of our technological society so that we might enhance the benefits over the burdens. We welcome more than we fear science, the progenitor, and look forward to what it may have in store for us. We are confident that we'll find ways of accommodating the problems that inevitably accompany the new gadgets. And yet, in spite of our optimism, we worry about our technological society. We wonder at times with H. J. Muller what technology is "doing to us rather than for us."

There have been endless arguments over definitions of technology. Most of the definers are in the small percent of our society who are themselves technologists. To the average person technology is a black box. With wheels on it it can be driven to work or to the supermarket. With hinges and some insulation it is a door to the refrigerator. With a bit of rounding of the edges of the box, a nose cone up front and rocket motor in back, it threatens nuclear winter.

Technology educators know what is in the box and understand how to make it work, how to fix it, and how to design a better box. They know the technical side of technology. Many are aware of what technology provides for society and share the general concern over its proper use. Anna Harrison recently defined technology as the process that produces our goods and services, from concept to production and delivery. Its companions, science and engineering, likewise were defined as processes, each with an interactive role working toward good societal ends. Loren Eiseley, with concern for the dark side of man, wrote, "The violence in a raindrop is equalled, if not surpassed, by the violence in a microscopic genetic particle. The one, multiplied, carries away a mountain range. The other crosses an ice age and produces on its far side, a man-ape whose (technology) now endangers his own civilization."

The public is aware of the enormous benefits of technology, even though more often than not it takes them for granted. Concerned citizens sense concomitant burdens or problems along with those benefits but too often are stymied over solutions to those problems. Technologists understand the technical nature of our technology, but have barely comprehended its future societal implications even having studied carefully the history of the past century. It has all come too fast and without precedence.

But not only must we understand it, we also must energize it, use it, cope with it. As the gifts of technology become more pervasive and its concomitant problems more critical, there is compelling need for broader understanding. Technologists must give more thought to the uses of technology and their impact on society. Nontechnologists must no longer regard technology as something that works magic for or against them. Much has been said of technical literacy, usually meaning that nontechnologists must learn some technics. But this is not enough. Modern technology and its societal meanings require a holistic integrated understanding that permeates all segments of our society. This is, for education, a goal whose time has come. This is particularly a challenge for technology educators in Wisconsin.

American technology

Americans have a particular problem in perceiving the implications of technology. The birth of the United States in the last quarter of the eighteenth century coincided roughly with the dawn of the technological age, and America and modern technology grew up together. Virtually every other country in the world inherited social structures and production systems from an earlier period that partially lived on through the nineteenth century. Remnants of this heritage exist today, providing reminders of the difference between the age of technology and its predecessors. With few exceptions the United States has no vestige of a landed aristocracy, of a guild-based labor organization, or a production system powered by animate energy sources.

In addition to the fact that America was not encumbered by feudalism, its adjustment to a maturing industrial age was made easier by the unique ratios of factors of production in contrast to those in other parts of the world. America was rich in land and resources. When international borrowing was taken into consideration, it was relatively rich in capital. Labor was the scarcest factor of production. Thus historically the mechanization of production and the massive introduction of labor-saving equipment never posed the kind of threats to jobs and security as it did in Europe. While there were some painful dislocations, there was no American folk hero equivalent to Ned Ludd. Many Americans have not even heard of the Luddite movement to destroy labor-saving mechines.

Today America faces a new problem in the latest stage of the industrial age based upon revolutions in communication, information processing, and newly emerging fields such as biotechnology. This problem is far more difficult than that faced by America in earlier stages. Our resource base is shrinking (witness our petroleum import bill); our open lands have disappeared; our massive import of capital has a very different consequence than it did in the nineteenth century.

Information age

One of the more obvious technical revolutions in which all of us are involved is the explosive growth of the "information age." A decade ago, word processing was about to change forever the business office. But it has leaped far beyond, even into the home where microcomputers have become commonplace. Tentative efforts to investigate artificial intelligence are becoming respectable pursuits, and we may not be far from the next leap forward, "idea processing." Already the expert decision-making systems are used in medical diagnostics or for oil exploration. Pattern analysis for weather and military applications are also in early practice. The leverage of the computer as used in practice and thought is awesome. Computer-integrated manufacturing is already in place in some industries, and its effects on our society are only now being perceived. Computer-assisted education, however, is being developed more cautiously. Perhaps there is irony in the greater conservatism among educators, but surely within a generation the sum of technologies of the

"information age" will have permeated industry, banking, business, education, and home life in ways still unimagined. Because of this, the information age may be the most appropriate descriptor of the nature of our immediate future technological society. And yet, the information age is still having difficulty establishing the fundamental human-machine interface. The mischief in the human brain is fully transportable to the machines. Invasion of privacy, pilferage of proprietary information, replacement of human craft jobs with microprocessor-controlled robots, and possibly just plain weariness in the "noise" of too much information are a few examples. Psychologists now are worried that some people are becoming too attached to their computers. A recent study at UW-Stout showed that about 30 percent of the computer programmers questioned would rather be with their computers than other human beings!

Computers in education

Educators are exploring computer use. Obviously, some uses serve the mechanics of education—word processing to write materials, record-keeping, grading. The next step is simulation of laboratory experiments, perhaps combining video media with the computer. How often we would like to run experiments that require equipment we can't afford, say the observation of crystal growth at the atomic scale in a million dollar electron microscope, or experiments that may be too dangerous, say the capping and detonation of explosives. But the greatest importance, I believe, is in teaching concepts. Here the teacher uses the computer as an assistant. Three-dimensional drawings come to life as they are rotated on the viewing screen, and one can just feel the "aha!" in the student as understanding finally occurs in the brain!

Mechanization

Along with the information age has come a recent revolution in work. The mechanization of work has evolved for a long time. Machines are not an invention of the modern world. Intricate mechanical devices were known in antiquity. The mammoth doors of the fabled library at Alexandria could be opened and closed by steam power. Intricate time-keeping devices were used, and, of course, the "engines of war" facilitated conquest. But until the modern period, little was done to relieve humankind from its burden of using its muscles and those of domesticated animals to operate production and commerce. One of the unique features of the industrial revolution was that the machines developed at that time began in a significant way to mechanize work and provide inanimate energy to power production.

We are now in a period in which the mental work of mankind is beginning to be performed by machines. The dramatic reduction of the work force engaged in agriculture is repeating itself in manufacturing. The production jobs in society are declining; service and information jobs are dramatically increasing.

Virtually every week the daily newspapers carry a story about how newly acquired robot technology has decreased the need for manpower. The following quote from the *Minneapolis Star and Tribune* (15 October, 1984) is a good example:

> At the General Electric Co.'s locomotive plant in Erie, PA, it took 70 men 16 days until recently to build the 2,500 pound frame for the giant traction motors that power a railroad engine.
>
> But two years ago, in the depths of the recession, GE decided to pump $316 million into the 70 year old plant to buy new equipment. Now, with the individually programmable robots operating along the assembly lines, five men, not 70, can turn out a traction motor in 16 hours, not 16 days!

Increased productivity is one side of the coin; the reduction of jobs is the other. During the next quarter of a century we are likely to see jobs in manufacturing disappearing like jobs in agriculture disappeared from the end of the nineteenth century until almost the present time.

Integrating the computer into all phases of manufacturing is expected to make a profound change in the workplace. Information processing will be involved in design of products and processes, planning and analysis, process control, quality control, and plant maintenance. Computer-guided processing of materials will include robotics, materials handling, and manufacturing.

Robots can now replace human labor in semiskilled operations, primarily doing routine (and boring or mundane) work. They are part of the on-going mechanization of work, but are more threatening to labor because they are human substitutes, rather than assistants to humans. Sensory devices ("vision," "touch") have already been coupled to robots, and this will increase their level of performance still more. The integration of robots into manufacturing systems will change the workplace and the economics of production.

These two examples serve to illustrate something of the nature of technology in our society. It is at once explosive, unpredictable, remarkably beneficent, and laden with social and technical problems. It forces us to accommodate to its vagaries and to be flexible, if we are to share its bounty.

Although the new technology may be too new on the human scene to be fully understood, it is the responsibility of education, beginning in the K-12 programs, to acquaint all members of our society with some measure of its technics, including hands-on practice. And of equal importance, education must deal with the social and political consequences of technology both as history and future. Technology education in this holistic sense has an unprecedented challenge!

Computers and Social Knowledge:

Opportunities and Opportunity Cost

By Michael Hartoonian

The computer presents educators with two powerful conceptions. One is expressed in Pogo's observation that ". . . we always seem to be confronted with insurmountable opportunity." The other is presented best in T. S. Eliot's poem, "The Rock."

Where is the knowledge we have lost in
information?
Where is the wisdom we have lost in knowledge?

Opportunity becomes insurmountable to the degree that we are unprepared or unwilling to make enlightened choices among alternatives. However, when those alternatives appear as confused conceptions of knowledge or as disoriented epistemologies, then pedagogically we proceed at great risk. An important context in which to consider this risk is provided by Eliot's delineation of information, knowledge, and wisdom.

Notions of information, knowledge, and wisdom differ significantly. Information is one-dimensional. It is linear or horizontal, fragmented, and quite useless in and of itself. Knowledge is structured information that shows relationships between and among bits of information. Knowledge is best represented by theories about natural and social phenomena; it is created basically within content areas, and it tends to be field specific. Wisdom is the organic application of information and knowledge to human dilemmas, desires, and dreams. Wisdom is that quality of thought and imagination that ties us to our cultural heritage and gives us the ability to find and build the moral framework upon which human life is defined and within which meaning resides. The patterns of life, constructed upon this framework, are manifested in the motive concepts of our culture—concepts such as justice, love, courage, and beauty.

That information, knowledge, and wisdom are different ways of knowing is a fact that has direct implications for educators. First of all, it is critical to have students involved with all three levels of thinking and knowing, so that information can be tempered with wisdom as well as with knowledge. This is particularly important today, since we have reached a point in history when the computer can actually perform the human function of organizing and passing on information. Second, we should understand that wisdom is more important than knowledge and knowledge more important than information. While all three are needed to keep any society healthy, the areas of

knowing most needed and most useful are knowledge and wisdom. Information, particularly in an information age such as ours, is by definition everywhere abundant. Knowledge and wisdom, on the other hand, are not only scarce, but seem to be fading from importance. Yet, the latter two ways of knowing are necessary if information is to be used in helping to make the human condition better. This is the central issue, the central function in our relationship with technology. However, in our educational programs we tend to place most emphasis and to spend most of our resource on information. Why is this the case? Perhaps, because teaching information is easier than teaching knowledge and wisdom. Information is easier to test and to write textbooks for, and it is getting more than its fair share of new computer software. On the other side of the argument, we know that the teaching of knowledge and wisdom calls for school programs that are coordinated, for teachers and administrators who behave as members of a community of scholars, and for an understanding of the computer (technology) that can enhance knowledge acquisition and social judgment.

When decisions are made about computer utilization and the curriculum, a conscious choice should be made regarding time allocations for information, knowledge, and wisdom. That is, the time devoted to information varies inversely with time spent on knowledge or wisdom. We must understand this tradeoff first, regardless of the content area under consideration.

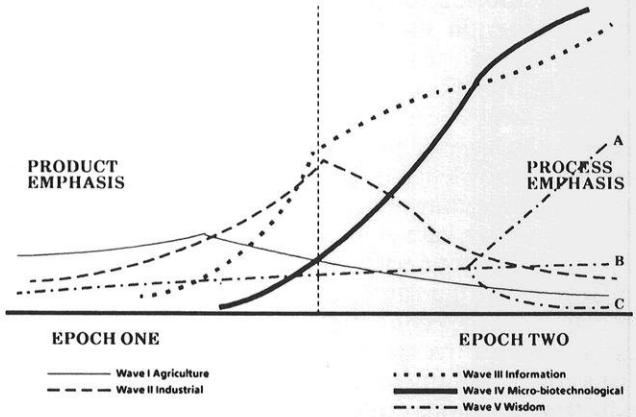
If we consider Pogo's conception of opportunity, then we must know that the cost of the computer is not only its purchase price and operational expenses, but also the "cost" of the time, books, and opportunities it replaces. At one level, this tradeoff can simply mean a new and better way of having students confront information and, to some extent, knowledge. But we need to make different kinds of choices about computer use, for, like it or not, computers will continue to affect the way we live, the way we learn, and the way we teach. For example, our telecommunications networks are already converted into computer-based systems of incredible sophistication. This development should have some positive impact on education as it facilitates access to the larger world community. Computer usage will also lead to the development of hybrid subject matter, such as social mathematics (the statistical study of social phenomena), and techno-ethics (the study of the ethical implications of technology). Thus, the opportunity cost of the computer includes our willingness to put aside some traditional subject matter, some established classroom methods, and some of our romantic attachments to information. Our conception and handling of information will determine whether we continue to use computers as electronic workbooks or as vehicles that can help us explore the domains of knowledge and wisdom. The movement toward knowledge and wisdom is, in a sense, insurmountable, because it constitutes an evolution beyond the "third wave," the phase of history in which we are now living, so vividly described by Alvin Toffler in his book by the same name.

In his delineation of historical stages Toffler labels the first wave as the agricultural age, the second as the industrial age, and the third wave as the information/electronic age. A significant difference exists between the first two waves and the third wave; a difference having to do with conceptions of product and process. The first and second ages were product revolutions while the information age is a process revolution. The notions of product and process differ in their conceptualization of economic capital. Information and knowledge have become the capital of today. Knowledge has always been related to power; now it has also become the very center of our economy, the critical resource. Knowledge is not, of course, a physical and finite resource, but an abstract and infinite one. We must, however, develop a way to use or interject knowledge into our economic, political, and social systems in much the same ways that fossil fuel was interjected into the economies of the late nineteenth century and first three-quarters of the twentieth century. Just as our economy became energy-intensive with the industrial age, today it is becoming knowledge- and information-intensive. Thus, the emergence of information as a major form of energy is finally becoming recognized. It is the first energy form which, metaphorically, stands outside the second law of thermodynamics. That is, it is not "running-down," nor is it generating heat and friction; it can also be stored with minimal losses almost indefinitely. Economically speaking, we are seeing a shift from products built with high temperatures, high pressures, and high power to processes built with "low entropy" with little disorder to the earth's energy systems. An illustration of this shift is the reduction in the size of computers because of the replacement of vacuum tubes by the microchip. What once took a three-story building to contain can now fit into the space the size of one's fingernail.

This emphasis upon low entropy, on information, and on process, then, represents a break in the history of cultural evolution. The first two waves described by Toffler can actually be seen as parts of the same evolutionary theme, that of product and high entropy. But the third wave presents a new evolutionary theme—that of information, process, and low entropy. Building upon the base formed by agriculture and industry, we are beginning a new period in the life of the human species.

We are beginning a second evolutionary epoch. Epoch two, which includes Toffler's third wave, will also bring technological and institutional revolutions and will produce a rapid, erratic, and geometric growth of information. In a sense, we are moving into the third wave at such a high rate of speed that the fundamental

nature of reality is changing. This new reality is based upon different conceptions of time, information, and systems that will carry us beyond the third wave and into a fourth and even a fifth wave. The following chart presents an image of five waves and their relative importance (one to another) through time. Note especially the way in which the five waves move across epoch one and epoch two. All five waves are represented in both epochs, but wave five is still beyond our abilities of prediction.



Thus, while the information wave is still quite young, beginning after World War II, we are already moving into a fourth wave which we might call the micro-biotechnological age. A micro-biotechnological age has at its base the powerful combination of the computer and the explosion of knowledge. This will allow the focused power of information to blast through new research and development frontiers. This revolution seems to have in store for us a whole array of "super-stuff." From microbes that can clean up oil spills in the ocean to artificial life and artificial intelligence, we are seeing the science lab alter our realities; with these altered realities, ethical dilemmas are springing up like weeds in the human vineyard. This "fourth wave" is driven by knowledge as applied to natural and social phenomena and is aligned with the more traditional notions of subject matter or discipline study.

It is within this fourth wave that computers will have to be turned more toward specific subject matter such as biology, economics, and literature and will have to give up a great deal of their former task as "organizers of information." To be sure, there are estimates that within the next ten years information will increase 100 percent every twenty-four months. But, this information load will still be manageable as computer capacities increase. The educator's task today is to help students pay less attention to information per se and more attention to the training of their minds, so they can function within subject fields and across disciplines. In other words, students will need to spend time with computers within subject areas so that they can learn the logic or syntax of those epistemologies. This practice is at the base of developing intellectual skills.

Because of the progress and problems generated by information and knowledge, we must find the logical and ethical means both to create and to move beyond the fourth wave and toward artery 'A' of the fifth wave (see chart above). This fifth wave will represent the mature stage of epoch two, and, if we take route A as opposed to B or C, this wave will be known as the age of wisdom and judgment. If we fail to reach this domain, then we will fail to survive as a species.

Again, we will have a better chance to approach the mature stage of epoch two if we pay careful attention to the concept of "opportunity." First, we need to make more equal the opportunity for computer usage relative to class, race, and sex. This seems not to be the case today. In studies done at the University of Minnesota, Ronald E. Anderson found that computer utilization is skewed toward those school districts and children who come from the higher socio-economic levels. Further, girls and women are underrepresented in their utilization of computers as are children from minority groups.

Second, we need to be more fair in our use of computers across discipline lines. Academic areas other than mathematics need an opportunity to participate. Specifically, social studies, language arts, and science must become "more equal" (to mathematics) in time utilization. Further, the computer must be at home within the humanities so that it can help in our journey toward route A of the fifth wave.

Finally, we must move pedagogically and philosophically toward wisdom by allowing the computer to help educators teach more knowledge (i.e., subject or discipline study) in our school programs. This trade-off will afford the time for judgment, truth, and celebration. With this time we can better search for rational unity. That is, we can try to explain life and its meaning. It is this search that can lead us to the fifth wave (the age of wisdom). And, if we can engage the computer properly in this work, we may be able not only to search, but actually to come to know the essense of our human nature and spirit.

We have an opportunity today to express our responsibility in helping students search for wisdom. And, while the computer can help in this expression, only the human mind has at its calling the ability either to enhance or to reduce the power of ignorance and evil. In the end, the education of most social worth is basically that which provides the wisdom that can best destroy those areas of ignorance most dangerous to human life and spirit. The computer can be a significant ally in this endeavor if, and only if, *we use it* to move society and ourselves beyond the information age and toward the age of wisdom. □

Renée B. Lang: A Woman of Letters

By Faith B. Miracle

Photos from Lang collection

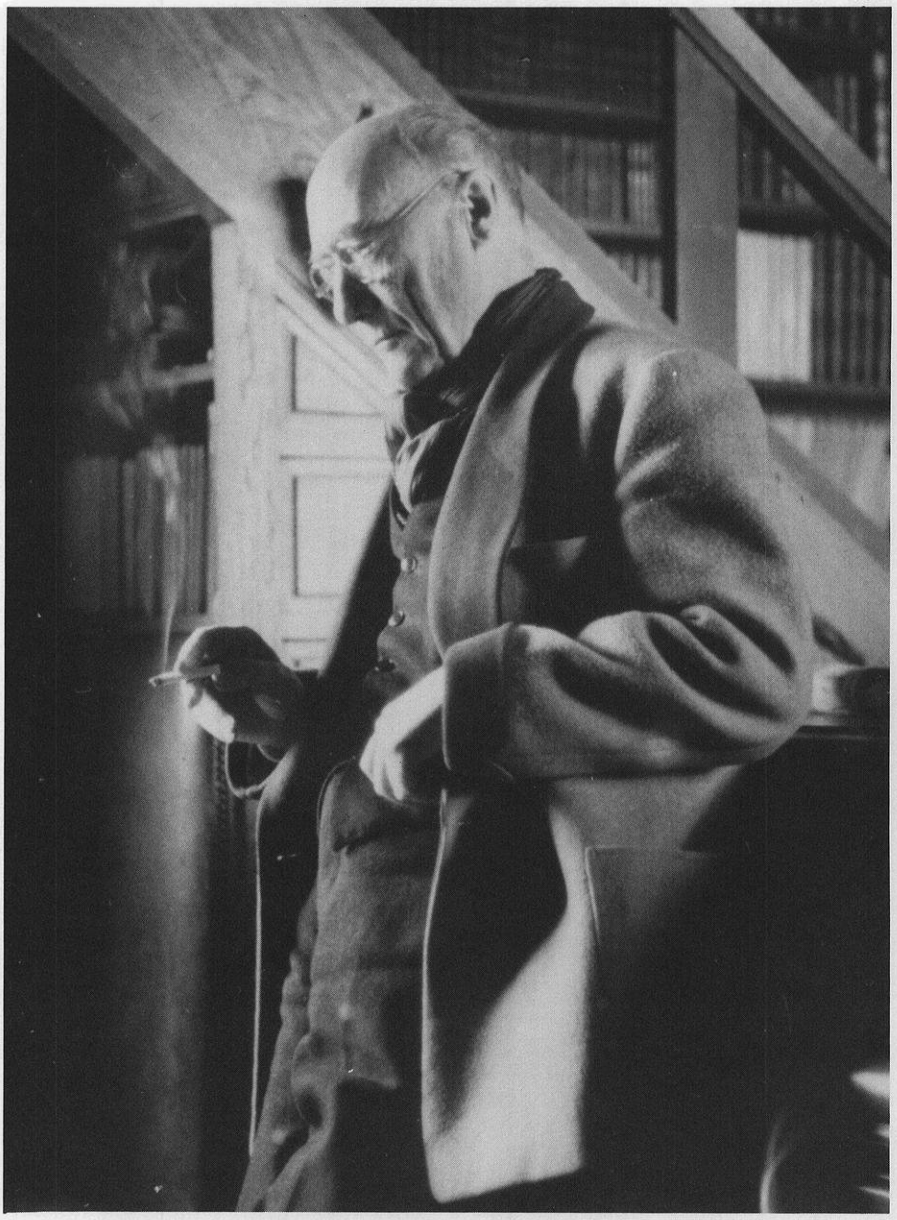
When Renée Lang was a student at Columbia University, where she earned her American Ph.D. in 1946, she attended a seminar taught by the French scholar Paul Hazar, cofounder of the comparative literature discipline. At the close of the seminar, he gave her his main work published in two volumes, inscribed: "To Renée Lang, who has agreed to be my student, but who one day will count among the masters." Today Lang is recognized both in America and Europe as an outstanding teacher, writer, and Gide scholar. She thinks, lectures, and publishes in four languages and has received support for research from such sources as the American Council of Learned Societies, the Bollinger Foundation, and the American Philosophical Society.

In 1962, after a lengthy search, Marquette University chose Lang to be the first occupant of its newly established women's chair of humanistic studies, and she came to Milwaukee from Wellesley College.

Lang received her European education from the universities of Geneva, Berlin, Rome, and Cambridge. But her education really began in her childhood home in Switzerland where she encountered such personalities as Freud and Einstein. "I grew up in an intellectual hothouse atmosphere where the practical aspects of life were neglected. That made my American apprenticeship quite difficult for me." French, German, and Italian were spoken in her home. She believes Russian was her first language, as her nurse spoke only Russian. She never actually "learned" languages, but rather "grew up with them." She also acquired a "fair knowledge" of Portugese, Spanish, and, of course, Latin.

She entered literature as a young child through poetry. The first poems she loved and read were by Heinrich Heine and Rainer Maria Rilke. "All young people who knew German read Rilke, especially the *Cornet.* But the Rilke I read as a child was not the Rilke I discovered later, particularly with regard to his personal and poetic rapport with France."

When she was fourteen years old, during a visit to a Geneva book store, she found *The Immoralist* by André Gide, and she made her first major intellectual commitment to an author. "Why do you read hundreds of books, yet only one touches you? It's because in that book you find answers to questions you have not yet dared ask your-



André Gide, Nobel prize-winning French novelist, essayist, and critic whose philosophy guided three generations of readers in France. His book *Fruit of the Earth* was a bible to many French followers.

self." Years later, Gide chanced to sit beside her in a Berlin theater, and after the performance they walked together and talked in a cafe. Though their paths would not cross again for some time, Lang recalls that evening as "one of the greatest" of her life.

Music was important to her as a child, and she studied piano with José Iturbi. During a brief period of rebellion when she was eighteen, she went to Dresden-Hellerau in pursuit of music and dance. Love of literature brought her back to her other academic studies, but music has remained "a great love and need."

As a student in Berlin, she witnessed the early manifestations of the Hitler regime. After the death of her young Czechoslovakian husband, her parents sent her to the Italian Riviera to restore her health and spirit. She was bored there, in spite of the beauty, and finally "escaped" to Rome. She "fell completely in love" with that city and never would have left if circumstances—the war—hadn't forced her away.

She was urged to begin publishing soon after she came to the United States in 1940. One of her early monographs was on Nietzsche's early influence on Gide. Gide publicly denied having read Nietzsche before writing *The Immoralist*; Lang found evidence that he had. Gide wrote to her, "You say with rare tact and the most acute spirit that I am a liar!" The dispute was widely publicized in France and Germany, and when Gide finally surrendered to Lang's arguments, it was considered "a real victory from the standpoint of literary criticism."

This was the beginning of a correspondence between Lang and Gide. She once asked him for advice, and he counseled her to find happiness ". . . through a joyous and full acceptance of your destiny, with all its duties, obligations, and even renouncements, and convince yourself that . . . you have chosen for the best. I clasp your hand. Very affectionately, André Gide." Gide received the Nobel prize for literature in 1947. In his last letter to Lang, written in 1949, he said he was "extremely tired, reading only Virgil." He died in 1951.

Gide guided Lang in many ways. He had a "wonderful curiosity" and encouraged that spirit in her. "Gide had liberated me, but I found I had to liberate myself from him. I saturated myself in Gide to get rid of his influence." In 1949 her first book on Gide was published in France, and the critics compared her to the great German scholar of French literature, E. R. Curtius.

While working on the Gide book, she discovered that years earlier there had been a period when Gide and Rilke had corresponded. She began a new stage of detective work to complete the pieces of correspondence and also to find the facts and circumstances which nurtured

Rare photograph showing Rainer Maria Rilke smiling (left), was taken in September, 1926 in southern France during his last meeting with Paul Valéry (right). Rilke died of leukemia three months later.

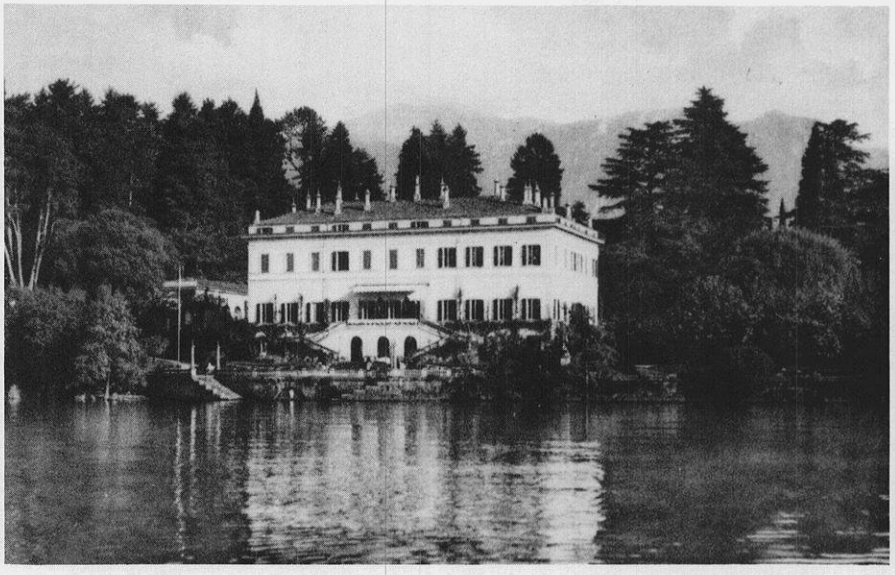
it. "So Gide led me back to Rilke, whom I had not read since childhood."

The poetic power of Rilke's writing affected Lang during this period (though she is not particularly interested now in his poetry.) She especially loved his hermetic poems, the sonnets and elegies, which he wrote towards the end of his life. She considers her long essay on the Gide-Rilke relationship, published in France in 1952, to be one of the best things she has written. The letters appear with commentary and biographical explanations. German, Argentine, and Japanese editions appeared almost immediately; an American version was rejected by Lang because of incompetent translation.

Lang's research brought her in touch with almost every living person she could find who had known Rilke, including most of the women in his life. She found two previously unknown letters which revealed Rilke's political naiveté and caused a scandal when published. In the letters, which he had written to his friend Duchess Gallarati-Scotti of Milan, he had defended fascism and Mussolini. The duchess politely refuted his statements, suggesting to Rilke that perhaps he was not well enough informed to understand fascism. The letters were included in Lang's *Lettres Milanaises*, published in France in 1954. Rilke's admirers felt Lang should not have published them; his detractors were pleased, and the Nazis "were triumphant!" Lang dismissed the criticism, stating simply, "Truth is truth." She felt the letters helped explain the importance of Italy in his life.

A deep friendship developed between Lang and the Gallarati-Scottis, and for a time she lived at their country home, Villa Melzi, on Lake

The country home of the Gallarati-Scotti family on Lake Como in Italy contains rare art. The duchess refuted Rainer Maria Rilke's naive defense of fascism.



Como in Italy. "They were wonderful, courageous people who risked their lives to speak out against fascism."

While at Wellesley, Lang mounted an exhibit documenting Rilke's relationship to France, and in 1952 she participated in the Rilke exhibit in Paris marking the twenty-fifth anniversary of his death.

Lang knew that Gide and Paul Valéry had been close friends. They had regularly corresponded for more than fifty years, ceasing only when Valéry died in 1942. During her research she discovered Rilke's unrequited adoration of Valéry. "I was alone, I was waiting, my whole heart was waiting. One day I read Valéry. I knew then my waiting was over," Rilke told a friend. Thus it was both Gide and Rilke who led her to Valéry.

She was fascinated by the rigors of Valéry's thought and prose. Though he is perhaps best known for such poems as *Graveyard by the Sea*, he did not want to be called a poet. He had contempt for vagueness, dreams, and emotions, and he differed from Rilke, who believed his own poetry was a divine gift. "Valéry felt if you could transfer a poem into prose, it was a sign that it wasn't a poem. His prose is dominated by the sharpest, most merciless thinking. On the contrary, he did what he wanted with poetry to prove he could apply his theory and write beautiful poetry. He did admit, however, that sometimes certain phrases are given you by something which is not rational. But he would never have explained it as a 'divine gift' as Rilke did." Valéry didn't believe in an understanding between the French and German spirit, and he never returned Rilke's veneration. *Rilke, Gide et Valéry* was published in France in 1953. Lang greatly expanded the Italian edition which was published in 1960.

In 1955, the tenth anniversary of Valéry's death, Lang wrote a major article on him for a special issue of a French magazine. She went to Séte, the city "by the sea" in southern France where Valéry was born and buried. "It's amazing what literary pilgrimages do to clarify a writer's inner landscape. Valéry's impressions of the sea appear in all his work." In 1971 *Books Abroad*, an international literary quarterly sponsored by the University of Oklahoma, devoted an issue to Valéry to mark the centennial of his birth and placed Lang in charge of the project.

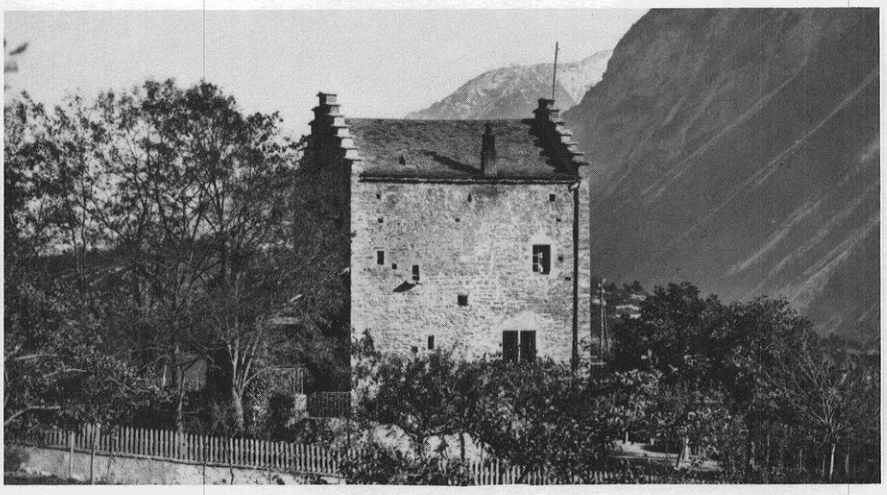
Lang has a rich collection of literary treasures. Many of the books in her personal library are inscribed, and some are rare, privately published editions. There are manuscripts of two of Rilke's French poems with a cover done by Valéry. (The poems had been sent to Valéry by Rilke in 1924. Madame Valéry gave her much personal material.) There is a four-page,

Renée B. Lang was lecturer on nineteenth and twentieth century French and German literature in the French department and associate director of the French House while at Columbia University, 1940–1944. She went to Wells College in 1944, where she was assistant professor and then associate professor. (She returned to Wells later as scholar-in-residence.) After spending six years in Europe, she returned to the United States in 1957 as professor in Tulane University's French department, teaching comparative literature. She spent the years 1959–1961 in Europe,and came to Wellesley College as professor in the French department in 1961. She joined Marquette University's French department in 1962 and established a comparative literature department there.

She has been visiting professor of comparative literature at Northwestern University in the classics department and the University of Wisconsin-Madison, which was one of the first universities in the country to have a separate comparative literature department. Following an early retirement from Marquette in 1969, she returned to teach a long series of varied subjects in Marquette's continuing education department and accepted offers to be visiting professor at the universities of Minnesota and Maryland.

Multiple lecture sites in the United States and Europe include Harvard University and the Sorbonne. She has done research at Columbia and Princeton universities and the University of Wisconsin-Madison as well as the national libraries of France, and the Schiller Museum in Marbach, which holds the German Archives of Modern Literature.

She has published five books, mainly literary criticism:
André Gide et la pensée allemande, Paris. LUF, 1949; Plon, 1955.
A. Gide und der deutsche Geist. Stuttgart: Deutsche Verlagsanstalt, 1953.
Rainer Maria Rilke et André Gide. Paris: Correa, 1952; German version revised, Wiesbaden, Insel-Verlag, 1957, also Argentine and Japanese editions.
Lettres Milanaises (R. M. Rilke). Paris: Plon, 1954.
She has published over one hundred articles and reviews, contributing to such journals as *Preuves, Neue Zurchner Zeitung, De Tat, Books Abroad* (now called *World Literature Today), Romantic Review, Yale French Studies, Comparative Literature*, and many others.



Muzot, the small 13-century castle in Switzerland where Rainer Maria Rilke spent the last years of his life in solitude.

handwritten report by Gide on the Paris sequestration and auction of Rilke's possessions in 1915. There is a small book which was privately published and given to Lang by Herman Hesse. There are more items than can be mentioned in one article.

Much of her research remains in boxes, partially finished. Some work has been abandoned, including a project on Thomas Mann's son Klaus, which was to have been part of a ten-volume biography. (Klaus, whom Lang knew, committed suicide in 1945.) She has lectured extensively on the Mann family, including Heinrich, whom she esteems as having been not only a fine writer but a great, militant antifascist who took a stand against the Nazis before his more famous brother Thomas did. She considers Thomas Mann, however, to be the most accomplished and complex German writer, "Kafka aside."

Lang has also written and lectured on French writer-artist Jean Cocteau, whose admittance to the conservative French Academy was considered a breakthrough. (Contemporary French writer Marguerite Yourcenar has since become the first woman to be admitted.)

Now retired, Lang works at a desk in her book-filled living room on Milwaukee's east side. She tries to follow all good contemporary literature. Günter Grass and Heinrich Böll are among the German writers she reads, and she appreciates the revival of literature and art in Germany during the last ten years. She remains an active force in Les Causeries du Samedi, a Milwaukee organization, which she helped found, devoted to the study of French culture.

In 1982, because of her reputation in the field of comparative literature, the Renée Lang chair of humanistic studies at Hebrew University was established in Jerusalem. The journey there for the inauguration of the chair was an especially happy time for her. She was drawn to the land and the people when she first traveled there approximately fourteen years ago and was moved by the high level of motivation among the students. Lang, who has a "deep faith in the humanities," found a strong inclination toward the humanities in Israel.

Commenting on American students, she finds that a majority do not seek a way of life or thought in books, but rather they seem to be strongly influenced by today's music. She has, however, experienced "again and again" that American students who appeared to be only mildly interested when talking about literature "awakened and were almost breathless when existentialism was discussed." Many of her former students have become excellent professors and writers. "I love to share the enrichment language and literature have given me. I love to watch a young person grow in understanding. It's like a continuation of myself."

While she is not a radical feminist, she follows feminist conferences and enjoys speaking to feminist groups. She is now working on a book about Natalie Clifford Barney, the "Amazon of Letters," daughter of a wealthy Cincinnati family who gained notoriety for her unconventional life in Paris (1951–1957), and she regularly attended Barney's salon litteraire (the "famous Fridays"). They continued to correspond during the last years of Barney's life. Barney gave Lang copies of all books she had written, (essays, aphorisms, criticisms, memoirs); many are inscribed, extremely rare editions. Letters from Barney to Lang number more than one hundred. Ironically, Lang will have to go to France to research her letters to Barney. They are all "numbered, annotated, and under plastic" in the Bibliothèque Litteraire Jacques Doucet at the University of Paris. (Studio House, the Washington, D.C., home of Barney's artist mother, Alice Pike Barney is now part of the Smithsonian Institution.)

Renée Lang grew up during the years between two world wars, in many languages and places. Her stability and roots, however, are not found in places, but in her love of literature.□

Poems by R. S. Chapman

At Forty

for Tom

We're cutting down,
You and I,
On drink, caffeine,
And wouldn't think
Of cigarettes,
Daily eggs,
Or a second serving
Of grilled red meat.

We've added fiber
To the diet,
Meditation
For peace and quiet,
Interval training
To the daily run,
Carbo-loading
For the marathon.

At forty, experience insists
That the world outside
Exists;
But only in
The intimate transaction
Of action,
Body and mind.

Parent-Teacher Conference

My son, who fiercely loves
Only three people
In his class
And thinks the rest
Are weirdos,

My son, who collects GI Joes,
Tanks, machine guns, missile avengers
And makes his own
Sound effects
Blowing up enemies,

Is praised
For his social sensitivity,
The generous inclusion of others,
His willingness
To be kind.

Speech To Accompany The Gold Watch

Old colleagues, nothing personal,
Want cheap new blood
Full time

And your help in planning
A clinic and curriculum
Without you;

You can visit your grandchildren
And play golf in a new city
Every month

With old students, deans now,
Who will bring you martinis
And the inside story;

We will go on
In the everyday way
Less wise and less loved.

This is the inside story.

"Verde que te quiero verde"

after Lorca

green how much I want you green
green wind green branches
green rain sings in the leaves
out of green shadows trillium sails
the last bright flags of snow
willows bend bronze over hills humped fresh west of town
where fishermen lie on their bellies near springs
waiting for the rising gold-
green dawns of trout

under the moon a balloon of ice
in the black bed
twisting green mysteries of seeds

Robert Schuler

Deja Vu On Flight 532

The one as
Familiar as the
Other, a sleigh
Traversing piles
Of cloud, the
Tinfoil peeled
From a steaming
Lunch. This
Cauliflower
Seems familiar.

Michael Finley

Absence, Presence

(Isle Royale, 1977) for Gary

In fog, above the frosted hawthorn,
I spot a she wolf, teats full, almost touching
the pine needles. No whining. No caves nearby.
Where are the pups? The wolf trots away.
Was she here for me, like the red print of leaves,
dead on a maple, was here for me last week?
Leaves crinkle under my boots,

reminding me of the time a grouse
exploded from a hawthorn thicket
and disappeared into the silk of heaven.
Today the hawthorn bobs in a slight breeze.
A nearby maple grove whispers its secrets.
What message? What message?
Over the hill, a less gray horizon,
the sun burns off the fog.

More than leaves mark my being here today.
Walking in wild woods, I think I've tamed myself.
I see a feather tipping the spike
of a dead goldenrod. Not impaled. I walk fast,
wanting to see the feather up close.
Sometimes I want the woods to leap up
in a wild dance so that I know whatever I crinkle
or snap is one more step in a dance that whirls
like flake, feather, leaf . . . Anyone could go
into a trance, not want to come back,
not knowing if anyone feels his absence.

Charles Cantrell

Sometimes at Night

Ring-necked pheasants spirit up
beside me. Trucks. Signals. Dust
clouds and hovers. Rows of milo
blur. Telephone wires. Cotton
dust. The dangerous
corner. Driving into dust.
Someone in front of me, someone
behind. Dust. Turning
my father's Ford pickup southward,
stopping only long enough to jump
from the cab to the dirt, hot
and unforgiving, our land.

I'm running down the row to help
my father. He's working, doing something
I cannot see though it's clear
he's spraying Johnson grass. Yes,
for a moment it seems clear that he's
walking behind the John Deere,
not one of the new ones, but one of the old ones
that runs on something more than butane,
something more rarefied like loyalty,
no one in the driver's seat, but the tractor
creeping along at its slow gait
so my father can walk behind and spray
the Johnson grass in the cotton,
keep the family farm from turning foul.

I take the nozzle or hoe or
irrigation pipe or crescent wrench
or case of oil or shovel from him.
My hands take from his hands
till he is stripped of work.

Back up the field, no dust lingers
in the air. I see no pickup against the sky
at the head of the row, only a chair
from my office, one with yellow fabric
and cushions against the metal.
My briefcase, a gift from my parents, sits
upon the chair the way it sits
in my office: it is open, and there
the Johnson grass and white weeds
are taking root
among the rows of words in a long poem
for my son, my only seed.

Doyle Wesley Walls

Back To School

The chorus of silver bells at dusk
is done; woodcock displayed
last spirals over the alder bog.
Pink snow of duchess blooms,
lilacs and peony bouquets
were there when summer came
with humming birds
and left as suddenly.

Swimming pools are placid now
and lumbering yellow buses
hidden since last June
rove the land again. Your first
reading assignment is a curled leaf
on a vacant bench.

Had Manske

To Grapes

Rain climbs down the vine
one leaf at a time
in an endless descent
on these grapes; welcome
sweet fruit to your life:
the sky tears that grieve
will enlarge you, will define
your clear skin as a shell
that expands with your heart
until nothing's left out.
All kinds of weather will sing
in your blood, will concentrate time
in your dark purple juice
that finally surrenders
to the pure call of wine.

Joan Rohr Myers

Woodcuts by Mark Golbach

Of all printmaking processes woodcut is the most ancient. There is evidence of carved woodblocks being used to print fabric in Egypt 4000 years ago. In the eighth century A.D. Buddhists printed religious texts by placing paper (invented in the second century by the Chinese) on an inked block and rubbing it from the back until an impression was made. The prints reproduced on these pages were produced with the same method.

The Western pictorial woodcut dates from the fifteenth century. These early prints, epitomized by the work of Durer, were most often of a religious and didactic nature, although such mundane objects as playing cards were also made. Combined with the printing press and moveable type woodcuts soon became the principle method of illustrating books. By the nineteenth century relief printing, usually in the form of wood engraving, had become a highly specialized trade and was employed almost exclusively to reproduce facsimilies of pictures originally executed in other media.

The modern woodcut print as an original individual expression begins most significantly with the work of Paul Gauguin. His woodcuts were influenced both by the primitive art of Tahiti and the Japanese prints which had recently reached the West. The woodcut as an art form flourished in the early part of this century among the Expressionists. They produced a large number of direct, forceful images. During the middle portion of the twentieth century only a handful of significant artists worked in this medium. Recently, however, there seems to be a dramatic resurgence of interest in the process. Artists both famous and obscure are turning back to the woodcut as a vehicle for the more expressive quality of this era's imagry.

Mark Golbach

Marlyn Agnew

Mark Golbach in his studio

Woodcuts by Mark Golbach

The Real World

By Arthur Hove

"That may be what you think, but that isn't the way it is in the *real* world."

This admonition is usually given to people in academia, the military, sports—and to teenagers. It presupposes the world is divided into two parts: one real and the other unreal. For lack of a more precise definition, the real world is where people meet payrolls and carry out other functions normally associated with commerce. The real world is simple. You can see it, feel it, describe it. Uncertainty is a pervasive element here; a significant degree of risk characterizes most transactions. Life is lived close to the edge. Losers are more commonplace than winners.

On the other hand, things that are not part of the real world do not have this urgency or tenuousness. This is the territory of metaphysics, a place where people have the time and inclination to mull over such concerns as epistemology and ontology.

Real denotes something which is genuine, not artificial. The word genuine once had more currency than it does now. Everyone from carnival barkers to store clerks used to make a special effort to indicate that something was quality because, as they explained it, rolling the word off their tongue, it was "jen-you-whine." While the word may not be so prominent as it once was, you can occasionally see it associated with genuine leather goods. But you also can see it on items made from synthetics such as genuine vinyl. This semantic concreteness has built-in contradictions from a practical standpoint. Something may be ersatz, yet it has a reality of its own. Fake fur may not be animal hair, but it is fiber or some other substance that is real in its own right.

The variety and extremes present in our contemporary society accentuate the spectrum of reality, extend our conception of the real world. It becomes a dilemma to say which is more real: homeless ladies roaming the streets of our large cities as they carry all their earthly belongings in shopping bags, or a gaggle of upscale yuppies in Los Angeles sniffing cocaine as they pursue life in the fast lane.

Discoveries in organic, inorganic, and bio-chemistry as well as advancements in industrial technology have provided us with the opportunity to tinker with as well as duplicate nature. Progress here has been stimulated by both natural human curiosity and fundamental economics. Substitutes are generally less expensive than the real thing. Sometimes, there is no effort to call attention to the difference. Opportunists flood the fashion market place with counterfeits of designer jeans and expensive wristwatches and cameras.

In the food area, chemicals and technology are used to duplicate taste and texture. You can enjoy the taste of strawberry without having actual strawberries used in the strawberry-flavored concoction you're eating.

This situation, understandably, has growers and producers of food uneasy. "Accept no substitutes" is the usual exhortation. "All natural" is much preferred to "artificially flavored." Dairy products made with milk have a "Real" logo on the label to assure the consumer that cows not chemists have provided the principal ingredient for the product.

Before it changed its formula this year, Coca-Cola was declared to be the "real thing." Ad copywriters have not yet managed to come up with a successful slogan that deals with the dilemma that if the old formula was the real thing, what then is the new formula?

In any era it has been difficult to establish a distinct demarcation between what is real and what is illusory, between what is actual and what is made up, between what is known and what is believed.

As we have gotten more sophisticated in our examination of the physical world, we also have discovered that the surface immuta-

bilities of science do not explain everything. They can be contradicted by the same scientific method that explains them. Psychology, particularly as articulated by Sigmund Freud and C. G. Jung, revealed that there is an interior dimension to our world, that the mind is capable of creating its own worlds, places that exist independent of the external world. The territory of the mind was identified as a separate reality that existed in thought and perception. Although the explanation was more scientifically based, the sentiment was hardly new. It is as old as Plato's cave, that allegorical cavern where shadows on the wall become the extent of reality for those who are fettered and unable to perceive the world that exists in sunlight beyond the mouth of the cave.

Concurrent with Freud and Jung, the arts turned from expressions of the concrete to new depictions of reality. Over the past century, the visual arts have presented us with images that force us to take a new look at the world. The result is a catalog of "isms" that have come at us with a cyclic regularity. Expressionism showed inner torment through contortions of external reality. Surrealism transformed reality into a landscape of distorted objects and dreamlike perspectives. Impressionism, fauvism, cubism, abstractionism, abstract impressionism, modernism, and postmodernism have also altered our perspective. So has minimalism, that ultimate reduction of theory and substance.

As the basic transformers of reality, the arts create illusions which cause us to suspend belief. We subconsciously assume that what is being represented is the real thing rather than an imitation. Here it is imagination that counts. Those with literal minds are not as responsive to art as those who feel the world around us is merely an illusion. True reality lies in the world of the imagination.

H. H. Arnason, describing a particularly provocative painting by the Belgian painter Rene Magritte, notes that *The Treachery (or Perfidy) of Images* . . . portrays a briar pipe so meticulously that it might serve as a tobacconist's trademark. Beneath, rendered with comparable precision, is the legend *Ceci n'est pas une pipe* (This is not a pipe). This delightful work confounds pictorial reality."

Much of our environment is controlled to the point that we have difficulty actually determining what is real and what is not. Advertising and the mass media shape a considerable portion of our thoughts and lives so that we are conditioned to believe nothing really exists or has any intrinsic quality until it is verified by the media.

Television reporter Daniel Schorr noted in *Harper's* magazine last year that, "Being on television confers a kind of reality on people, much more so than being written about in the newspaper. . . ." We are now familiar with the general choreography of many public demonstrations. These events usually wind down by mid-afternoon so that the participants can rush off to see themselves on the six o'clock news. The reality of this situation is not the demonstration itself, but the televised report of the event. While this may seem somewhat disturbing to the purist, it is a testament to one of the basic aspects of the real world—it must be something that can be confirmed by objective measures.

Not all have succumbed to the authentication of television, however. An example of skepticism comes in a bit of folk wisdom from the comic strip "Hi and Lois." Trixie, the baby of the Flagston family, who cannot yet speak, thinks to herself as she and her mother are watching television: "Something I still haven't figured out . . . Are those people in the TV *real*, or are they sort of *play*-people? When you touch them they feel like glass . . . I like real better."

Another perspective comes from Thomas Griffith in a recent "Newswatch" column in *Time* magazine: "We now get government salesmanship by pageantry, which television feels compelled to present while trying to offset it by commentary. The result can hardly be called reality." But then reality has a way of becoming what we say it is, so that one person's reality can become another's derangement.

We create the world in the act of perceiving it. Much of twentieth-century literature represents this solipsistic point of view. In America, some of this tendency goes back to Walt Whitman's proclamation: "I celebrate myself and sing myself, / And what I assume you shall assume." This egocentric focus was widely repeated in the 1970s, causing those years to be labled the "Me Decade."

The sensory and intellectual cacophony that the media produce confuses us. Perception becomes reality. What you see is what you get. We have a whole life that exists on the surface. Demagogues know this and try to exploit our tendency to want simple solutions to complex problems. They maintain that life is fundamentally a struggle between good and evil. One should not confuse the issue by presuming it is anything beyond that.

From an objective standpoint, however, it is difficult to say the real world is distinct and readily definable. We all live in our own little universes. Thoreau's cabin by Walden pond is just as real as Carl Sandburg's "city with the big shoulders." The mind of the mental defective can, in some ways, be just as discerning as that of a genius.

Perhaps this is why existentialism has proved for some to be the most compelling explanation of the seeming absurdities of contemporary life. It was Jean Paul Sartre, existentialism's most recent proponent, who noted that hell is other people.

Reality in the most practical sense, is everything that happens to us, everything we witness, between the time we are born and when we die.

Accept no substitutes.□

Photographs by Marylu Raushenbush

Galleria: Pat Fennell

By Warrington Colescott

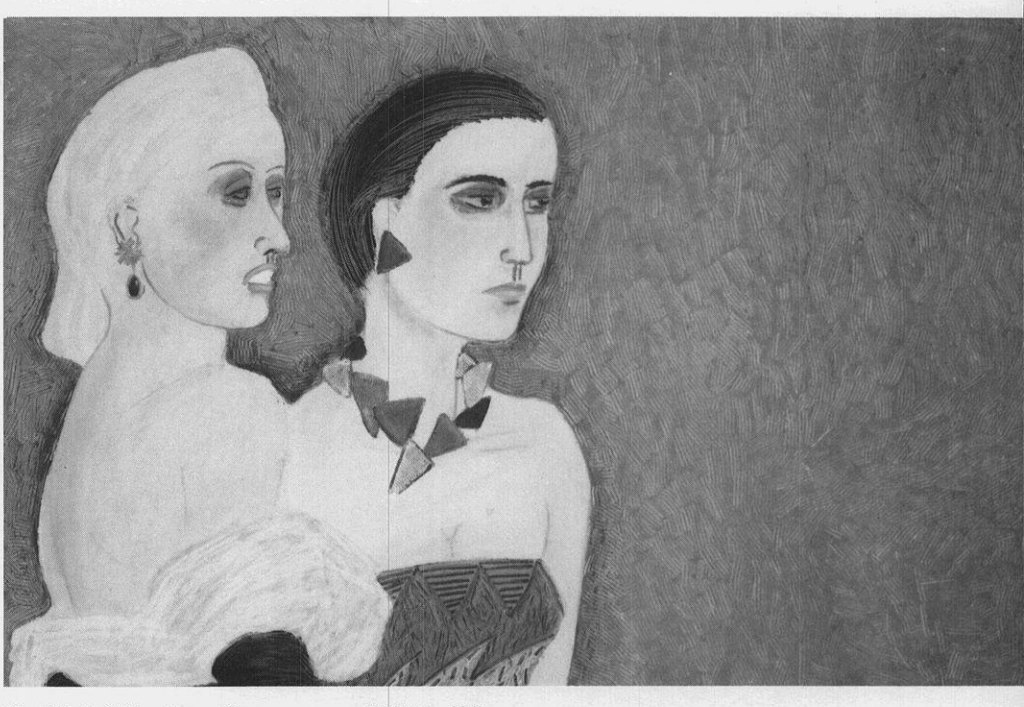
Pat Fennell's studio in Madison has the familiar abandoned-property look of university-furnished faculty studios worldwide. She occupies the second floor of a delapidated frame building, a desolate, low-ceilinged apartment with warped flooring, splintered plaster, a view through multiple storm windows at the cracked windows across the court. Her small rooms were scrounged from the UW-Madison, Art Department's off-campus graduate studio space, reassigned to junior faculty. The natural light is south and minimal; it is a wretched space in which to create art, but there it is; the walls glow with the colorful paintings that are tacked on them at regular intervals. There is an inherent casualness in the large paper sheets. The drawing seems more related to a hand-written note than a word processor print-out. Closer examination reveals that the paintings *are* hand-written notes, about social situations, not real, but lifelike, excerpts from a scenario taken from life.

The artist moves about the room, animated, talking about her work, her methods, the sequence of her ideas. She pushes a bicycle into the hallway, ringing its bell, then props more pastels against the wall. The room seems crowded with linear figures. Smiling, talking, leaning, sitting, gesticulating figures fill the papers and dominate the frames. Decorative patterns provide a setting to the players in these muffled docu-dramas. "I've always loved the theater," Pat says. "I go whenever I can, I read plays . . . Pinter, Shepard . . . wonderful stuff. I see theater everywhere, in the street, in fashion. My favorite paper is *Women's Wear Daily*."

"I was born and raised in Brooklyn. What excitement it was to go to Manhattan, to see the people, who were so different from Brooklyn, to see their clothes, their manners. Then, best of all, to go to the theater." The bright set pieces on the wall, the *tableaux vivantes*, did they move a frame? Was there a twitch of movement?

Pat Fennell came to Madison in 1981 as a visiting lecturer in art, her first teaching job. She was at the end of a cycle of talented women artists brought into a department that had been male dominated since the sixties. The department's hiring selections had turned spectacularly perceptive for a period, bringing in a succession of feminine artists whose careers took off while in Madison, bringing success which quickly catapulted them to other, more lucrative arenas: Wendy Edwards, Deborah Butterfield, Susanne Slavick, Nancy Buchanan, a roll call of brilliant young artists. Pat Fennell was of this company, but has remained in Madison, valued here for her teaching and administrative skills as well as her creative output.

Why Brooklyn produces so many artists would make a good call-in program for public radio. Is art an urban antidote? Pat Fennell declared for art at an early age and proceeded to graduate from the Maryland Institute College of Art (cum laude) and took her Master of Fine Arts degree at the Pennsylvania State University, where she married a student in classics.



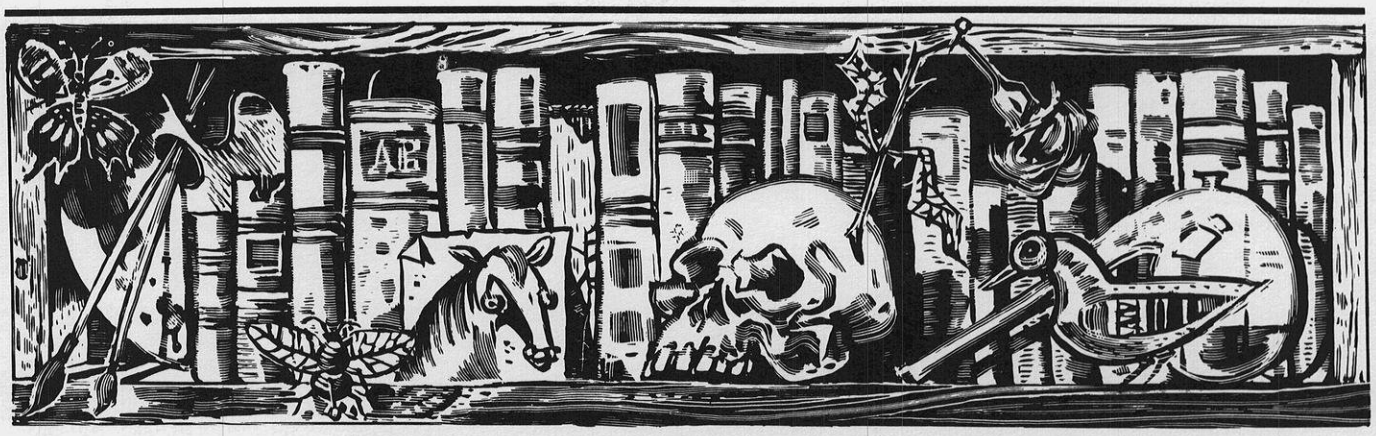
Untitled. Mixed media on paper, 26″ × 40″.

After graduation Pat followed her husband to Bloomington, Indiana, where he became a doctoral candidate. For five years she was a successful dental assistant. She painted at night, and gradually her work became known in the community beyond the dentist's waiting room. Robert Barnes, a painter at the University of Indiana, saw that she was given a studio and there was input from other faculty artists, notably James McGarrell. When an offer came to join the Madison department, she decided to take it.

The evolution of her work has continued briskly in Wisconsin. There is less of a drawing emphasis now and a greater reliance on painting, texture, and color. The somewhat muscular work of four years ago has become focused on smaller events, treated with great invention, stated with a cool eye. Her *dramatis personae* are neither satirized nor patronized, but remain snaps from an intimate journal. The artist hints at autobiography; sometimes a protagonist is offered, feminine and vulnerable. The animation of the work extends to objects and all parts portrayed. Emotions radiate, auras surround and conjoin. There is a dizzy (giddy) interest in body hair. Characterizations are rendered in shorthand, with panache. The medium is usually cattle markers on paper, her favorite material.

Currently Pat is participating in group shows at the Cudahy Gallery, Milwaukee Art Museum, a mixed-media-on-paper show at UW-Green Bay, and solo shows at Artemesia Gallery in Chicago and WARM gallery in Minneapolis. She is one of "Five Imagists" at the Noel Butcher Gallery, Philadelphia, and her drawings have been juried into national exhibits such as the 20th Bradley Print and Drawing Exhibition at Peoria, Illinois. The list of her exhibitions grows steadily, increasingly more important shows and more individual attention. She has galleries in Chicago and Philadelphia, collectors in Milwaukee, and a fan club in Madison.□

Pat Fennell in her university studio.



BOOKMARKS/WISCONSIN

TOWARD THE FINAL SOLUTION: A History of European Racism by George L. Mosse. Madison: The University of Wisconsin Press, 1985. 237 pp. $12.95, paper.

By Roger Blakewell

This spring President Reagan visited the military cemetery at Bitburg, West Germany. An outcry was heard around the world from Jewish people, veteran groups, and others who learned that among the dead were graves of the SS, the feared Schutzstaffel or "protective ranks," selected to carry out Hitler's "final solution to the Jewish question."

Thanks to prime-time television specials like the "Holocaust," many people know that "final solution" is merely euphemism for the murder of millions of Jews. But what is generally unknown is why it happened. Historian George Mosse tells why—why six million of Europe's Jews systematically were rounded up, shipped to places like Auschwitz, Maidanek, Sobibor, Treblinka, and then murdered using techniques the Nazis perfected in a prewar euthanasia program.

Mosse, in a scholarly, masterful way, unfolds the backdrop of European racism—the theory behind the practice—that led to this unprecedented inhumanity to man. He relates that European racism was nurtured and perpetuated not just in Germany but throughout Europe with roots, ironically, in the Age of Enlightenment. "The Nazis did not invent racism," Mosse explains, "they merely activated it."

Eighteenth-century Europe was the cradle of racism. It was during this time that the ideal of beauty and order developed. Fledgling sciences like anthropology were looking for man's "missing link" and examining physical differences in people, from bumps on their heads to the shape of their noses. The blacks' flat nose, for example, was thought to prove a kinship to the animal; the so-called hooked Jewish nose became an "outward sign of the absence of inward grace." But only after the mid-nineteenth century was racism applied to Jewish people with any consistency.

It is important to realize in Mosse's masterful work that Adolf Hitler grew up in the nineteenth century and was exposed to the popular thinking of "racial and social biology" and cultural prejudices. It was thought that racially inferior peoples like the Jews could degenerate the more racially pure German Volk. Mosse not only makes a strong case for the importance of visual differences between peoples, but also for the obvious cultural differences.

Germans were a superior, Aryan race of hard working, racially pure people, exhibiting strength, will, honor, and morality. Jews were without scruples, had no sense of values, and were wholly commercial. The attempt to make racism into a science is evident in this book, following the Darwinian "fit" and "unfit" premise. The state would help in this natural selection, a theory put to practice a century later.

"Too often racism has been brushed aside as unworthy of serious study," says Mosse. But in this second edition Mosse makes it a serious study and worthy of scholarly praise. He reveals the historical truth that other historians have failed to reveal: that anti-Semitism was an ingrained part of European society and culture. It was a burning fuse that wouldn't go out, and it eventually culminated in the ovens of the Holocaust.

Roger Blakewell is a writer and teacher in Wausau and has academic credentials both in history and in English.

BIKING THE GREAT LAKES ISLANDS by Kathleen and Lawrence Abrams. Wausau, WI: Entwood Publishing, 1985. 164 pp. $8.95.

By Maggie Blackbourn Korslin

Bikers, tired of fighting with cars for road space? Pick up a copy of Kathleen and Lawrence Abrams' *Biking the Great Lakes Islands* and

trade the traffic and construction of city biking for the quiet and solitude of the Great Lakes islands. "On a bike, as on an island, you set your own rhythms," the Abramses say. And this feeling sets the tone for the entire book. The reader enjoys a relaxed instead of fast-paced version of their journeys.

The authors spent an entire summer touring seven Great Lakes islands: Madeline, Washington, Beaver, Mackinac, Drummond, St. Joseph, and Manitoulin. They were happy to report they weren't chased by barking dogs. "Maybe, we speculated, island life relaxes dogs as well as people," they say.

The first seven chapters are devoted to each individual island and the routes the authors traveled. Island maps detail different routes and points of interest to keep the biker on track. Each route is rated according to length, grade, road conditions, and the authors' overall impression.

The Abramses include ferryboat hours, prices (it varies, depending upon if the biker takes only a bike or includes a car), and the length of time it takes to ride to one's destination. They also note island landscape, plant life, and various inns to stay in along the way. The eighty black-and-white photographs show island diversity, and one gets the feeling he or she would never be lost as these authors mention interesting sights along the way.

The Abramses weave historical aspects in between "bike talk." This gives the reader a nice break as the authors describe some of the colorful legends surrounding the islands. They tell about Madeline Island's origin, as having been a fur and logging center named for the daughter of White Crane, an Ojibway chief. They also mention the French ship that vanished near Washington Island in 1679 and has yet to be found.

The Abramses recount their own personal history on this trip. After seeing two wild turkeys on one of their routes through Beaver Island, the authors remember, "They reminded us of one time when this island challenged other young adventurers, and for a few minutes, we felt as though we had stepped backward in time. Then a car, the only one we met on this route, sped past us, blew dust toward our bikes and interrupted our feeling of deja vu."

The latter part of this book deals with bikes and suggestions and advice from the authors. After a brief history of the bicycle, the authors discuss selection and adjustment. They suggest accessories and tools every biker should own and identify usual bike breakdowns and the tools needed to get back on the path. They recommend running a safety check before each tour.

Again, their down-to-earth style comes across with the photograph of Kathleen Abrams cooling her feet in the Great Lakes sand. "Even with the best bike equipment, a biker gets tired," she says.

For an enjoyable, yet informative, look at biking the Great Lakes islands, this book is ideal. It will serve as a travel guide, history book, and repair manual all-in-one. Not only will one learn biking is not all sweat and hard work, but also that the Great Lakes islands can be the perfect place to enjoy it. Stow this book in your bike pack!

Maggie Blackbourn Korslin is editor for American Family Insurance's "The All American."

WHEN THE WOOD BEGINS TO MOVE by Richard Behm. Prentice, WI: Jump River Press, 1982. 49 pp. $5.00.

By William T. Lawlor

In a prefatory epigram, Behm suggests that he is "becoming something the world has never seen before—a dream animal—living at least partially within a secret universe of his own creation and sharing that secret universe with other, similar heads." Speaking in solemn despair, Behm admits that life can inflict pain, scar, cast one adrift, leave one in the dark; however, the force of art can soothe, heal, shed light, lead one home, even if such redemption can only be achieved and shared within a small group of trusted people.

The poet journeys into nature to find solitude and harmony, but the depression that the poet carries with him from the human society is not easy to cast off. In "A Prayer at Sleep," the poem that opens this volume, Behm's world is disintegrating, even in nature: dusk is "unraveling," shapes in treetops are "adrift," wings are "fluttering," and the shore is "stone." The prayer is to bless this night of struggle, to bless the "ache to cipher" that may lead the poet to understand the chaos that confounds him.

In a series of fishing poems that develop *When the Wood Begins to Move*, the plentitude of fish contrasts with the emptiness in Behm's soul. The fisherman catches catfish, blue gills, bass, and trout, and he is amused by the dance of death. But such coldness about death soon turns to awareness that the poet himself is steadily moving toward death. In "When the Wood Begins to Move," the poet senses that the roots of the trees are extending towards him, ready to take him, and he must "rise up" and "flee." One way of fleeing is to create, as in writing, and in "The Hunt of the Poem," Behm insists that the "hunt is all." Consequently, in this strangely unsatisfying universe, the poem vanishes as the hunter-poet approaches the poem-prey, and because the poem cannot be bagged, the poem, ultimately, "is the hunter. Poet-prey."

Pitted against this depression are some considerations of childlike innocence and the worry-free world of primitive creatures. Although the weight of Behm's depression is far greater than his hopes for redemption, this volume of poems does reach a final, more positive resolution. In "One More Time," the overwhelming depression is summarized in a way that smacks of Matthew Arnold's ending to "Dover Beach": ". . . and we are lost

here, time and spaceless, / / drinking whiskey in the blackness, / growing old, fishless, / devoid of any vision but this: / reel in and throw the line one more time."

And it is the resolution to "throw the line one more time that is the redemption. This spirit grows in "The Metaphysician's Dream," in which Behm says, "I busy myself / with these small quests, / and insist, / and insist, / the sun is rising." In "Hiking to North Country Trail," Behm offers his flesh to the wood that moves toward him to take him—but if the wood cannot do so, Behm must "be taken seriously." A strength to go on has been discovered magically in the darkness of the wilderness.

William Lawlor is associate professor of English at UWSP and has published poems, translations, stories, and essays in numerous small magazines.

AN AMERICAS ANTHOLOGY: A GEOPOETICS LANDMARK (VOLUME 1: PRE-COLUMBIAN TO 1860), edited by D. Clinton, Tom Montag, and C. W. Truesdale. St. Paul, MN: Joint publication of New Rivers Press, Salthouse Press, and Wisconsin Writers Publishing House, 1983. $6.00.

By Arthur Hove

The Romans had a phrase for it *genius huius loci*—the spirit of this place. Since the beginning, explorers and settlers have been fascinated, if not overwhelmed by the landscape of the New World. They have written about it, sometimes cryptically, sometimes glowingly. The land is so vast, the natural riches so plentiful and varied. There was something infinitely mysterious about the land. In order to understand it, you had to record it, make note of what you saw and what you and others did in responding to its strangeness. Lewis and Clark were the most prominent of the recorders—harried by their expeditionary command responsibilities, yet diligent in their observations. They established through their trek across America and back that the Pacific Ocean was the limit of land exploration; it consequently was time to go back and look inward, to see where we had been.

Such is the spirit of this volume, which deals with a new kind of literature, geopoetics. As Tom Montag explains, "the content of geopoetic writing must in some sense be exploratory, i.e., the narrator must be exploring some new landscape, terrain, region. Unlike the more familiar 'regional' writing, geopoetic writing must have in it a sense that, in some way, the land being explored is new and uncharted and that the narrator is recording impressions of it for the first (or nearly for the first) time ever."

It was William Carlos Williams, in his *In the American Grain*, who made the genre widely known. "In these studies," Williams explained, "I have sought to re-name the things seen, now lost in (a) chaos of borrowed titles, many of them inappropriate, under which the true character lies hid." It was also Williams, in his epic poem *Paterson*, who noted, "Stones invent nothing, only man invents."

This collection contains creations, re-creations, and evocations of encounters between people and the land. Some are in prose and some are in poetry. Some are lists or other desultory material that suggest larger realities, greater truths. Others are pieces of narrative that tell us of a historical moment or event. All the selections remind us that, in spite of our urban sophistication, our technological achievement, it is still the mystery of the land that prevails.

This collection is a haunting reminder that civilizations may rise and fall, but the land remains. It also provides an encouraging realization that there are talented people working in this literature—familiar names such as the late Millen Brand (to whom this volume is dedicated), Paul Metcalf, and Peter Michelson, and newer voices such as Susu Jeffrey, Lyn Lifshin, and William Pitt Root.

The result is a volume that captures the American experience in a chronicling of voices and events that reminds us the essence of history is not just great events, but something else. It is the dailyness that characterizes the lives of those anonymous individuals who have sought peace and harmony in an environment that makes such equilibrium only a fleeting reality.

IN ANY AVAILABLE LIGHT: NEW POEMS by Viola Wendt. Waukesha, WI: Bittern Press, 1983. 51 pp. No price listed.

By Arthur Hove

Viola Wendt's world is populated with the familiar—birds, flowers, women growing old, the seasons changing—and yet the freshness and individuality of her language, the distinctiveness of her voice, provide us with new perspectives.

This is the third collection of poems by a former faculty member and poet-in-residence at Carroll College. The poems here deal with everyday experiences and show that while the world may be an "inscrutable rip-off of being," most of us would, indeed, "mind giving it all up."

Perhaps this is because there is pleasure to be gained from watching purple martins, those avian "urbanized sophisticates," as "At dusk, in ballets of exquisite skill / they swoop up thready mosquitoes red-bellied / with globules of human blood still hot." Or to know that a woman can derive a "sensuous joy" from nestling on an electric mattress pad, or that a young man in pursuit of spring love will admit, "I penalize my Bank C D / to buy you diamonds." Or that others, too, are melancholy after Christmas: "We have delivered Him again in pain and blood. / And again the classic postpartum depression / undoes us."

These poems are short and, for the most part, simple and unpretentious. They demonstrate an

economy of style, flashes of distinctive insight—and wisdom. Viola Wendt offers the reader what is found in her "Gift for a Poet"—"fragrant words of sorrow and praise."

Arthur Hove is assistant to the UW-Madison chancellor.

Reviews in brief

TWO DECADES OF HAMADY AND THE PERISHABLE PRESS LIMITED by Walter Hamady. Mt. Horeb, WI 53572: The Perishable Press Limited, P.O. Box 7, 1984. 128 pp. $27.50 postpaid.

By Patricia Powell

This catalogue for a 1984 exhibit at the University of Missouri-St. Louis is an annotated checklist of 106 Perishable Press hand-crafted books. Each book has a careful description of illustrations, type style (hand set), papers (hand made) used in text, cover, and the number in the edition. A reader can learn quite a lot about what goes into making a fine book from these descriptions. Anecdotes about the conception and process are frequently included as well as excerpts from reviews and articles. Thirty-odd photographs give a sense of the rich variety of Hamady's work and wit. Bibliophiles and others interested in the art of the book are surely aware of Walter Hamady and his Perishable Press, Limited; this catalogue provides easy access to his work of the last twenty years.

CEMENT SCULPTURE: A STUDIO HANDBOOK by Dik Schwanke and Jean Lahti-Wagner. Lanham, MD: University Press of America, 1985. 87 pp. $26.50 hardcover, $14.25 soft cover.

By Patricia Powell

The authors, who teach art at UW Center Waukesha County, have designed this guide to be a step-by-step creation of sculpture, both carved and cast, from portland cement and cement-related materials. They supply detailed information on formulas, tools, processes, and safety. Numerous photographs illustrate hand carving, soft carving, pseudomodeling, and casting.

The authors note that cement as a medium has been ignored by sculptors and its versatility overlooked or unknown. They attempt to remedy the lack of information specifically for artists and strongly advocate cement as a durable, aesthetic sculptured medium. The handbook is intended for art students and art instructors as well as professional artists.

Dik Schwanke notes that he was a visiting professor on the Madison campus when Harvey Littleton sparked artistic interest in the old/new medium of glass. He sees his promotion of cement as a similar attempt to motivate artists to develop its potential.

Book reviewers needed. We are updating our files of book reviewers. Persons interested in contributing book reviews should send name, address, professional qualifications and experience, with subjects you are interested in reviewing to Editor, *Wisconsin Academy Review*, 1922 University Avenue, Madison, WI 53705. Payment is book to be reviewed and two copies of the journal in which the review appears.

Because we believe the book reviews are an important source of information about the intellectual and cultural life in Wisconsin, we try to find a reviewer who is able to assess accurately each book reviewed. We give serious consideration to reviewers and are most grateful for the valuable service they perform for the Academy and for our readers.

Letters

Dear Editor:
I was surprised to learn in Lucy Mathiak's article, "A Visionary Heritage," (June 1985 *Review*) that "the arts were not routinely included in rural curricula before the 1950s. Art education depended on the inclinations of the individual teachers and school boards." As the daughter of a woman who taught in rural schools in Clark County from 1936–40, 1947–54, I know that at least two art curriculum books were available: *Picture Study in the Grades* written and published by Oscar W. Neale, State Normal School, Stevens Point, 1927 (450 pp.), and *Picture Study for Elementary Schools, A Teachers' Manual* by Delia E. Kebbe, Jane Rehnstrand, and Maybell G. Bush, 1938 (208 pp.). Two of these authors worked for the Department of Public Instruction, and they included principles of art as well as descriptions. My teachers must have used the Neale book because I remember being introduced to Bonheur's *The Horse Fair*, Velasquez's *Don Balthazar Carlos*, and Murillo's *Children of the Shell* reproduced there. I also remember a small framed print hanging on my bedroom wall that my mother had used as an art study picture. It might be worth while to investigate these books.

Carolyn Heidemann
Lake Mills

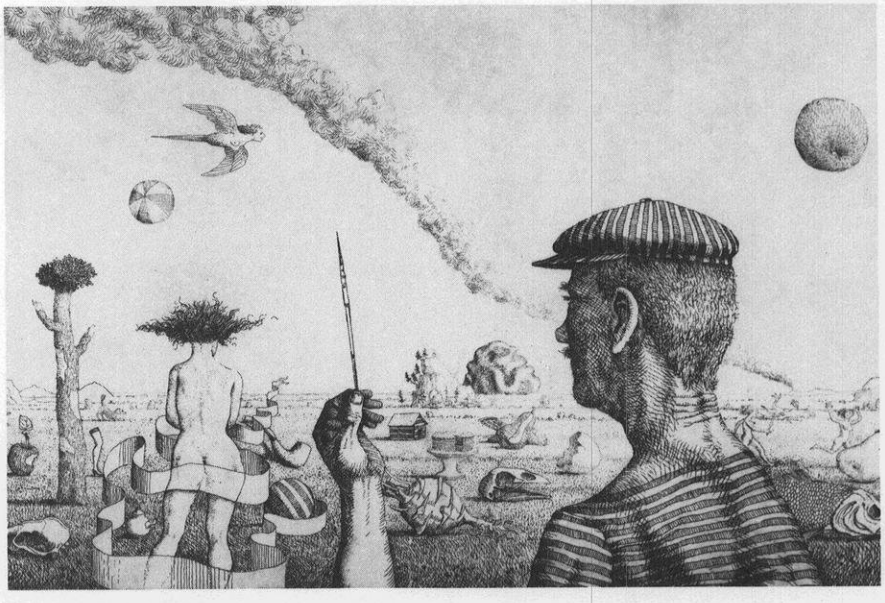
Dear Editor:
The article on "The Young Shakespeare Players" was inspiring. Your focus of the Wisconsin Academy Review spotlight on the life of Richard DiPrima is in keeping with the finest traditions of the Academy. We should all applaud the exercise of civic virtue by persons like DiPrima, who silently, but heroically strive for a better future.

Pete Muto
UW-River Falls

Help the Wisconsin Academy Support Wisconsin Art

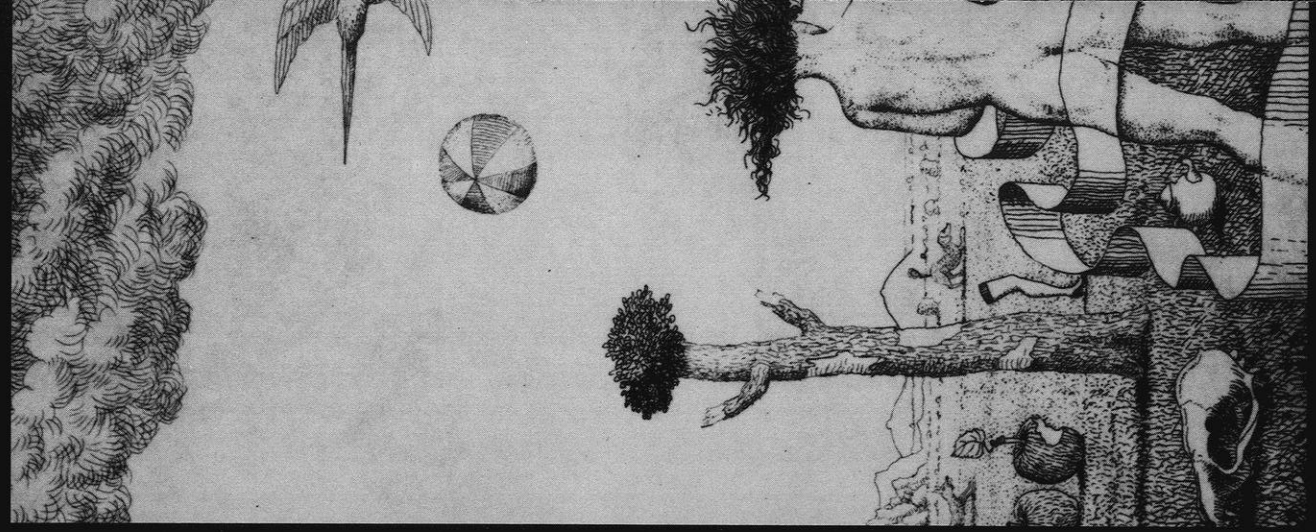
The Wisconsin Academy of Sciences, Arts and Letters has designated this the year to renovate its art gallery in the Steenbock Center at 1922 University Avenue in Madison. Academy vice president for arts Warrington Colescott appointed a committee to plan fundraising events and to promote the gallery to Wisconsin artists and those interested in art. The Wisconsin Academy first exhibited Wisconsin artists in 1974, when it occupied its own building. In the 1980s as Madison galleries became increasingly difficult for artists to get shows into, the Academy realized it could offer a unique encouragement to artists of all levels as a noncommercial gallery, readily accessible to Wisconsin artists working in all media. Making the most of the potential space, however, requires extensive remodeling, and here the committee's plans to raise funds for a matching grant from Marshall Erdman and Associates architectural firm become the key to success.

John Wilde



To benefit the Academy art gallery artist John Wilde has offered the proceeds from the sales of a signed and numbered limited edition of the etching shown. This will be printed on arches cover by Mantegna Press and available after September 15. A framed print will hang in the Wisconsin Academy gallery for those who wish to view it.

Persons who make a $200.00 tax-deductible donation to the Wisconsin Academy gallery fund by December 31, 1985, will receive the Wilde print, as long as the edition lasts. After January 1, 1986, the donation required to receive the print will be $350.



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