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Winter, 1981



From Homage to Yukio Mishima

Abe Frajndlich

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Stuart M. Klein

THE BUSINESS OF CITY MANAGEMENT: CLEVELAND, 1981

A “check-list” mentality and failure to provide incentives may vitiate the noble effort of Cleveland’s Operations Improvement Task Force

In December of 1978 the City of Cleveland defaulted on loan obligations of about 10.5 million dollars. On Tuesday afternoon, November 18, 1980, the City formally came out of default when a consortium of local banks agreed to lend it more than 36 million dollars, to be deposited in the Union Commerce Bank. Out of this sum the defaulted notes have been paid. The remainder will be used for other City obligations. Yet little has really changed.

In the following pages I take stock, from a management view, of Cleveland’s present situation, and of what has been done to reverse its position. My conclusions are based on both published and unpublished sources and personal interviews with 43 people including members of the Operations Improvement Task Force, city directors, commissioners, lower management and nonmanagement people, two ex-mayors, a former county commissioner, and several former city executives. The situation does not yet warrant despair; indeed, there is more than a glimmer of hope. But it does urgently

demand continued intense effort and above all an intelligent union of managerial expertise with political savvy.

While the original lenders to whom Cleveland defaulted no longer have a claim on its assets, the City’s new debt remains substantial and draws higher interest rates than before. Cleveland owes at least 30 million dollars on capital construction bond funds used by previous administrations for current operating expenses and other obligations. The capital infrastructure continues to deteriorate and at some estimates will take between 700 million and one billion dollars to bring up to standard. The tax base also continues to erode although inflation may bring more money to the City. The City credit rating is zero according to Standard and Poor’s, and Caa, three steps below an acceptable credit level, according to Moody’s Investor Rating Service. Some insurance and investment companies will not be able to invest in Cleveland for many years because of the default. Add to this the projected increases in interest payments of more than 70 million

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Photo: Louis T. Milic

dollars over the next two decades and you have a city still in deep financial trouble.

The proposed income tax increase on the November 1980 ballot was the best hope of moving the City toward sound financial footing. The incredibly inept campaign in support of the tax suggested something less than a full commitment on the part of the Voinovich administration.¹ But everyone is breathing easier and feeling more optimistic about City finances since the passage of the 1/2% tax increase on a special ballot February 17.

A new administration must act quickly, and there is evidence that the current administration has understood this. But there is still reason for uneasiness. There was the income tax fiasco in November. And there is the paradox that the management of the City is now largely in the hands of professional managers who lack a sense of political urgency and instead seem to enjoy a complacency born of the rational business executive's "can do it" attitude. This should not surprise. The corporate model takes a rational approach to decision-making, based on the best available information and evaluated by clear criteria. But Cleveland is hardly the same kind of organization as a successful corporation. Especially where radical change is required, such an approach may be beside the point — even counterproductive. It is politics that prevails and that must be dealt with. The business approach tends to ignore the compromise, the old loyalties and rivalries inevitable in an essentially political enterprise.

Still there is hope that during Voinovich's tenure as mayor the City may be able to put its management house in order. Three developments encourage this optimism. The first is that Voinovich was able to initiate a process of executive recruitment for his directorships which minimized political considerations and emphasized competence. Certainly, some of his staff were selected according to the usual political process, but some, by all accounts, are first rate.² The second development is the manner in which Voinovich went about dealing with the City's financial problems. A professional accounting task force was formed largely with volunteers that studied and then reported on the City's financial condition. The effect was impressive and culminated in the development of a financial plan that permitted the City to emerge from default. And much of the credit must go to Voinovich's directors of the offices of Budget and Management and of the Department of Finance, both powerful offices able to direct financial resources to adminis-

trative purposes.

The third development was the so-called Operations Improvement Task Force, which is largely the subject of this article. It is that effort which provides the greatest hope for an articulate and coherent city management system that not only will enable Cleveland to climb from the current morass but also could provide a means for sustaining good city management well beyond the Voinovich administration.

The Operations Improvement Task Force

In the Fall of 1979, shortly after George Voinovich was elected mayor of Cleveland, the Operations Improvement Task Force (OIT) was created. Its mission was to examine every aspect of City operations and to make recommendations for improvement. The organization of OIT included a twelve-member executive committee of business and community leaders whose primary task was to legitimize the effort for the business community and hence to facilitate the recruitment of technically competent professional and management personnel to do the actual work. A second committee, called the Ways and Means Committee, assisted the Executive Committee in soliciting the human and financial resources from business and from local foundations.

Evidently, the two committees were successful. More than \$850,000 was donated to fund the project. More than eighty people were recruited from business for the Task Force. The final group of recruits was selected by an operating committee after extensive interviewing. The final assemblage appeared both competent and committed: ready to provide a service — and, perhaps, to get their corporate ticket punched. All told, thousands of person-hours were donated to the OIT effort. Clearly, there was great interest on the part of the business community in helping provide better city management.

Starting in January of 1980, OIT organized into four teams, each led by a vice president of a major Cleveland corporation who also served on the operating committee. These teams spent three months analyzing the City's operations.³

The teams' methods of inquiry, although not identical, were similar. Members first would examine each operating area of the City by asking such questions as: What is the operation supposed to do? How is it doing it? How could the operation be improved? What would be the impact of the improvement? To answer these and other questions the members interviewed numerous City employees

from the commissioner level down, soliciting their comments and suggestions. For the most part these interviews marked the end of City workers' involvement in the process, a point of considerable significance.

The teams analyzed comparative data from other cities, scrutinized City documents and records, and compared existing procedures to those used in modern business. Preliminary reports then were prepared and discussed in detail within the teams. The team leader was responsible for culling out undocumented or unwarranted conclusions and bringing the results of his team's efforts to an operating committee. That committee then would further edit and refine. The process was repeated and the final published product was a 164-page report with 650 recommendations⁴ for change varying from trivial (e.g., relocate the paper stock area of the division of printing and reproduction) to the gargantuan (e.g., institute procedures that would reduce the City work force by about 900 persons). By all accounts, the OIT effort consumed the energies and dominated the thoughts of most of the participants during its three-month life.

Will anything of significance result from such an effort? We posed this question in dozens of interviews with officials and other persons involved. Several alluded to the great amounts of money that could be saved if the Task Force recommendations were implemented. Unfortunately, the expected outcome will be different from the real. The Task Force report states,

It is anticipated that the full implementation of the task force recommendations will produce income for the city if: the generation of new or increased revenues reach expected levels; savings resulting from more streamlined and efficient government operations reach anticipated goals; and if prompt action is taken by City Council where needed. Assuming that the above happens and taking into account the time required (four to five years according to task force estimates), the annual benefits could reach 57 million a year in city funds plus a 2 million reduction in federal expenditures for the city while net onetime returns for the city may be as much as 37 million.⁵

The "ifs" in the above statement are large words. For example, one recommendation, to reduce the work force by some 900 people, was so politically inexpedient that Voinovich has already dissociated himself from it. No doubt there will be layoffs (214 at this writing) but it will be years before the total will approach 900. So the anticipated annual savings are too high even before other recom-

mendations are considered. City Council has not taken action "where needed" in every case, although it has been unusually agreeable where OIT recommendations are at issue. The City has already backed off from the recommendation to contract out a portion of its waste collection, although Voinovich was able to extract a concession from that division to increase productivity to the standard expected from an outside contractor. We could go on, but the point is this: the potential financial benefits of the task force recommendations, politics aside, are but a small portion of what the City needs to emerge whole from the default. And when politics is considered, that portion diminishes even further. While I don't want to minimize the millions of dollars in savings that could result from implementing the more realistic recommendations of the OIT, it would be a mistake to consider the effort as significant on financial grounds alone.

OIT and the Process of Management

So, what will be made of OIT's admirable effort? To answer, let us place the OIT in context. Similar efforts have been made elsewhere. Continuous loaned-executive programs that provide management expertise for municipalities have been organized in Toledo, Ohio; Worcester, Massachusetts; Los Angeles County; and New York City.⁶ These programs appear useful, though evaluations are typically stated hyperbolically with only tenuous support from substantiated data.⁷ However, in these cases the loaned executives have continuity with city government in a decision-making capacity. Such is not true of OIT.

Perhaps the most closely analogous effort has been in Allegheny County, Pennsylvania, where a Committee for Progress in Allegheny County (ComPAC) was started in 1976. ComPAC's organization and purpose are similar to OIT's. According to a report on ComPAC's success, "almost 3 million annual and recurring savings and an equal amount of onetime savings will accrue to the county government . . .," assuming full implementation. Perhaps as important, according to the article, "ComPAC has . . . offered and sustained lines of communication between the public and private sectors . . . to assist each other in areas of mutual interest."⁸

Interestingly enough, Cleveland offers yet another example of such an effort, called the "Little Hoover Commission," established in 1965.⁹ The Commission was formed as a result of a City financial problem (sound familiar?) in late 1964 when the State of Ohio

took \$120 million from Cleveland's taxable property values. To obtain additional funds, an income tax proposal was put on the May 1965 ballot. It was soundly defeated mainly because of the opposition of the business community. In response, Ralph Locher, then Mayor, suggested that the business leaders undertake a study of all of the city operations and make recommendations as to how the city could be more efficiently managed so that a tax increase might not be needed. Twenty-four business and community leaders were selected to take part in the effort.

The first thing the Commission did was to undertake a crash study of the immediate City needs, which resulted in two major recommendations. The first was to increase salaries across the board by 7%, with additional amounts to fire fighters, police and professionals. These recommendations were implemented as of July 1, 1966. The second recommendation was to increase the city income tax — adopted by the City and later upheld by a 70% favorable vote of the citizens. These two recommendations and subsequent actions provided evidence of the potency of the commission.

A major, in-depth study of the City as a management system was subsequently undertaken using much the same methodology as OIT. The analysis resulted in a voluminous report with 562 recommendations and over two-thousand pages of supporting documentation. All told, 79 business executives, community leaders and professional specialists participated. Sixty-four organizations contributed personnel and financial support. By August 25, 1967, approximately 20% of the recommendations had been accepted and completed and another 50% were "in process." A final report dated September 16, 1968, indicated that a year later an additional 6% of the recommendations had been completed. Of the so-called "big one-hundred" recommendations — items considered to be necessary and practical — between 35 and 39% were substantially acted upon in 1968, three years after the study had begun. But only 18-20% had *actually* been completed in late 1968.¹⁰

And what of the others? Well, for one reason or another they have been wiped from the slate. Mayors change, and with them, priorities. But according to one former City executive, a major reason for the low implementation level of the Commission recommendations was the lack of *commitment* to implement them from the basic and continuing managerial cadre of the city. The commis-

sioners, assistant commissioners, and supervisors had no perceived stake, *none at all*, in the outcome of the Little Hoover Commission's work.

To evaluate the efforts of the Little Hoover Commission and OIT according to a checklist may well miss the essence of these efforts. Still, it is in the checklist that "objective" success or failure becomes evident. And because of this, such a checklist presents evidence of progress as well. One of the OIT team leaders stated this point best:

Many of the recommendations we made were simple and routine. A lot of them were obvious and came from city employees who we've encouraged to make suggestions, who would have come up with the changes in any event. Don't misunderstand me, I don't mean to say that those people can come up with only simple routine suggestions — it's just that they were thinking about these things for a long time and the changes were obvious. The reason we incorporated them with the Task Force and did not simply go ahead and do them, was so there could be clear progress made from both the employees' standpoint and the Mayor's. Every time a change was made successfully, this was one more good thing that happened as a consequence of the Task Force and I believe that that kind of successful progression is important if the Task Force is to achieve its ultimate purpose of making the most significant change of all — a total effort toward modern management techniques.

This sophisticated statement is born of substantial experience in the corporate world, but it has a subtlety that escapes most people, particularly those in city government who are ramrodding the OIT recommendations through and who view the "check lists" not as a motivating device but rather as a means of control. Indeed, contrasting the city people with the business people as to their approach to this question is illuminating.

One interview was particularly so. The Mayor's executive assistant, a businessman himself and a main force behind the Task Force idea, has assumed a major responsibility for monitoring the implementation of OIT from City Hall. He showed us records indicating the OIT progress of specific City units. He was asked how he could possibly keep tabs on all of the City units. He said facetiously, "by working 18 hours a day," and then more seriously, "by looking at the tracking forms that Bob Hunter (the Chairman of the Operating Committee) has put together. Those forms come in monthly and they show where each department and division is on their task force recommendations." When asked about priorities, he said the implemen-

tation of the report was a top priority. "What about incentives, what's in it for the City people to implement?" I asked. He answered, "Their careers — the directors' careers, and to some degree the commissioners', though for the others — recognition, I guess."

Well, one wonders about that. From a management point of view, it becomes both impossible and meaningless to monitor work "in progress." Indeed, I learned in interviews of several units that have taken a first step on a given recommendation without any intention of going any further. This will show up on the check list as "in process" and "on time," and if lack of future progress is noted, additional steps will be taken — enough to satisfy the monitor and buy time until the whole thing blows over. Such fudging seems the inevitable consequence of a system of measurement and control based on form, not substance.

The problem is exacerbated by a natural adversary relationship between the mayor's office and the other city workers including commissioners. This is particularly true when there is a new administration coming in on a wave of reformist promises. The aspiring candidate feels compelled to criticize the incumbent's poor management, the way the city is functioning, and by implication those who are doing the work. These implications are not lost on city workers, many of whom owe their jobs to previous administrations. These city bureaucrats, being masters of survival, are likely to invent means of looking good to keep the wolves from the door. And of course, the wolves always go away around election time when the incumbent administration has a stake in praising city management. Otherwise it may be voted out. The appearance changes but the level of efficiency remains the same. In short, the administrative goal of efficient city management becomes subordinated to the political goal of *appearing* to provide such management.

Still, the City employees who were interviewed were mostly impressed by OIT and its efforts, though many were cynical as to the ultimate outcome. They had seen such efforts before. Many of the City divisions had been studied by consultants, yet little had been done to implement the recommendations. For example, at least three comprehensive organizational analyses of the City personnel division had occurred over the last 15 years, each disclosing similar problems and making similar recommendations. That nothing had changed is demonstrated by the resurfacing of the same items in the OIT anal-

ysis. Why should this be so?

One answer is that the sustained management effort required to implement and then follow through on any change was and is absent in city government. There are those who feel the four-year mayoral term may alleviate the problem, and I tend to agree. Yet the long-term planning, organizing, and building of the appropriate motivation and control systems require sustained efforts with few short-term, clearly visible payoffs that support the political goals of top management. And building an effective management system is a long-term proposition that extends well beyond four years. What political system do we know of that sets its sights so far ahead? Few, I would guess, since most politicians do not think like professional managers. There is no reason that they should.

The consultant's recommendations will seldom produce meaningful change because political goals are almost always at odds with those of effective management. One OIT recommendation, for instance, was to undertake a major job classification study for the City. According to OIT there are currently about 800 different job classifications when 400 would likely do. Despite all efforts to the contrary, at best we will see only marginal reductions over the long haul.¹¹ Why? Because it is to the mayor's advantage to have more rather than fewer job classifications. The greater the number of available jobs, the greater the mayor's discretion in providing patronage positions. Jobs are invented, people hired on a temporary basis, civil service tests are created and permanent positions evolve. As one personnel director said five years ago in response to pressure from the mayor's office to hire an ex-boxer and a piano player:

The only thing I can do is to create jobs for them, so we can get away from the civil service requirements. So I'll establish another job or two, put them in as temporary employees and later on we will cook up a civil service test for a job classification and they'll be okay.

Even setting aside clearly political goals, there is hardly any area in which personal goals of the City workers and the administrative goals of City management coincide. If we understand that most OIT recommendations are changes in procedures toward some end, we can better realize the nature of this problem. OIT recommendations are almost all designed to increase efficiency. And so they might. Yet, what is imposed upon city management is an evaluation system that measures not how well they do their jobs, but

rather the extent to which they change their procedures. Such evaluation ignores effectiveness. Thus, changes in procedures may take place but an increase in efficiency probably will not.

Take the Division of Community Development as an illustration. This division, among other things, enforces the City's building and housing codes. One OIT recommendation states that the City needs to publish a comprehensive procedures manual for City building inspectors. The rationale is that variations in work routines result in inconsistent inspection and documentation. But putting such a manual into use presents a problem. The fact is that inspectors often work according to the exigencies created by politics and personal profit. And there is no way to control variation in the prescribed behavior without eliminating the forces that create them in the first place.

Suppose an inspector is sent out to a new construction site and notes violations of city ordinances. One outcome might be to talk with the contractor and informally get a commitment to comply with the city ordinance and agree to a reasonable date for follow-up. Another might be to cite the contractor and impose penalties according to law. A third might be to accept a bribe and submit a falsified report. What course of action will the inspector choose? Well, we can't say for sure, but the third alternative is not unheard of. Or let's say that the contractor has connections with some councilman who then requests favors from the City inspector. The inspector knows for sure that the councilman will be checking up and so, even if there is no personal profit, the political pressures may lead to behavior which is at odds with the prescription of any manual.¹²

There are numerous examples of such conflicts, but the point is clear. The recommended manual may be created but it won't make much of a difference. To state it in broader terms, many procedures will be implemented according to OIT recommendations but the outcomes will not be those intended. When this issue was raised in interviews with members of OIT, with two exceptions, the essence invariably seemed to evade them.

City Commissioners and the OIT

The City Commissioners — there are approximately forty of them — are the top level management protected by civil service. Above them are directors or sometimes assistant directors appointed by the mayor. Below them are assistant commissioners and

supervisors also protected by civil service. The Commissioners remain, as City administrators if not always as commissioners, while the appointed division directors come and go. Because they remain (and many have been with the City for a long time), the Commissioners represent an important nexus of the social structure of the City management system. During their service, they have built up an extensive web of obligations, and they have their own organization that meets regularly. They can therefore control procedure, change, level of efficiency, and operations in general. So the Commissioners are a major element in the ultimate success of the OIT recommendations.

That point is all the more important because of the way the Commissioners view OIT and its efforts. Every single Commissioner I talked with has shown a deep suspicion of the Task Force, and some are bitterly resentful. While they acknowledge that many of the Task Force recommendations are good ones, they nevertheless feel by-passed by the process and in great personal jeopardy. Objectively, this feeling can be accounted for by reorganizations that eliminated several Commissioners' jobs.¹³ Undeniably, some deserved demotion; they were either ineffective, corrupt, or both. But, according to the Commissioners, there were some injustices, and even more important, the idea is circulating among them that the ax will fall again. Too, the control procedure devised by the Task Force, with its tracking system, has placed constraints upon their usual discretion. While it is undeniable that many of the OIT recommendations can lead to efficiency, most Commissioners are not clear on how the changes are going to affect them. Consequently, they may be expected to resist change and to continue in ways that are comfortable and have predictable outcomes.¹⁴

At the symbolic level, the resentment resides primarily in the perception that OIT is unsophisticated concerning the realities of the city government and that it has engaged in hit-and-run tactics implicitly criticizing the efforts and competencies of existing City management. It is viewed as part of a blitzkrieg that swooped down upon the City workers, picked their brains, retired to protected sanctuaries to analyze the data, and then, without checking back, made recommendations for the final report. The Commissioners feel powerless to affect the course of events associated with the Task Force recommendations except in one way, and that is to resist, and thus to demonstrate that the

Task Force was trivial in its effect.

It is difficult not to sympathize with the Commissioners as they express their cynicism, hurt, and something less than enthusiastic response to the whole effort. Still, it is axiomatic in management that success is directly associated with a common team-like effort directed toward shared goals that exist throughout the management cadre. If one element of management is in adversary relationship to another, a significant organizational problem exists — one that hardly can be overestimated. A key, then, to successful City management is to bring the Commissioners into the fold. OIT has not done this; it has worked to the opposite effect.

What Needs to be Done

Given its mission and its constraints, the Task Force did the job about as well as it could have done. The problems discussed above are endemic to any such activity; even so, many of the changes already made will help the City. But as I have argued, the reliance upon procedural and structural changes will not do everything that the Task Force supporters hoped. Consequently, the next order of business should center on efforts that address the problems I have discussed, although some may defy adequate solutions. The Mayor and his administration must examine areas of goal conflict between the administration and the ongoing management group; they must work to resolve the inevitable hostility that exists between the political component and the managerial component; and they must bring the Commissioners and those under them into a cohesive grouping with shared goals that transcend particular goals of individuals and subordinate offices. Can these things be done? A hopeful indication may be found, perhaps surprisingly, in the division of police.

This division is currently run by Chief William Hanton, a seemingly affable, yet steely-tough man. He is critical of his division, although also profoundly supportive. His criticisms are directed to evident problems that he is committed to solving. Several City people we talked with felt that the police would be resistant to the Task Force recommendations. They reasoned that the military character of the police department and its rigidly formal *modus operandi* which is essentially inward-looking and self-protective would inhibit OIT implementations. While these impressions may be correct in form, we found them inaccurate in substance.

On the contrary, Hanton and his people seemed eager to make the division effective.

Foremost among its problems is the well-publicized slow response time to calls. According to them the problem is mostly due to the reduction of personnel and police vehicles. The ratio of uniformed personnel per 1,000 population has gone down from 3.52 in 1971 to 3.20 in 1980. The number of serviceable vehicles has suffered nearly a 30% reduction. Furthermore, according to police statistics, the number of violent crimes has increased more than 16% during this past decade, while the population itself has been declining. During the past year alone, crimes against people have increased more than 22%. So what needs to be done?

One answer is contained in some of the OIT recommendations. Among these is the development of a computer-assisted dispatch system along with a geographic base file and an on-line booking system. These, together with the so-called 911 telephone system, a central answering point with many ancillary benefits, could reduce response time significantly. More than 50,000 person-hours could be saved in the reporting and booking processes — hours that could be allocated to the street. Hanton has given the system top priority and has obtained the commitment of members of the OIT to work with him until it is implemented.

Noteworthy is the manner in which Hanton is proceeding. In the first place, Hanton, with the full weight of the traditional police authority structure, means to be successful. And despite the shortcomings of such a military-like organization, the efficient connection from command to the ultimate action should be obvious.¹⁵ Hanton has acknowledged and is planning to meet the training needs of the force so that they will be thoroughly conversant with the new procedures — in short, he is trying to establish a climate of reciprocity within his management group and among the uniformed personnel as well.¹⁶

Most important, within the structure of authority, Hanton *understands* the efficiency of full involvement from patrolmen to his top management team. For example, under Hanton's direction and with a nudge from OIT, a self-study was undertaken culminating in a lengthy document which squarely addresses fundamental problems. Though like all political documents it tends to be self-serving, still it deals directly with the issue of power and power distribution in an authoritarian organization.¹⁷ Whoever wrote the document acknowledged some of the newer theories of management that incorporate the idea of power equalization as a means of giving

lower participants more of a stake in what goes on and hence additional inducements to act toward the goals of the organization as a whole.¹⁸

Does this stretch credibility? Of course. But listen to what a sergeant currently in charge of an evaluation system for uniformed officers has to say.

We're getting groups of officers together to talk over the evaluation procedures. They are really excited about it and are taking hold. We've got a lot of good ideas from the men and we are incorporating them in the evaluation program. You'll see that the ideas that they come up with address the problem of actual behavior — not traits — like how a guy combs his hair. I think that something like this is badly needed and will really work because the men have a stake in making it work.

Although experience suggests that the sergeant may be a bit optimistic, still the process commands attention and reflects Hanton's commitment to involving his officers in important matters. What a process like this can do is to shift the locus of control from formalized procedures such as the filling out of reports, to something which can be internalized and which can guide actions in the absence of formal and centralized controls. An example of why this should be important is contained in a comment from a cop concerning discretion on the street:

Look, we have to fill out all of these forms and reports but they don't tell nearly the whole story. Anybody can make the reports look like whatever they want to. An example? Okay, there's a buddy of mine, see? He's really a good guy, but let me tell you what he did. A lady from the suburbs is driving down Prospect and she's really loaded up. She's nicely dressed with furs and everything, and she runs up on the sidewalk and bangs into this light pole. She doesn't do it hard and nobody is hurt. The car is hardly dented at all. And my buddy comes on the scene. He looks it over and he checks her driver's license and he can do a couple of things. He could really nail her for driving while intoxicated, but he doesn't do that. Instead, he treats her real nice and calls up her old man to come and get her. He can take care of that, you see. But now on another day, he sees this black dude driving up Prospect and the guy goes through a light that just turned red. Now he has a choice. He can go after the guy and nail him or he can stop him and lecture him or he can let him go. He nails the dude. Now I tell you this black guy was dressed just as nice as you are, and he didn't do anything that thousands of people don't do everyday.

The point is that the best controls yet devised will not substitute for internalized

standards which govern appropriate behavior. Nor will they sustain such behavior. Evidently Hanton has noted this and acted accordingly. Yet this simple and fundamental point has escaped most of those concerned with the implementation of the OIT recommendations, particularly those who have the check-list mentality. Indeed, it is a well-known organizational phenomenon that quantitative measures such as check lists support hierarchical control and make possible the direction of subunits towards the outcomes desired by higher level management — in this case the outcome of ostensibly conforming to Task Force recommendations as measured on the tracking forms. Yet these quantitative measures say nothing about whether the recommendations will do what is intended. The focus on check lists rather than on processes or on desired outcomes has shifted the value premise of top management from that of providing the best possible service at the least possible cost (an unenunciated but implied goal of most governmental organizations) to the political goal of "let's make the Task Force effort work and demonstrate that it's working by providing the proper array of check marks on the tracking sheets." A classic case of goal displacement and an inevitable consequence in organizations when the important value premises have intangible referents and consist of unanalyzable abstractions.¹⁹ This unanticipated failure in practical measurement arises from the nature of organization goals themselves, which are far more complex than the measuring instruments can deal with.²⁰ In this case, the measurement used captures only one element of the organization's goal set, and that element is political, pure and simple. One OIT leader clearly sees the problem. And he is worried:

We have got to keep working with Voinovich to be sure that things happen as a result of our work. The key is with the city people — their commitment — though we can help. A lot of things we recommend require skills that the City people don't have and in some cases won't live long enough to learn. Implementing the recommendations the way we are doing it is not so hard but making them work needs different approaches. Ask them (the City people) have you done it, they'll say yes. Ask them is it working, they may say yes, but what would you expect?

Will OIT enable the City government to move toward greater efficiency and effectiveness? It already has, to some extent.²¹ And it has certainly been a noble effort. Still, unless the fundamental problems of the manage-

ment system and its process are addressed and solutions devised — and I see a low probability of this happening because of the reasons given — many people, most particularly those involved with OIT, will be bitterly disappointed. And OIT, not unlike the Little Hoover Commission, will, 14 or so years hence, be seen as a historical curiosity. What is needed to forestall this unhappy outcome is a reorientation toward what OIT *has* done. The major document and its 650 recommendations should be viewed as a working document, not an end product. The focus should

move away from the top priority of “implementing OIT recommendations,” toward the effects the recommendations are designed to accomplish. In this way the document provides a means whereby all of City management may be involved in establishing priorities and developing plans to meet these priorities. No doubt many of the plans will incorporate OIT recommendations, but now most of the management system will have more of a stake in seeing them through to their ultimate intent.

NOTES

¹There are some who feel that the deplorable run in November for an increase in the City’s income tax was intentional — that Voinovich wanted to create a political justification for eliminating many Kucinich people from the payroll. Perhaps; but a more straightforward explanation is unsullied ineptitude.

²Even though the search process proceeded in an orderly fashion with at least some people on each of the search committees working quite hard, there were and remain some problems. The director of public utilities resigned in November, 1980. He said his wife was homesick. The director of the new, OIT-recommended department of economic planning comes from New Orleans under a cloud of controversy. The directorships of city planning and public safety remain unfilled at this writing.

³The OIT team leaders were: Stanley C. Czarnecki, Vice-President and Assistant Secretary, Acme Cleveland; Robert W. Hartwell, Vice-President of Power, Cleveland Cliffs; James J. McGowan, Assistant Vice-President, Ohio Bell; and Gustav E. Schrader, Group Vice-President, TRW.

⁴The initial report contained about 1200 recommendations and voluminous backup material.

⁵*City of Cleveland Operations Improvement Task Force Final Report* July, 1980.

⁶Interestingly, President Ronald Reagan instituted a similar effort when first elected governor of California. He describes it as follows: “In Sacramento, soon after I became governor of California, I appointed a task force drawn from business and the professions to conduct what amounted to a management audit of all the offices of state government. Some 250 volunteers served up to three months conducting and analyzing this review. When they were finished they submitted a report containing nearly 1,800 recommendations. We implemented more than 90% of them, at an annual savings to the taxpayers which was equivalent at the time to more than 1% of the state’s budget.” (See *The Wall Street Journal*, January 9, 1981, p.12.)

⁷See *Management Service Report*, Volume 12, No. 1, January 1980, pp. 1-12.

⁸*Ibid.*, page 5.

⁹The Little Hoover Commission report is contained in 21 separate documents, all except 2 dealing with operating divisions or departments of the City.

¹⁰See Followup Report No. 3, *Cleveland Little Hoover Commission Recommendations*, September 16, 1968.

¹¹At this writing, the job of classifications study is almost complete. The consultants found about 600 active classifications and reduced these to about 525. We shall see how long that number will suffice.

¹²These examples come from a case described by a former City executive.

¹³While the word “reorganization” refers to many things, it frequently is a euphemism. Often, reorganization occurs to eliminate jobs or to redistribute power. In either case, it is done to move aside troublesome people who are in positions of influence and to replace them with someone more tractable or at least trustworthy or who needs the symbolic support that that legitimate authority offers. See G.D. Greenburg, “Reorganization Reconsidered, the U.S. Public Health Service, 1960-73,” in *Public Policy*, Volume 23, No. 4, 1975, and R.E. Mile, Jr. “Considerations for a President on Reorganization,” *Public Administration Review*, 37, No. 2, (1977), pp. 155-162.

¹⁴See W.L. French and C.H. Bell, Jr., *Organization Development* (Englewood Cliffs, New Jersey: Prentice-Hall, 1978) for a detailed discussion of this issue.

¹⁵In addition to the rigidly formal authority structures, the police have rigorous socialization procedures, both formal and informal, that supposedly guide a police officer's behavior. Further, they have a tradition of action that includes concepts of service and selflessness. Still, problems of controlling the behavior of the street cop occur when situations require behaviors which are at odds with the formal socialization efforts and with tradition. Consequently, cops learn to adapt quickly to the street and develop rigorous though informal socializing procedures that emphasize a different set of norms from those formally expressed within the department. As one officer said, "There's only two things you gotta know around here. First, forget everything you have learned at the academy, because it's the streets where you learn to be a cop; and second, being first around here don't mean shit. Take it easy, that's our motto." (See J. Van Maanen "Police Socialization: a Longitudinal Examination of Job Attitudes in an Urban Police Department," *Administrative Science Quarterly*, 20, [1975], 225.)

¹⁶See A. S. Tannenbaum, *Control in Organizations* (New York: McGraw-Hill, 1968). Tannenbaum makes a compelling argument for a redistribution of power in authoritarian organizations such as the Police Department. His point is not that power should be taken away from the higher levels of the authority structure, but rather, that more power should be infused lower down by increasing the discretion and the influence in decision-making of lower-level management. According to Tannenbaum and many others, the ultimate responsibility for making decisions still resides at top levels though the decisions are likely to be better informed when they reflect lower-management's wishes.

¹⁷*Ibid.*

¹⁸See R. Likert and Jane Gibson Likert, *New Ways of Managing Conflict* (New York: McGraw-Hill, 1976). The Likerts describe ways of building participative management systems into organizations which are largely hierarchical. Their view is that hierarchical conflict in organizations and the resultant alienation of lower participants is a result of rigid hierarchical control. They advocate participative techniques centered around small groups with a particular attention to the points at which groups overlap hierarchically and laterally.

¹⁹Goal displacement occurs most often when the relations between means and ends are not well known, when measurements of desired outcomes bear little relation to those outcomes yet are "objective" and depersonalized, and where lower participants do not share the values of higher levels. Under these conditions the greatest incentives are attached to "looking good" on the measurement. See Peter Blau, *The Dynamics of Bureaucracy* (Chicago: University of Chicago Press, 1955); Robert Merton, *Social Theory and Social Structure*, revised edition (Glencoe, Illinois: Free Press, 1957); and W. Ouchi, "The Relationships between Organizational Structure and Organizational Control," *Administrative Science Quarterly*, 22 (March 1977), 95-113.

²⁰See Herbert Simon, "On the Concept of Organizational Goals," *Administrative Science Quarterly*, 9 (1964), pp. 1-22.

²¹At this writing about 25% of the OIT recommendations are fully implemented, a record a bit better than that of the Little Hoover Commission's. Most have been easy ones and primarily cosmetic, although several have been of great significance. Chief among these latter are:

- (1) the four-year mayoral term;
- (2) the taking over of the data center by the City;
- (3) the reorganization of the Department of Community Development in a way that could greatly increase its effectiveness;
- (4) the reduction of City job classifications (although, as noted, there are significant long-term problems here); and
- (5) the strong possibility that the prevailing wage rate provisions of the City Charter will be confined narrowly to bona fide craftsmen.

Anthony Addison

THE UN-PERSON WITHOUT WHOM OPERA WOULD NOT EXIST

The sad tale of the operatic librettist

Opera has often been described as a marriage of Music and Drama, but if that is so, the description nowadays must be qualified as a Victorian marriage of the most chauvinistic variety in which, without question, Music is the dominant partner. In this age, not only do we credit the composer alone with an opera's authorship but, when it comes to performance, we are quite happy to trade off Virtue on the musical side of things for Vice on the dramatic. Sometimes it would seem that the prerequisite for being a world-renowned prima donna is failure to take the dramatic side of opera seriously, and the public laps it

up with cheers and adulation.

Was it always so?

Almost any book on opera opens with the information that, in Florence around 1600, Giovanni de'Bardi, Conte di Vernio, together with some friends calling themselves the *Camerata*, having concluded that the ancient Greeks intoned or sang their dramas, decided to restore to the awakening world that form of theatrical experience: hence the birth of opera.

When emotions rise, the speaking voice comes close to song, so why not go all the way? Every good play has a triumphing



Photo: Louis T. Milic

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A native of Bournemouth, England, Addison was a boy chorister at St. Paul's Cathedral in London from the age of seven to fifteen, and subsequently studied at the Royal Academy of Music (viola and conducting). For seven years he served as coach, chorusmaster, and conductor for the Carl Rosa Opera Company and in 1962-4 was a student, associate, and friend of Boris Goldovsky. He has written twenty-five English versions of operas and many articles on operatic matters.

o Tochter von Zi-on, er-wach, froh-lo
 (daughter of Zi-on, re-joice, re-joice)

cke, froh-lo re-joice, cke,

An example from Handel's *Messiah*, in which the word is totally subordinated to the music.

scene of one sort or another, and what better way of adding to the excitement than with trumpets and crowds joined in a song of praise? What play is not improved by a divertissement, a dance for some notable in the cast, or at least background music to help the mood? It all seemed a very logical idea, one that could only help drama without in any way harming music. The playwright, or librettist, could only welcome such collaboration. Little did those Florentine worthies realize what they had started.

Since Bardi and his friends were responsible for festival performances at the court of the Grand Duke of Tuscany, it is not surprising that, from the start, spectacle played an important part in opera. The reason is simple enough, and the motivation persists to this day. "The more you can pile it on, the more you impress your friends." Since pitched battles were passé, opera was an obvious vehicle for an ambitious prince to overawe his rivals. We may like to think that Bardi's lofty antiquarian precepts were enthusiastically carried forward by his fellow nobles for purely artistic reasons, but this was hardly the case. The popular understanding of opera was no more universal than it is today, and any enthusiasm on the part of the noble audience was probably generated by the marvellous inventiveness of the Mechanist, the technician who caused chariots to fly upwards, cities to be devoured by flames, seas to inundate poor mariners, monsters to breathe fire, temples to fall in ruins and Gods to come down from the clouds.

When, in the early seventeenth century, the new art form found its way to England through the agency of the young bloods doing the Grand Tour, the name of the mechanist would head the title page of a libretto, even above the author, while the composer would be unnamed. A certain Mr. Povy wrote in 1632 concerning the authorship of the Twelfth Night Masque of that year, "Ben Jonson being for this time discarded, by rea-

son of the predominant power of his protagonist, Inigo Jones, who this time twelvemonth was angry with him for putting his own name before his on the title page . . ." Inigo Jones was an architect who returned from Italy with knowledge of the operatic spectacles there and gained royal favor by applying this knowledge to the masques, which were sung entertainments in the operatic style.

Music was still only part of the decoration, while the librettist, if he was really doing his job, provided not only good poetic drama but also fine opportunities for the newest of scenic wonders created by men like Inigo Jones.

As chance would have it, the art of singing reached a peak in the seventeenth and early eighteenth centuries. Giulio Caccini, one of the *Camerata*, included in his collection of arias and madrigals *Nuove Musiche* (1602) many rapid and extended divisions which suggest vocal abilities we today would call instrumental, and they foretold the days of the great eighteenth-century singing teacher Porpora and virtuosi such as Mme. Cuzzoni and the castrati Cafarelli and Farinelli. Farinelli earned a fortune with his voice; it is said that he sang the same four songs nightly for ten years to the melancholic King Philip of Spain with such variety of expression and ornamentation that the monarch never failed to go to bed much cheered. The music historian Charles Burney tells of a contest between Farinelli and a trumpeter in which the singer proved superior in every way, singing louder and softer than the instrumentalist, faster in rapid passages and longer in sustained passages, as well as being able to ascend the scale higher and with truer tone.

The virtuosity of the castrati was partly due to the fact that they started singing around eight years old and so could profit from years of training not interrupted, as it is for the normal man's voice, by the onset of puberty. And since they were indeed virtuosos, it is no great wonder that they could

demand an opportunity not simply to declaim poetry to music, but to show off their own vocal and musical accomplishments.

I should mention at this point that this was the age of Stradivari, the great violin maker, but not of Paganini, the great violin player; that wind instruments had limited range and mobility and serious intonation problems; and that many of the instruments of the modern orchestra had not yet been invented. Thus the art of singing was relatively very much further along the road to competence than was the art of instrumental playing, excepting that of the keyboard player. Men and women could realize in their own voices what simply could not be played on orchestral instruments. Today's cynical tag "Singers and Musicians" was in those days very far from just, for singers were the musicians. Often they were composers as well, and they very soon felt the need to contribute more than background music to the new partnership.

Although Händel's *Messiah* is not actually an opera, its style is very close to the operas of the period and it can provide a familiar illustration of what was happening to words and music. Anyone who knows the *Messiah* well will recall the soprano aria "Rejoice, rejoice greatly" and will probably have noted that Händel sets these words to a great many notes. In fact, he gets so carried away with the idea of expressing rejoicing in music that he stretches the words and repeats them until they are almost meaningless, and conveys the sense of rejoicing in purely musical terms. In real life, we do repeat ourselves, but only if we think our listener did not understand the first time, if we want to make him feel inferior, or if our own memory is slipping. The poet, in earlier times at least, would have considered himself a very poor wordsmith if he fell to repeating words at all. Yet here, in this new art form in which music was supposedly only supporting his poetry, the poor librettist found himself helpless as his words were repeated and distorted so that the composer could justify himself musically. Worse still, with a virtuoso performer, they would be further stretched with cadenzas and ornaments so that the singer could justify himself vocally.

And so *poetry, spectacle and voice* fought for supremacy on the operatic battlefield. With the increasing size and variety of the orchestral forces, and the composer's developing desire to speak through music (see below), plus the growing understanding of the subconscious, with which music can most easily communicate, it is not surprising that

music took over the leadership in Opera.

Unfortunately this fact has caused the musical world — historians, critics and public — to forget the very existence of the librettist, let alone consider what he actually contributes to the operatic medium, and hence my sad description of him as "the un-person without whom opera would not exist."

His words may be obscured by the composer's penchant for blending voices in harmony or by the ever increasing variety of noises coming out of the orchestral pit, but the librettist still plays a crucial role in an opera's success. His poetry may be cut up and distorted to the point where it sounds like prose, his words may be given a significance (or lack thereof) that he never visualized, but no opera can do without him. Indeed, if there is one cry that has gone up from composers throughout the past two hundred years, it is "Oh Lord, send me a librettist with whom I can work."

In a recent experiment in Minneapolis and Houston conducted by the National Opera Institute, in which I took part, librettists and composers were brought together and the results of their labors were rehearsed, rewritten, and rehearsed again, as is the practice on Broadway. It transpired in discussion with authors, composers, directors and performers, that almost all suggestions for improvement had concerned the libretto. This should not be unduly surprising because, although one can choose from a thousand or more colleges that teach the composing of music, there is not, to my knowledge, a single institution that will teach the writing of libretti. And the reason for that is simple enough: the job of the librettist is undoubtedly the most unrewarding in all the arts.

The librettists of the seventeenth and early eighteenth centuries published their works for reading, even before a composer had been selected, for, before the days of copyright, publication under the librettist's own name guaranteed him some credit for his authorship. Successful libretti were set to music by many composers: *La Dafne* by Ottavio Rinuccini served Jacopi Peri, Giulio Caccini, Jacopo Corsi, Marco da Gagliano and Heinrich Schütz and probably others who are no longer remembered, while Metastasio's *Artaserse* was set by Johann Hasse (1730), Leonardo Vinci (1730 — not the painter), Domenico Terradellas (1736), Christoph Gluck (1741), Karl Heinrich Graun (1743), Niccolò Jommelli (1749) and others.

Towards the end of the eighteenth century and throughout the nineteenth, the

vogue was for adaptations of successful dramas rather than for original libretti, and this can hardly have helped the status of the librettist. Lorenzo Da Ponte is remembered for his adaptation of Beaumarchais' *The Marriage of Figaro* and Bertati's *Don Giovanni*, but we remember Victor Hugo, who wrote *Le Roi S'Amuse*, much better than we do Francesco Maria Piave, who turned it into *Rigoletto*; and Alexandre Dumas, fils, author of *Camille*, better than the same Piave who turned it into *La Traviata*.

In some way connected with this change in vogue was the development of the language of music to which I have referred above. I will attempt to summarize the various ways in which music can be used as a language to convey non-musical ideas, but I suggest turning to Boris Goldovsky's *Bringing Opera to Life* to find the subject more exhaustively treated.

The first aspect of music as a language can be called "Imitations of man and nature." Composers have always been fascinated by such imitations: the distant hunters in Purcell's *Dido and Aeneas* (strings mimicking hunting horns); the throbbing of the lover's heart in Mozart's *Die Entführung aus dem Serail*; the thunder and raindrops in *The Barber of Seville* storm; and the cuckoos in *Hansel and Gretel* are but a few examples.

The second aspect concerns the defining of the mood and character, a form of the language used commercially by Muzak. Again one can quote from *Dido and Aeneas*, when different kinds of music are assigned to the lovesick Dido, the conspiring witches, and the carefree sailor. The very first notes of *Madame Butterfly* and of *Die Meistersinger* would immediately make clear which opera deals with the Japanese Geisha and which with the Nürnberg Bürgermeisters: the slight hesitation in the rhythm when the singing starts underlines the flimsiness of the Japanese house of wood and paper, while the stuffy, fussy little march illustrates the characters of the officials who will attend the wedding ceremony.

The third aspect concerns the use of common analogies. When we speak of music we constantly find ourselves using non-musical terms. We talk of a "deceptive" cadence, meaning that a harmonic progression which we expect from experience to take a certain turn is interrupted and resolved in an unexpected manner. We speak of "high" notes, although they are not in fact high but notes of greater frequency of vibration. In fact, to achieve high notes on the cello, one must place the finger lower on the string, and, on



Lorenzo Da Ponte, (1749-1838), librettist for Mozart's *The Marriage of Figaro*, *Don Giovanni* (written with advice from Casanova), and *Così fan tutte*. Da Ponte spent his last years in New York City as professor of Italian at Columbia University.

the piano, on the same level but further to the right.

A composer wanting to illustrate a child sliding down the bannisters might do so with a rapid scale downwards (going from a high rate of vibration to a lower). Such a scale conveys the idea of going downwards although, in fact, if there were any noise involved, it would probably rise in pitch (increase in speed of vibration) as his speed increased. These examples are given to show that such analogies, although generally accepted, are not particularly logical.

The composer can also communicate by associating a musical idea with a non-musical. This association normally has to be set up by the composer, but he may use an existing musical association, as for example when Puccini quotes the opening measures of "The Star Spangled Banner" to introduce Lieut. Pinkerton's toast and thus states his nationality without words. Wagner used this method of communication extensively in what is known as the *leitmotiv* technique, and so did Beethoven on occasions before him.

In *Fidelio*, following the aria in which he talks excitedly of his wife, Florestan goes to sleep; as he sleeps, the oboe softly plays the theme of the aria and we know that he is dreaming of her. The Marschallin in *Der Rosenkavalier* explains to Baron Ochs that she could not see him earlier because of a headache; however, as she does so, the orchestra plays the theme of her love music with Octavian and we know she is not being strictly truthful. Incidentally, be it noted that, when

words and music disagree, it is the music that tells the truth.

If we add to these aspects of musical language the fact that composers began to need opportunities to have their characters sing together in harmony and counterpoint, pitting one emotion against another, and that the piling up of vocal forces could make a grand finale that could not even be thought of in a straight play, we can see why a composer was bound to start dictating to his librettist.

The famous quartet from *Rigoletto* is a typical example of the operatic ensemble, a feature that is quite unthinkable on the non-musical stage. Four people sing together, each using different words, with the obvious result that no one can possibly follow what each is saying. However, Verdi has chosen incredibly vivid vocal lines very aptly describing (1) Rigoletto's love for his daughter and his desire for revenge upon the Duke, (2) The Duke's totally insincere protestations of love for Maddelena, (3) Gilda's love for the Duke and her horror at the way he is behaving, and (4) Maddelena's flirtatiousness, calculated to lure the Duke to his death, yet mixed with her more tender feeling for such an attractive man. In such an ensemble, words become quite meaningless but, with fairly simple action, this loss of verbal detail is gladly traded off against the musical characterization of each vocal line and the musical excitement of the whole.

Whatever our feelings about ensemble singing (and there are composers who have rejected it as being hopelessly unreal) there is no doubt that once again it has undermined the ancient prerogatives of the librettist.

If, by the increase in ensemble singing and orchestral commentary, words in opera have become less and less intelligible, one might wonder what there is left for the librettist to do. The answer is that although words may mean less to the audience than they did in the time of the *Camerata*, they still fill a vital need for the composer. He may indeed have all the musical techniques which have been mentioned but he must still have characters to portray in his music. He still requires someone to write appropriate dialogue, to divide the whole into scenes and shape those scenes to serve the needs of the story and his needs as composer. Someone with real theatrical instincts must work out situations that will put the story across and someone must oversee the whole from the theatrical point of view. Whatever their abilities in dramatic music, very few nineteenth-century composers had that true understanding of drama to enable them successfully to write their

own libretti, and hence the need for our downtrodden friend.

Except in the case of patter songs, words set to music take approximately three times as long to sing as to speak, so that, when adapting a play, the librettist must reduce the number of words considerably. At the same time, he must add opportunities for arias, for by that means we learn enough about the principal characters to become interested in them; he must employ the chorus gainfully, on stage and off. Pilgrims approaching and passing by, revellers in the street below the sick one's window, distant sounds of the Requiem Mass, a triumphant *Te Deum*, heavenly hosts, and dockhands at work — these are some of the uses of the off-stage chorus. On stage, they appear in a realistic crowd scene with everyone singing at cross purposes, as returning soldiers, as popular supporters for a principal, or as background to some other action. In most cases all such choral activity will have to be contrived by the librettist because there is no equivalent in the original play.

In reducing the length of his text, the librettist must remove what can better be said in the language of music, for music can actually convey emotional matters more quickly and accurately than words, and this often means a complete reshaping of the scene, as in the quartet already mentioned. He must devise the situations which lead up to the big finales, for these extended moments, involving many principals and the chorus, often replace a scene in the play in which the stage is gradually emptied for a final soliloquy.

If the composer feels that he can use the device of musical associations, the librettist must give him ample opportunity to teach the audience the dramatic meaning of the appropriate music. Finally, he must find the right words to clothe the musico-dramatic framework, words that are simple enough to be understood, characterful, singable and meaningful, and we see that the librettist has a role worthy of far more esteem and appreciation than is normally accorded him.

Perhaps the most convincing way of highlighting the librettist's contribution to opera is to compare two operatic versions of the same story. Shakespeare's *Merry Wives of Windsor* provided the source for Nicolai's opera of that name, libretto by H.S. Mosenthal, first performed in 1849. Forty-four years later, it provided a basis for Verdi's *Falstaff*, with libretto by Arrigo Boito.

In the following table we can compare what scenes from Shakespeare each has chosen:

Merry Wives, Nicolai/Mosenthal

Act I, Sc.1: Outside Mrs. Ford's house. She receives her letter and is amazed, insulted and amused. Mrs. Page receives hers. Finding them identical, they are outraged, then laugh and plan a merry revenge.

The ladies leave. Mr. Page promises his daughter, Anne, to Master Slender. Dr. Caius is upset. Ford's jealousy is mentioned. Fenton appears and asks for Anne. Page rejects him because he is not wealthy . . . insults, refusals and determination

I, 2: Interior of Ford's house. Aria for Mrs. Ford as she plans a reception for Falstaff. Mrs. Page arrives and they plan together. Mrs. Page hides and Falstaff appears. He courts ardently and unsubtly. Mrs. Page runs in, pretending that Mr. Ford is on his way. Falstaff hides in the basket. Ford unexpectedly enters with others. The basket is taken out with Falstaff inside. The ladies are left alone for a few minutes; they enjoy the joke. When her husband returns, Mrs. Ford pretends to be very hurt. The finale is built by all turning on Ford in disgust.

II, 1: The Garter Inn; Falstaff and "Master Brook."

II, 2: In a garden; a comedy quartet, Slender, Caius and Fenton all hoping to win Anne.

II, 3: Ford's house; Falstaff makes a second visit and escapes as "the old woman of Brentford." Finale based on vague threats as to what they will do when they catch Falstaff.

III, 1: Page's house. Story of "Herne the Hunter" whose ghost patrols the forest. Mr. and Mrs. Ford are reconciled. All plan activities for Windsor Great Park, in which Falstaff will appear dressed as Herne and will be made a fool of. Mrs. Page also hopes to marry off Anne to Dr. Caius, while Mr. Page plans to wed her to Slender.

III, 2: Windsor Great Park. Falstaff meets the ladies who leave him when they pretend to hear the approaching night spirits. Formal ballet of pixies and elves. Anne and Fenton, both disguised, are married. Falstaff is discovered and beaten. He apologizes and is forgiven. Caius and Slender, both disguised, run off together, each thinking he has Anne. The ladies have the ultimate finale.

Falstaff, Verdi/Boito

Act I, Sc.1: The Garter Inn. Falstaff at home. We meet his servants, Bardolph and Pistol, also Dr. Caius. We hear of his plan to court the wives. Falstaff dismisses Bardolph and Pistol for insubordination.

I, 2: Outside Mrs. Ford's house. Mrs. Ford, Anne, Mrs. Page, and Dame Quickly meet. Mrs. Page boasts of her letter, then Mrs. Ford. Finding them identical, they laugh, then become outraged, then plan a merry revenge.

The ladies leave. Ford arrives with Bardolph, Pistol, Dr. Caius and Fenton. They tell Ford of Falstaff's plans for his wife. Ford is furious, but drags the others into hiding when he catches a glimpse of his wife. Fenton and Anne are left alone for a quick flirtation. The ladies return and Quickly is elected to go to invite Sir John into the trap that they are planning. They leave, and Fenton and Anne again get together.

The men return and later the ladies and both groups continue their plotting while Fenton and Anne plight eternal love. The ladies have the last word.

II, 1: The Garter Inn. Falstaff alone. Bardolph & Pistol return and make up. They are now double agents. Quickly arrives with news that both ladies will welcome his attentions. She leaves and a Mr. Brook is announced. It is Ford, come to find out what is up between Falstaff and his wife.

II, 2: Interior of Ford's house. Mistress Quickly reports her success. The basket is readied. Mention is made of Ford's support for Caius' courtship of Anne. The stage is set and Falstaff arrives. He courts ardently and unsubtly. Mrs. Page and Quickly interrupt and Falstaff is hidden behind a screen. Unexpectedly Ford himself appears with others, spots the basket and investigates. Later Falstaff hides in the basket and Anne and Fenton behind the screen. A kiss is heard and the finale is built on Ford's belief that his wife is behind the screen with Falstaff. When that is cleared up, all enjoy seeing Falstaff dunked in the river.

III, 1: The Garter Inn; Falstaff, recovering from his dunking, is visited again by Mistress Quickly and is invited to meet the ladies in Windsor Great Park at midnight, dressed as Herne the Hunter.

III, 2: Windsor Great Park. Fenton greets the night as he waits for Anne. Action then follows Mosenthal fairly closely, although the two weddings (Fenton-Anne and Caius-Bardolph) are celebrated together. Falstaff has the last word, inviting everyone to join him in the pronouncement that "All in the world is folly and therefore man should be jolly."

It is not surprising that the versions differ considerably, partly because of the forty-four years dividing them and partly because of Boito's great experience, not only in writing libretti but in composing operas. Mosenthal follows Shakespeare in calling the opera *The Merry Wives of Windsor* while Boito opts for *Falstaff*. In Mosenthal, the wives start the show and Falstaff does not appear until the end of the first act when he is quickly put in the basket and thrown into the river. In Boito, we meet the hero in his place of residence, as well as the riff-raff who surround him, before meeting the objects of his amours. Mosenthal assigns arias, in the earlier style, to all principal characters while Boito carries the whole plot in conversations, that is, in duets and ensembles.

Mosenthal includes more of Shakespeare's situations, including the "Woman of Brentford" scene, but cannot therefore go into as much depth. In fact, only the two wives come out with any character, for Falstaff has little to sing and Ford is seen only in his rages. Boito introduces Mistress Quickly, a particularly rich character, but drops Mr. Page, making Ford the father of Anne and thereby giving a whole new side to his character. He also drops Slender and brings in Bardolph and Pistol, who are not only multifaceted themselves but, by their interaction with Falstaff, tell us a lot more about the fat knight. Fenton and Anne appear and reappear, each time giving us a better clue as to their feelings for each other, while in Mosenthal they have but one short scene together, plus a brief wedding ceremony.

Boito's *Falstaff* is indeed one of the greatest libretti ever written. Mosenthal's, on the other hand, is essentially routine, although Act II, 2, with Anne and her three suitors, and the final wedding of Caius to Slender are original and rather more amusing than in Shakespeare's play. It is fascinating to think what Nicolai could have done had he been provided with a libretto as good as Boito's, for he did very well by what Mosenthal gave him. If *Falstaff* is considered a masterpiece, it is not only because Verdi did his work well. Boito, the librettist, must have his share of the credit.

An even more revealing comparison can perhaps be made between two late-nineteenth-century operas based on the *Histoire du Chevalier des Grieux et de Manon Lescaut* by the Abbé Prévost. Massenet's *Manon* (1884), libretto by Henri Meilhac and Philippe Gille, and Puccini's *Manon Lescaut* (1892), the score of which does not name a librettist, were written within eight years of each other



Arrigo Boito (1842-1918), a composer in his own right, and librettist for Giuseppe Verdi's operas *Otello* and *Falstaff*, photographed with Verdi at Verdi's home, Sant' Agata.

and there is no real difference in emphasis such as there was between *The Merry Wives* and *Falstaff*. It was, however, necessary for the librettists of the later *Manon Lescaut* to make some changes in order to avoid comparison with the earlier work.

If there was ever a composer who had trouble with his librettists, it was Puccini, who seems to have had the strongest instincts for the theater but not the literary qualifications necessary for writing his own libretti. Once Puccini had become excited with the idea of writing an opera on the subject of *Manon* and *Des Grieux*, his publisher commissioned Ruggiero Leoncavallo, later the author of both the words and the music of *I Pagliacci*, to write a libretto. Very early on, Puccini disagreed with his outline and Marco Praga, a playwright with no experience of libretto writing, was brought in for the job. Praga did not feel confident in verse, so suggested Domenico Oliva to help him. Their libretto at first pleased Puccini and a contract was signed, but as he started to compose, he gradually found more and more need to make fundamental changes in its shape, until Praga could take it no longer and resigned.

Oliva and Puccini then worked out some new ideas and Puccini began composing in earnest. Again problems occurred and Oliva

backed out, whereupon the publisher, Ricordi, brought in Luigi Illica and later Giuseppe Giacosa to finish the work. No wonder the title page of the score does not mention a librettist. By now, there was no doubt that the composer was the top dog, and the librettist merely a hack whose main task was to satisfy the composer's desires. Opera had travelled far since the days of *Metastasio*.

Writing to Giuseppe Adami, Puccini answered the suggestion that his *Manon Lescaut* might be too like Massenet's: "Massenet feels it as a Frenchman, with the powder and the minuets. I shall feel it as an Italian, with desperate passion," and it will be noticed that he does not include his librettist in the statement.

It is indeed true that Massenet, with Meilhac and Gille, has included "the powder and the minuets," but far more important to the audience's appreciation is the fact that his libretto is set out in a beautifully logical manner: Manon and Des Grieux meet and elope to Paris. At home in Paris, Des Grieux is kidnapped, with the backing of a wealthy admirer of Manon. In a street scene, Manon hears that Des Grieux is becoming a priest, so leaves her elderly lover and goes to find him. At the seminary of St. Sulpice, Manon seduces Des Grieux from the priesthood and they are next seen at the Hotel Transylvania where Guillot loses at cards to Des Grieux and accuses him of cheating and Manon of theft, returning later to have Manon arrested. Finally, on the road to Havre, a rescue attempt is abandoned and Manon dies in Des Grieux's arms.

Puccini's scenario, on the other hand, goes as follows: Manon and Des Grieux meet and elope to Paris. Act II finds Manon living in an apartment belonging to Geronte and we learn that she has left Des Grieux. Lescaut enters and hints that Des Grieux would like to see her again; he arrives and Manon is arrested as she tries to leave the house with her jewels. At Havre, we see Des Grieux and Lescaut trying to effect an escape, but Manon is loaded into a ship to be sent to the colony of Louisiana. Des Grieux persuades the ship's captain to take him along. With no explanation, we now find Manon dying in Des Grieux's arms somewhere in the "bare and undulating plains of new Orleans."

This last act might have made more sense if the librettists had given the reason for this strange turn of events. Why could Manon and Des Grieux not have set up house and made their fortune as so many of the convicts did? The reason, as given in Prévost's origi-

nal story, was that, by the laws of Louisiana, the convicted women were apportioned to the men who had been in the colony the longest. The rule was waived in Manon's case because she was thought to be married to Des Grieux. After a while, they begin to feel guilty at living together without the blessings of the church and apply for a license to marry. At that point, they learn of the law and are forced to escape from the city to avoid being separated. It is true that Puccini imparts to his characters considerable "desperate passion," but they are hardly strong enough as characters to bear the load. Compared with Massenet's characters, they are one-dimensional, even though clad in as passionate, dramatic and melodious music as Puccini ever wrote.

In *Manon*, Massenet's librettists, by introducing the actresses in Act I, show us Manon's deepening love of luxury which, in *Manon Lescaut*, hits us as a complete surprise. They allow us to see Des Grieux not only as a passionate lover but, after his separation from Manon, also as a novice priest; and Lescaut as a dutiful cousin, before he sides with Manon's wealthy admirers to remove her from Des Grieux. Even Bretigny, their equivalent of Geronte, is shown as a man with guts enough to disguise himself as a soldier in order to get into Manon's good graces.

Again, it is interesting to think what Puccini would have done if he had been free to set the libretto by Meilhac and Gille, for in them Massenet had a far better team. Without doubt, it is that better team, the librettists Henri Meilhac and Philippe Gille, that must be credited for the greater success of *Manon*, for Massenet's music is hardly better than Puccini's.

Since our present concern is the operatic librettist and his relationship with the composer, we will not dwell on those like Wagner who fulfilled both roles. As a more recent practitioner of these dual capacities, Carlisle Floyd, wrote: "I am frequently struck by the pitfalls of collaboration . . . At such times, I consider myself fortunate that in my case such dialogues are carried on by a composer and librettist of identical aims and values, and that consequently disagreements are out of the question" (*Opera News*, November 1962).

Of twentieth-century composers whose works are likely to remain in the repertory, Arnold Schönberg, Alban Berg, Serge Prokofiev, Ferruccio Busoni, Paul Hindemith, Leoš Janáček, Giancarlo Menotti, Carlisle Floyd and Thomas Pasatieri have all written their own libretti. Among those who still prefer to

leave the writing of the libretto to someone else, it seems that the twentieth-century trend has been toward greater cooperation, with the composer feeling more and more free to initiate dramatic ideas. This is true of Benjamin Britten, who had a variety of collaborators whom he did not hesitate to acknowledge publicly for their creative input; yet we still know the resultant operas as "by Benjamin Britten," not "by Britten and Crozier" or "Britten and Piper."

Perhaps the most interesting collaboration, partly because it was between two people of great artistic maturity, partly because it continued for almost twenty-five years and through six major operas, and partly because it is so well documented, is that between Richard Strauss and Hugo von Hofmannsthal. Since the one lived in the suburbs of Vienna and did not care to travel and the other was a world-renowned conductor who could not find time to compose except during his summer vacation, they were forced to communicate by letter. Their correspondence was published in 1952 and it stands as the most comprehensive and fascinating statement of the operatic creative process.

Each had attained considerable renown in his own field before fate brought them together, and they were of completely different temperaments. As a result, the letters are not only a statement of their individual philosophies but also an arena where all sorts of misunderstandings are worked out, and the reader therefore gets a very intimate view both of this relationship and of the whole problem of joining music with drama.

Hugo von Hofmannsthal, a successful poet and playwright since the age of seventeen, wanted to write his libretti as full-length plays first, knowing that they would have to be cut down before they could be set to music. His characters had to be formed in words, even though much of his writing would later be replaced by music. As he says, "Never could I attempt to formulate the text from the outset in this lyrical manner which leaves most of the characterization to the composer."

Richard Strauss was in his forties when the collaboration began and had already written the great tone poems and three operas.

He spent his winter months as a very active conductor at the Royal Opera House in Berlin, where he also directed an orchestral concert series. At one point he writes, "when composing your text don't think of the music at all—I'll see to that. You just write me a drama that's full of action and contrasts, with few mass scenes, but with two or three very good rich parts."

Their first opera together was *Elektra*, already a successful play, but thereafter Hofmannsthal was responsible for the choice of subject and for the costumes and scenery. Strauss had much to say about his dramatic needs and, for example, made extensive suggestions for a rewriting of Act II of *Der Rosenkavalier* for which Hofmannsthal thanked him: "From this one occasion I have learnt something fundamental about dramatic work for music which I shall not forget." (All letters quoted from *The Correspondence between Richard Strauss and Hugo von Hofmannsthal*, trans. Hanns Hammelmann and Ewald Osers, Collins, 1961.)

Luckily for Hugo von Hofmannsthal, the collaboration over such a long period, coupled with the popularity of the resultant operas, has tended to link the names of Strauss and Hofmannsthal in the public mind, so that we are probably more aware of this librettist than we are of most. However, there is little doubt that one of the reasons why Hofmannsthal wanted the correspondence published was to try to redress the traditionally faulty balance between the recognition accorded the composer and that given the librettist.

Will this faulty balance ever be changed, or must the composer continue to rely upon finding a self-effacing dramatist to supply his needs, one who is greatly talented yet prepared to have his work criticized, reshaped and distorted by his non-literary partner, one with poetry in his soul who is prepared to sacrifice most of the lyrical quality of his work to the composer's music, all for the satisfaction of being ignored once the work is complete? In short, must this vital partner in the creation of an opera continue to be an unperson, or can we begin to appreciate how much we owe to the librettist?

Walter T. Olson

VISITING THE PLANETS

The Mariners, Voyagers and other unmanned spacecraft of the past two decades have revealed a succession of surprises, perhaps the greatest of which is that each planet is quite different from the others.

"Glory and curiosity," wrote that urbane essayist, Montaigne, "are the scourge of the soul. The one prompts us to stick our noses into everything; the other forbids us to leave anything doubtful or undecided." We probe with ever more forceful instruments into the heart of matter itself. We study in increasing detail the very molecules that comprise our bodies and brains. We look with telescopes of great power and sophistication almost to the maximum distance that is theoretically possible in our universe. And now we are systematically visiting our neighboring planets of the Sun. Such visits epitomize the capabilities and potential of modern technological society.

Residents of Northern Ohio should have a more than usual interest in these uniquely modern voyages of discovery. For every one of the great, rocket-powered vehicles that have launched our nation's fifteen unmanned spacecraft to the planets has been the responsibility of the Lewis Research Center in Cleveland. The Center's management responsibilities include development and operation of Atlas-Centaur and Titan-Centaur vehicles. With these and earlier rocket ships, the Lewis Center has been responsible for more than eighty of the nation's major space

launches for unmanned lunar and planetary exploration, space science, and weather and communications satellites.

Why do we explore the planets? The reasons range through politics, defense, economics, science, and philosophy. Certainly a pragmatic, utilitarian case can be made. If you have read a newspaper today, shaved, watched a weather report, looked at your digital wristwatch, made a bank transaction, shopped with the aid of a pocket calculator, telephoned another city, bought packaged frozen food, or put gasoline in your car, you benefited from the space program. The immediate spin-offs into almost every area of life and the resulting positive economic benefit from the investment in space have been well documented.

But the eventual practical use of the new knowledge being garnered is not immediately evident. We are continuing a process that brought us to Newton and thence to our modern, technologically based culture. The process takes us from curiosity to information and knowledge, and from knowledge to insight and understanding; that's science. And the process takes us from understanding to applications, goods, and services; that's technology. Where the process will



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Photographs courtesy of the National Aeronautics and Space Administration.

take us in the future cannot be foreseen. Certainly neither Galileo nor Newton foresaw people by the hundreds of thousands jetting daily across the continents and seas of the world.

The roots of our contemporary adventures to the planets reach back to the earliest star-gazers of antiquity. The records of ancient Mesopotamia, Egypt, China, India, and Greece reveal thousands of years of cataloging the motions of sun, moon, planets, and stars, which resulted in accurate predictions of the movements of the heavenly bodies, and of eclipses, solstices, and equinoxes, and even descriptions of the sphericity and rotation of the earth. These early observations were generally made in the hope of understanding, through religion or astrology, the real or supposed influences of the heavenly bodies on men's affairs, rather than for the "pure" knowledge of astronomy. Whatever the original aims, they provided a valuable foundation for future astronomical studies—just as "pure" astronomy has in turn contributed practical benefits through modern technology.

Today's practitioners of astronautics will admit that they "stand on the shoulders of giants": Copernicus (1473-1543), who finally established the idea that the earth was a planet circling the sun (Aristarchus had proposed this idea 1800 years earlier); Brahe (1546-1601), whose novel instruments and sound observational procedures produced improved determinations of stellar and planetary positions; Kepler (1571-1630), who precisely described the elliptical paths of planets; Galileo (1564-1642), who not only put the dynamics of solid bodies on a sound experimental and theoretical basis, but also made key astronomical observations with that new invention, the telescope; and Newton (1642-1727), whose physical principles for the motion of bodies, whether apples or stars, were unchallenged for 200 years and today still serve adequately for almost all of our modern technology from automobiles to zippers.

Space exploration was a logical follow-up of the rocketry developed in World War II. That development itself evolved from advances in a number of fields: metallurgy, for materials that combine strength and light weight; chemistry, for high energy propellants; fluid mechanics, for flight dynamics, for pumping propellants, and for engine cooling; solid physics, for solar cells and electronics; and, especially, electronics and computers, for navigation, command, and control. In turn, the demand for even better

materials and propellants, more powerful computational ability, and smaller, cheaper, more rugged electronic equipment for space flight has stimulated the search for new knowledge and techniques that are applicable to many purposes besides rocketry. This snowballing of modern technology has produced benefits in the fields of medicine, transportation, and alternative energy, and in almost every aspect of our life today.

Many direct benefits have already accrued from space research. Remote sensing satellites from orbits more than 500 miles from the earth send back information useful for agriculture, environmental studies, oceanography, mineral and oil prospecting, navigation, military operations, and the monitoring of weather, floods, forest fires, strip mining, earthquakes, and volcanoes. Other satellites link the nations of the globe through radio and television. Eight U.S. and four Canadian domestic communications satellites serve the North American continent, and there are applications pending for 21 new satellites in the U.S. alone.

Visiting the planets is one part of a four-pronged program of space exploration. First, increasingly sophisticated launch vehicles and spacecraft are enabling us to examine in greater detail the lively physical processes in the Earth-Sun environment, which directly affect airlines, power companies, navigation, communications, and a host of other human concerns, including our weather and climate. Second, while we can still only look at—not visit—the stars, we can see into space as we never have before, by means of sensors and telescopes responsive to wavelengths to which our atmosphere is opaque, such as ultraviolet, X, and gamma rays. Third, four generations of spacecraft have visited the Moon to map its surface, to test and to view specific areas, and to permit twelve different astronauts to perform the tasks of lunar explorers and geologists. And finally—the activity with which this article is primarily concerned—we are sending unmanned spacecraft to visit the nearby worlds in our little corner of the universe, the solar system.

Since space exploration is still in its infancy, many of its practical applications are yet unknown, but they promise to be enormous. To begin with, improved knowledge of the other members of the solar system will help us understand the history and properties of our own planet; such knowledge could conceivably enable us to avert the extinction of life on earth at some time in the future.

Exploring beyond the confines of earth obviously involves much more than just get-

ting there and taking a look. Many sorts of instruments are required to record and send back to us the varied data we seek. A close look at the general appearance, the geology and geography, of the planets and their major satellites is expected, of course. So TV eyes are called for. Also, when we are free of our obscuring terrestrial atmosphere, we can "see" radiation reflected or emitted in other wavelengths than those of visible light. So besides TV imaging equipment, the spacecraft carry remote sensors for both infrared and ultraviolet radiation, and preferably spectrometers for measuring radiation intensity at specific wavelengths. Photopolarimeters that measure the brightness and polarization of light with high precision not only produce the close-up views that are of such compelling interest, but they can measure the reflectivity, temperatures, and heating and cooling rates of surfaces—data that permit inferences about the physical nature of the surfaces. Data from these sensors reveal the structure and composition of atmospheres, the presence of clouds or dust, chemical reactions caused by sunlight acting on upper atmospheres, and the physics of charged particles interacting with molecules at the very top of an atmosphere. We also learn about a planet's atmosphere from the occultation of radio transmissions as the



Heavily cratered surface in a northeast quadrangle of Mercury could be mistaken for the lunar highlands. Largest craters are almost 100 miles across.

spacecraft swings behind the planet.

We need to learn more not only about the solid bodies of the solar system but also about the environment around and between them. A tenuous solar wind of charged particles, electrons and protons, flows by Earth at a million miles an hour. At times its concentration and speed increase to levels that would be lethal to astronauts caught in it. Investigations are aimed at measuring the properties of this wind and noting its interactions with planetary magnetic fields. Here on earth the effects of the solar wind are manifest as night-glow, aurora, long-range radio interference, and surges in long-distance power lines. Other charged particles—electrons, protons and larger ions with energies greater than those of the solar wind, including extremely energetic "cosmic rays"—also zip through space; the study of their properties and sources requires different instrumentation than does that of the solar wind.

Although they are the whole point, the scientific instruments on board are usually only a small part of the spacecraft. For our unmanned visitor must contain antennas and radios to receive and to send information; navigation, guidance, and stabilization systems that include sensors, computers, controls, and rocket thrusters; a power-generation system; temperature regulators; and, finally, a computer to oversee, command, and control all functions, store and retrieve information for operations, and process, store, and retrieve scientific data for transmission. These robots must function unattended for months or years.

Earth's unravaged sister

What have we seen and learned? First out from the Sun is Mercury. Orbiting the Sun every 88 days only 36 million miles from it, Mercury can be seen from Earth only within two and a half hours before sunrise or for two and a half hours after sunset, and then for only about a two-week period every 44 days. No wonder the ancients thought this wandering star was two—a morning and an evening star.

Poorly reflecting, only 3000 miles in diameter, Mercury reveals virtually no details to the modern telescope. Only in 1965 did radio astronomers discover that it rotates on its axis in 58 days. Yet its importance to planetary science is disproportionate to its size. For here is a sister of Earth, but unravaged by wind and water. The primordial, unchanged surface of Mercury holds a record of events to be compared to similar records on Moon and Mars.

The Mariner 10 Mercury probe used the gravity-assist-trajectory, by which the spacecraft "hitches a ride" from the gravitational pull of a body that it passes near and thus reduces the size of the original launch vehicle. Venus was used to alter the trajectory of the spacecraft so that it would fall closer to the Sun and cross Mercury's orbit at the exact time to encounter the planet. In fact the trajectory was such that a close encounter with Mercury would occur three times in 12 months as the spacecraft orbited the Sun.

Mariner 10 was the sixth of a series of Mariners that had explored Venus and Mars over more than a decade. Launch was November 3, 1973 and Venus flyby February 5, 1974. During the few days from March 25 to March 29, 1974, as Mariner 10 raced in from 2 million miles to 3600 miles, pictures of Mercury progressed from tantalizing, to revealing, to fantastic! Thousands of additional pictures were gathered six months later on a second flyby at 31,000 miles, and still more data on the third flyby at about 200 miles. Picture resolutions were obtained to 300 feet, 7000 times better than observations from Earth. These few hours of spacecraft observations added more to man's store of knowledge about a little known planet than centuries of Earth-based observations.

Like the Moon, Mercury has a dark surface that reflects light and radar poorly, and displays a profusion of craters, some with bright rays, huge basins, ridges, jumbled terrain, plains, and highlands. Unlike the Moon, Mercury shows large scarps, or cliffs, 2 miles high that cross the landscape for up to 300 miles and resemble thrust faults. Mercury has a magnetic field, although only $\frac{1}{60}$ as strong as Earth's. Thus its interior probably resembles ours. The solar wind produces a bow shock wave and distorts this field into a long tear-drop shape, even as it does with Earth's field.

So here is a planet in some ways like Earth, in some ways like Moon, and in all ways a valuable source of information for comparative planetology—a source that will be studied for many years to come.

Earth's cloudy twin

Venus, once called "Earth's twin," is almost the same in diameter, mass, gravity, density, and orbital period as Earth. But thick clouds prevent even a glimpse of the surface through conventional telescopes. It does have a slow, retrograde rotation (clockwise, unlike that of Earth and most other planets). A Venusian day lasts 243.1 Earth days; that's



The clouds of Venus photographed in ultraviolet light from 450,000 miles reveal a complex atmospheric pattern. Winds aloft are more than 200 miles an hour westward as the entire atmosphere rotates around the planet in four days in the same direction as the planet's rotation.

longer than the Venusian year of 224.7 Earth days. Now we know that in many other ways Venus is quite unlike Earth. It is, in fact, another unique place in our solar system.

Venus has been visited by 14 spacecraft of which 5 were American and 9 were Russian. In addition, one U.S. Mariner attempt failed at launch, and the Russians experienced an unannounced number of failures in the 1960's. Mariner 2 flew by Venus at 21,650 miles on December 2, 1962 to become the first successful planetary spacecraft. It discovered average temperatures of over 800 degrees F in night and day hemispheres, and virtually no magnetic field and no radiation belts. Since then both orbiters and landers have made detailed measurements of the structure, temperature, and composition of the cloud layers and have gathered data, including pictures, on the surface below.

Unlike Earth, Venus has no magnetosphere. But at Venus, a bow shock from the solar wind was found at 4000 miles; the ionosphere (ions created by solar ultraviolet and X-rays on the upper atmosphere) holds off the solar wind.

The obscuring clouds of Venus apparently are the result of a chemical stew. The identified operating ingredients are water, sulfur dioxide, and oxygen. The clouds are in three layers. Uppermost, from 43 to 34 miles altitude, is a mist of sulfuric acid droplets at 55 degrees F. At about 33 miles is a layer with liquid drops and solid sulfur particles at 68 degrees F. A third layer at 30 miles contains solid and liquid particles of sulfur and some



The first color picture from the surface of Mars. The entire scene is reddish orange or reddish brown, like hematite, except where the wind has exposed the gray of the rocks.

sulfuric acid at 395 degrees F. Circulation driven by solar heating churns these chemicals into different temperature zones where various chemical reactions occur.

Below the clouds, from 29 to 19 miles, is a haze. And below that it is hot, dry, and clear with very low wind speeds. The surface would be lighted as on an overcast day on Earth, but redder. The atmosphere is 97 percent carbon dioxide, with 1 to 3 percent nitrogen, 0.1 to 0.4 percent water, and smaller amounts of helium, argon, neon, sulfur dioxide, and oxygen. Atmospheric pressure is one hundred times Earth's. There is as much nitrogen on Venus as on Earth. But unlike Earth, where carbon dioxide is locked up in carbonate rocks, Venus' carbon dioxide is gaseous. If Venus had a lot of water, it has lost it.

The twenty-five percent of sunlight that penetrates Venus' clouds is trapped as heat by the carbon dioxide, water, and sulfur particles, producing a "greenhouse effect" that drives the temperature to 900 degrees F day or night.

A modest radar carried on Pioneer/Venus Orbiter in 1978 and 1979 mapped about 90 percent of the planet's surface with enough resolution to discern major features. Venus is 60 percent flat, rolling plain; 16 percent of its area is below the mean radius ("sea level"); 24 percent is a few thousand feet higher; and 8 percent is true highland. The lowest area, 9000 feet below mean, is a basin about the size of the North Atlantic Ocean. A plateau as large as the United States and higher than Tibet appears to have a level surface and 10,000 ft. mountains at its edges. Two other large

highland areas appear to be rough, fractured and faulted with large boulders and rocks. Primordial craters larger than 45 miles across could be observed from Pioneer.

The Russian Venera 8 lander showed an area strewn with many rocks, a foot or two in size, with sharp edges; at another location, Venera 10 photographed large pancake-shaped rocks, with cooled lava or weathered rocks between. When Pioneer-Venus Day probe dropped on the surface at 27 miles per hour, it hit fine dust that took three minutes to settle.

There is much more that we want to know and will need to know about our sister Venus as we try to piece together the story of the beginnings and evolutionary course of our solar system.

Exploring the red planet

Mars, a wandering red light in the sky, has been named after the god of war since the Babylonians. By the seventeenth century, it had been observed that Mars possessed polar caps and rotated on its axis once every 24 hours and 40 minutes. Later, better observations revealed white patches that were interpreted as clouds. Mars' diameter of 4200 miles is a little more than half of Earth's, a little less than twice that of the Moon. With its rotational axis inclined almost 24 degrees to the ecliptic, it has seasons in a year of 686 Earth days as it circles the sun about half again as far from it as we are. To some, Mars seemed Earth-like, and, thus, possibly inhabited.

When Schiaparelli observed, as had others, thin, dark lines connecting areas, he marked them as "channels" on his 1877 map, but his Italian word "*canali*" was translated "canals." The idea that there were irrigation canals—on a planet that spectroscopy has shown to contain little oxygen and no water—contributed to the popular belief that Mars was inhabited. So widespread and persistent was this turn-of-the-century opinion, that a radio play based on H.G. Wells's 1897 magazine serial about an invasion by Martians, *War of the Worlds*, literally caused a panic in 1938. By the mid-twentieth century, scientists, at least, held little hope for more than microbial life on the cold, dry planet. But discoveries from our visits to Mars have replaced the imaginings of an earlier generation with equally wonderful observations.

These visits began on July 14, 1965, when Mariner 4, launched 6 months earlier, passed within 6000 miles of the planet and sent back 22 pictures of a cratered surface; data showed an atmosphere of carbon dioxide at about

0.007 the pressure of Earth's atmosphere. (Mariner 4's sister ship, Mariner 3, had been lost at launch when a shroud failed to jettison. An earlier Russian effort to fly to Mars had failed in March, 1963.) In mid-1969 Mariners 6 and 7 flew by Mars with improved equipment; between them they gleaned more than 140 long-range photographs and 58 closeups. By chance, these spacecraft traversed the southern segment of Mars that happens to look most like the Moon: heavily cratered, static, no canals, dead.

Had there been Martians scanning their sky with telescopes or radar during November and December, 1971, they would have been startled to observe three orbiting UFO's. For Mariner 9, after losing its sister ship to a faulty launch in May, arrived there November 14, and within weeks was joined by *Mars 2* and *Mars 3* from Russia. Both Russian orbiting spacecraft ejected landers, but transmission failed in both cases.

When these visitors arrived at Mars, a great dust-storm was obscuring the entire planet. But within weeks the tops of four volcanic mountains peeked out. As the dust further subsided, surprise followed surprise as volcanoes, canyons, channels, basins, cha-

otic terrain, fractures, faults, cliffs, craters, plains, dunes, and clouds revealed a planet far from dead and Moon-like, but very much alive, geologically at least.

Eventually Mariner 9 provided more than 7000 photographs during its 349 days of orbital life and mapped the entire planet. The stage was set for the more thorough exploration by two Viking spacecraft that each combined an Orbiter and a Lander, a mission that was initiated in November, 1968.

Launched in late summer, 1975, the two spacecraft arrived at the planet nearly a year later and swung into a highly elliptical orbit. After a month of examining possible landing sites in great detail, Viking-1 Lander, using its altimeter, computer, and descent rockets, automatically flew from its docked configuration with the Orbiter to a successful touchdown on the Plains of Chryse on July 20, 1976. Six weeks later, Viking 2 similarly put its lander safely down on the Plains of Utopia, while its Orbiter, like Viking 1, continued to examine the planet from space.

This enormously complex and difficult mission was a success in every way. The "primary mission" ended November 15, 1976 when Mars disappeared behind the Sun. But



Teardrop shaped "islands" are at the mouth of a valley flowing into the Chryse area of Mars. Similar patterns on Earth have been formed by huge floods, wind erosion, and glacial action.

the extended mission that began when Mars emerged a month later provided one of the longest-running successes in space exploration. Viking 2 Orbiter was shut down in July, 1978, and Viking 1 Orbiter functioned until August, 1980; both ran out of control gas. A battery failure terminated Viking 2's Lander in April 1980. Viking 1 Lander still operates, but with lessened effectiveness without its orbiting relay station.

A stunning array of more than 46,000 images from Orbiters reveals the many diversities of the Martian surface in all seasons, lighting, and weather. The huge Valles Marineris, stretching 2500 miles from west to east near the Martian equator, comprises a system of steep-walled canyons measuring up to five and a half miles deep, 150 miles wide, and 620 miles long. Tributaries are about the size of our Grand Canyon. Layered rock and landslides are evident on the canyon walls. At the eastern end, the valleys merge with chaotic terrain, an area of ancient craters where subsurface collapse and erosion have occurred. Huge channels begin at the margins of this terrain and run northeastward into the Chryse plain. Within these channels are teardrop-shaped islands, longitudinal grooves, terraced margins, and other features that are found in regions on Earth affected by large floods. Yet present conditions on Mars prevent the existence of liquid water there. Were there ancient floods? If so, they were ten to a hundred times larger than the largest ever known on Earth! Other types of channels include networks of small valleys, and long, fairly wide, meandering flat-floored valleys. Although some channels may have been cut by molten lava, evidences of water flow in the distant past are compelling.

Volcanoes on Mars resemble volcanoes on Earth, except they are much larger and they are quiet now. The largest, one of a group of giants, towers 17 miles above mean surface level and is more than 375 miles across its base, a contrast to the Hawaiian volcanoes that rise five and a half miles from the ocean floor. Enormous lava flows cover the surrounding plains.

Whereas fractures, faults, mountains, and other deformations on Earth are caused by plate motion on a continental scale, Mars shows no evidence of plate motion. Fracturing varies in age and intensity, but is most prominent around the bulge called the Tharsis uplift, where most of the big volcanoes are located.

Craters are almost everywhere on Mars, especially in the southern hemisphere. Cra-

ter densities are higher than in lunar *maria* (seas). Thus, except for polar regions, around some volcanoes, and in a few other local regions where craters are very sparse, the Martian surface is probably billions of years old. Resurfacing is extremely slow. One striking difference between Mars and the Moon and Mercury is that ejecta from Mars' craters look fluid, or mud-like, in contrast to the ballistic deposition in rays that occurs on the Moon and Mercury. Erosion has left some craters standing on pedestals.

The polar regions contrast sharply with the rest of the planet. Frozen carbon dioxide advances and recedes with the seasons. In the north, a small residual cap of water ice is left in midsummer; a much smaller cap of unknown composition persists at the south pole. Wind-blown debris creates layered deposits. Enough carbon dioxide condenses to lower the atmospheric pressure markedly and thus to cause great seasonal winds.

There is always some haze from dust in Mars' atmosphere to color the sky a creamy pink. At times, yellowish clouds blow up from dust storms, especially in the south in spring. Several dozen local and three global dust storms were observed by the Viking Orbiters. Mariner 9 saw several "small" dust storms about the size of Ohio.

Clouds form on the flanks of the volcanic mountains in late morning. Often layers of structured clouds like Earth's cirro-cumulus and strato-cumulus clouds cover the polar hood, while cirrus-like wisps of cloud are common elsewhere. Cyclonic clouds around low pressure cells were observed. Passages of cold fronts from the Arctic region are common. Viking discovered the presence of morning fogs in some crater and channel bottoms as thin frost from water is driven off the rocks when the sun warms them. On Mars, clouds are possible from both water and from carbon dioxide.

Mars' two moons, Phobos (fourteen miles in diameter) and Deimos (nine miles in diameter), are dark, irregular, cratered. They orbit with their longest axes stabilized and pointing toward Mars and their shortest axes normal to their orbit planes.

Viking 1 Lander at 22.5 degrees north, in the area known as Chryse, rested firmly on a rolling plain strewn with a variety of grey to reddish rocks of all sizes, from pebbles to boulders several feet across. Many of the rocks were covered with bubble-like cavities; others were flat and wind-polished. Wind had shaped the red, fine-grained material into small, rippled drifts and here and there had exposed a grey bedrock.

Viking 2 Lander, farther north, in Utopia, at 48 degrees and about halfway around the planet from Lander 1, also looked out at a red, fairly flat, rock-strewn scene stretching to a horizon 2 miles away, much like a desert in the American southwest. No drifts or dunes were present; no bedrock was exposed. Most of the rocks were bubble covered. The fine-grained soil on which it stood had been sculpted by winds. Although Chryse and Utopia look quite different from about 1000 miles up, the local scenes are quite similar.

During their several years of duty, the Landers faithfully observed the weather. Through the summer, the weather hardly varied from day to day: maximum wind, 15 miles per hour; temperature from -122 degrees F to -22 degrees F. A record high of 84 degrees F was recorded at Lander 1. More interesting weather occurs with changes of season when fronts and dust storms pass across the Landers.

The atmosphere is 95% carbon dioxide, 2 to 3% nitrogen, 0.1 to 0.4% oxygen and 1 to 2% argon. Isotope ratios for carbon and oxygen are like those on Earth, but the ratio of heavy nitrogen to common, light nitrogen is almost twice that of Earth. Did the lighter nitrogen escape? A denser, warmer, water-containing ancient atmosphere might explain both the isotope ratio and the great channels.

Analyses of the soil were quite similar in both locales. The soil has been interpreted to consist of iron-rich clays from weathering of globally distributed igneous rock. Water must have played a role in creating the clay and accompanying materials from the original base rock.

Looking for life on Mars

Among the experiments of Viking, the most intriguing and the most elaborate were the biological studies. If there is any life at all, it was reasoned, there will be small forms, microbes; three experiments tested for one or another evidence of life in soil samples: photosynthesis, respiration, metabolism. Also a sensitive mass spectrometer tested for the organic compounds that we think a living organism must evidence. A clever scoop on a long arm was designed to dig up a sample of soil, sift it, and deliver it to a particular experiment. The automation built into the Landers was a remarkable achievement even if they had never gone to Mars!

For photosynthesis, a sample of soil was incubated in a confined atmosphere containing radioactive carbon monoxide and carbon

dioxide and illuminated with artificial Martian light. After five days, the atmosphere was removed and the soil was baked at temperatures high enough to gasify any organisms. Radioactivity of the products was measured to reveal the extent of biological conversion, if any, of the original gases. For respiration, samples were incubated in a closed environment and any change in gas composition was observed. (On Earth, plants yield oxygen; animals yield carbon dioxide.) For metabolism, a soil sample was incubated with a nutrient broth in which a radioactive carbon marked each nutrient substance. During incubation, radioactivity, indicating CO₂ evolution, was measured.

Remarkably, each experiment gave a positive response, and from several soil samples. But the responses were not quite what was expected from a living organism. Nor were the results easily explicable in terms of the chemistry of the soil. Weighing convincingly against a biological interpretation of the responses, however, are the results of the mass spectrometer. To the limits of its sensitivity and below thresholds to activate the tests for life, the mass spectrometer detected no organic compounds in the soil. As life is understood, it requires the magic of the intricate molecules that only the carbon-carbon bond can create. The chemical ingredients for life exist on Mars: water, oxygen, carbon, nitrogen, sulfur, phosphorus, and metal elements. But the all-important chemical structures were not found.

The planet that was almost a star

Named for the most powerful of the gods and lord of the heavens, mighty Jupiter rules our night sky six months of the year. As it majestically orbits the Sun in a twelve-year period, it gradually moves its nightly court along our seasons; a spring "star" in 1980, it will dominate summer skies by 1982.

From Earth, Jupiter reveals a surface covered with changing, colored bands and spots; some features, like the Great Red Spot, which was first observed 300 years ago, are quite persistent. More than ten times the diameter of Earth, Jupiter spins so fast in its 10-hour day that its equatorial diameter is almost 7% greater than the pole-to-pole distance. Calculated from Newtonian mechanics, its mass is 318 times that of Earth. Jupiter's density, thus, is much lower than Earth's: 1.34 times the density of water, contrasted with the rocky Earth at 5.6 times the density of water. Jupiter's clouds are a cold -280 degrees F on top, but infrared instruments carried high in jet aircraft reveal that

Jupiter emits almost twice as much heat as it receives from the Sun. So it is hot inside, maybe 50,000 degrees F. Larger and hotter in its youth, Jupiter almost made it as a star! Long-wave radio waves and bursts of radio static, the latter related to passages of the innermost satellite Io, have been observed. From Earth, twelve moving pin-points of light are visible, marking Jupiter's own flock of moons or planets. Galileo first saw four of them.

Pioneer 10, launched on March 2, 1972, and Pioneer 11 a year and a month later, were the first craft to visit Jupiter. En route they crossed the asteroid belt beyond the orbit of Mars unscathed, thus dispelling a fear that the path to the outer solar system might not be open. At 4 million miles from the planet, Pioneer 10 encountered the bow shock of Jupiter's magnetosphere. On December 3, 1973, Pioneer 10, having survived the increasingly intense radiation belt around Jupiter, swung around the giant planet within 80,000 miles of its cloud tops. Slung into space by the extra pull of Jupiter, Pioneer 10 became the first human artifact to escape the solar system entirely. Pioneer 11 was aimed to fly within 21,000 miles of Jupiter. Whipping around the planet in a 330 degree turn, Pioneer 11 was redirected across the solar system toward Saturn where a close flyby was successful 5½ years later, in September, 1979.

The results from these two Pioneers not



Jupiter's Great Red Spot, 9,000 miles wide, rotates counter clockwise in about six days. Above and below it high-speed jet streams flow to east and west, while a complex, dynamic cloud pattern develops in its wake. White oval, like the red spot, is an anticyclonic "storm"; they whirl counter clockwise in the south, clockwise in the north.

only paved the way for the more advanced Voyager missions, but supplemented their results. The Voyager mission to Jupiter and Saturn was the remnant of a more ambitious plan to explore all the outer planets and their satellites with long-lived spacecraft during the rare occasion when these planets are lined up so that a grand tour is possible. In a mission restructured to conform to the more modest space budgets of the 70's, the Voyager spacecraft, nonetheless, are among the most sophisticated, automatic, and independent robots ever sent to explore the planets. About the size and weight of a subcompact automobile, Voyagers carry instruments for eleven science investigations. An antenna dish twelve feet in diameter, for transmitting decipherable radio signals sent at only 23 watts over billions of miles, unfolds to dominate the spacecraft. Because sunlight at Jupiter is only 4 per cent as intense as at Earth and shrinks to 1% at Saturn and only ¼% at Uranus, radioisotope thermoelectric generators, rather than solar cells, provide electricity for the spacecraft. With radio signals at the speed of light requiring 40 minutes from Earth to Jupiter, 1 hour 20 minutes to Saturn, and about 24 hours to Uranus, the on-board computerized command and control system had to be unusually "brainy," even capable of diagnosing and solving its own problems.

Launched in late summer 1977, Voyagers 1 and 2 flew through the Jovian system in March and July of 1979. And what remarkable sights were revealed, what scientific riches were sent back!

Clouds of ammonia and ammonium hydrosulfide crystals, colored in tones from white through yellow and gold to brown, reveal complex flow and circulation patterns in an atmosphere driven by heat both from within Jupiter and from the Sun without. Cloud-covered zones appear to be upwelling gas; belts may be descending gas. Horizontal jet streams eastward and westward at 70 to 100 miles per hour have vortices along their edges; the mechanisms are probably similar to those driving the Trade Winds on Earth. Jupiter's hydrogen atmosphere contains 10 percent helium, like the Sun. Traces of methane, ethane, acetylene, carbon monoxide, carbon dioxide, hydrogen cyanide, germane, and phosphine were found.

Unseen, but gigantic, is Jupiter's magnetosphere. The planet's magnetic field is 4000 times as strong as Earth's, is offset from the planet's center, and is tipped by 11 degrees from the axis of rotation. Hence it manifests a wobbly spin. In the upwind solar direction, the field extends 50 to 100 Jupiter diameters



A volcano spews material as high as 100 miles (seen against dark space over Io's bright limb).

into space. Charged particles are caught and accelerated within this spinning field to velocities corresponding to 300 to 400 million degrees, making this the hottest spot in the solar system. These particles are also a source of radio emission. Jupiter's inner planets traverse the magnetic field, apparently sweeping up charged particles. On the night side, the solar wind pushes the field out into a long tail, much like Earth's.

Among other Jovian spectaculars observed by the Voyagers were auroras, superbolts of lightning, a hitherto unsuspected ring system of small particles from 30,000 to 33,000 miles above the cloud surfaces, two new moons, and astonishing details of the four large Galilean satellites, Io, Europa, Ganymede, and Callisto.

Jupiter's planet-moons

Closest to Jupiter of these four planet-like worlds is Io, orbiting at 260,000 miles—almost the same distance as our moon. It is in a class by itself as the most active planetary body yet seen in the solar system. Voyager 1 found eight giant volcanic eruptions, with plumes from 45 to 175 miles high, implying several times the ejection velocity of terrestrial volcanoes. Seven were still active four months later when Voyager 2 arrived. Probable cause: internal churning, and thus heating, of Io by enormous tidal forces from the gravity of nearby Jupiter. The result is a fresh surface, free of impact craters, spectacularly colored in brilliant red, orange, and yellow tones. Studded with dark caldera (volcanic craters), Io looks like a pizza. There is evidence of extensive surface flows. Long curvilinear cliffs and narrow valleys reveal a layered terrain. Io's spectral reflectance matches spectra of sulfur and sulfur-rich materials. There are some mountains near the poles. Surrounding Jupiter at the distance of Io is a torus (donut-shaped volume) of ionized sul-

fur dioxide and sodium from Io. Particles from this torus cause the great aurora on Jupiter. A 10 million ampere current flows from Io to Jupiter at 10,000 volts. Altogether, Io is a remarkable world.

Europa, almost Moon-size, has a density that implies a rocky planet, with a crust of ice up to 60 miles thick. From a distance it looks like a giant snowball: white, highly reflecting, with thin, straight, long lines crisscrossing its surface. Closer up, dark streaks of various widths and lengths are seen to cover an otherwise smooth, featureless surface. Only three impact craters have been identified. Thin (6 miles wide) light, low ridges with regular scallops, or cusps, form a



At a resolution of about three miles, the bright, icy crust of the Jovian moon Europa is seen to be covered with a spectacular series of dark streaks. Otherwise, Europa has virtually no features at all; it's quite flat.

beautiful network of curving lines. Nothing like it has ever been seen on any other planet.

Ganymede, just larger than Mercury, has a density corresponding to half rock, half water. Its surface shows great diversity, the product of differing periods of geologic activity. Ancient terrain as large as the United States is dark and heavily cratered. Other, lighter regions have many straight lines of mountains and valleys, like our Appalachian ridges. There is one area of jumbled mountains. Ice is exposed in large impact craters and in rays from them. The breaking, faulting and spreading of Ganymede's crust is the only instance yet discovered other than Earth of a drift of continental plates.

Callisto, orbiting more than a million miles from Jupiter, two thirds ice, almost as big as Ganymede, is uniformly covered with craters, virtually all smaller than 100 miles diameter, and packed as closely as one can imagine. If the ice of Callisto is a mantle, it is now covered with a dark rock or soil. Traces of large impacts are evidenced by low, bright ridges in concentric rings. One ancient impact feature is 375 miles across, with concentric rings running out to 1000 miles from the impact point. If there were ever a central basin here like those on Moon or Mars, viscous flow has eliminated it. The high density of craters on Callisto implies geologic inactivity since the time of its formation. It's a cold surface, -180 degrees F by day to -315 degrees F at night and without any atmosphere. The features seen are unique on Callisto, and seem to be the characteristic geologic feature of an ice-rock planet—quite a contrast to the increasingly lively Jovian planets nearer the giant.

Thus a few weeks, days, hours of observations by the Voyagers again provided a "decade's worth of data."

The ringed planet

Saturn, second largest planet in the solar system, with a diameter more than 9 times Earth's, has a density of only 0.7 that of water. Like the other gas giants, Jupiter, Uranus and Neptune, Saturn has no solid surface. Also like Jupiter, from the surface in, hydrogen and helium are increasingly compressed by gravity until the hydrogen not only reaches first the liquid state but then acquires the electrically conductive properties of a metal. Gravity field analysis and temperature-profile measurements by Pioneer 11 suggest the existence of an iron and rock core twice the diameter of Earth, but so compressed that it contains 15 to 20 times the mass of earth.



From 11 million miles, colored band structure of Saturn is barely discernible through encompassing haze layer. Small dots are Tethys and Enceladus (at left and below rings) and Mimas (at right).

Days are short, 10 hours and 40 minutes, but the year is long, 29.46 Earth years, as Saturn completes one orbit 9 to 10 times farther from the Sun than is Earth. At this distance, Saturn is colder than Jupiter; its clouds lie deeper. Like Jupiter, Saturn emits more energy than it receives from the Sun, perhaps because of heavier helium sinking through the planet's liquid hydrogen interior. Saturn's colored bands are quite subdued by and barely visible through a layer of haze, like smog.

Of course, the most striking feature of Saturn is its ring system. First seen by Galileo in 1610, whose primitive telescope saw them as "cup handles," the rings were early believed to be two more planets. Using a better telescope, Christian Huygens correctly identified the rings in 1655. Designated by letters in order of their discovery, the three easily visible from Earth are A (outer) from 48,000 to 38,000 miles, Cassini division between A and B, B (middle), 36,000 to 20,000 miles, and C (inner), 20,000 to 10,000 miles. A faint D ring has been claimed to lie between C ring and the cloud tops. A faint E ring at 300,000 miles out from the planet has been photographed from Earth. Pioneer 11 discovered a new narrow F ring outside the A ring, a new division in the A ring, and a division between B and C rings. It also found the 12th and 13th moons of Saturn.

Voyager 1 was directed to swing by Saturn from north to south and north again, passing under the edge of the rings and to within about 2500 miles of the planet on November 13, 1980. On the way in, it afforded a very close look at Titan, the largest satellite of the solar planets, about 3000 miles in diame-

ter. Voyager 1 also had a close look at Tethys; on the way out it could observe Mimas, Enceladus, Dione, Rhea, and, off in the distance, Hyperion.

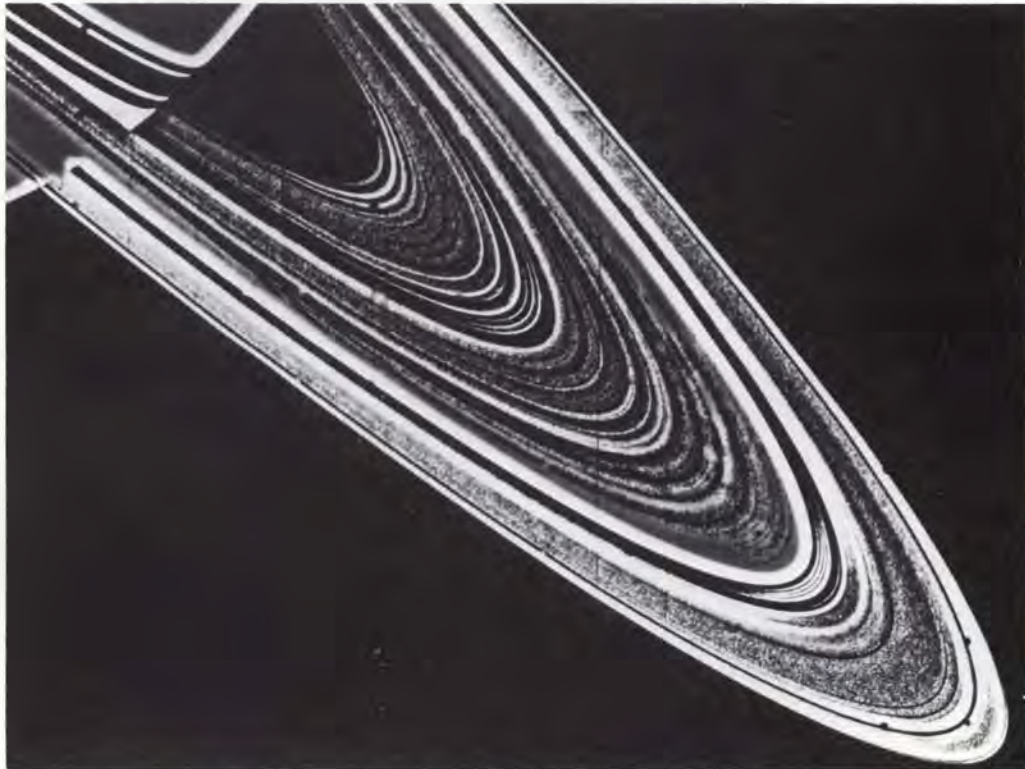
As it had done for Jupiter, Voyager 1 poured new information to Earth at an astounding rate. The high data rate of this machine permitted several hundred pictures a day. The bands and spots of the planet itself were resolved into complex patterns, like those of Jupiter. But unlike Jupiter, flow and rotation looked high on the inside of the bands, and low on the edges, just the opposite of Jupiter. Saturn's three main cloud layers from the top down probably are comprised of ammonia ice, ammonium hydrosulfide ice, and water ice. Winds aloft are 900 miles per hour!

But the rings of Saturn all but stole the show. With a camera having 50 times the resolution of the photopolarimeter on Pioneer, Voyager 1 began to see concentric substructures in the rings from as far away as 5 million miles. By the time the spacecraft was outbound, it had shown that the ring system consists of hundreds, or even a thousand, discrete rings. The F ring looked like three

knotted, or braided, strands. Dark radial spokes seemed to sweep across the ring system; from the nightside they looked bright.

Radio occultation experiments showed the C ring, for example, to consist of boulders about 3 ft. in size. Reflection spectra show the ring materials to have icy surfaces with a reddish tinge. Two more moons discovered by Voyager seemed to be on orbits just far enough apart to cause one to overtake the other, but not far enough apart for them to pass without colliding. Small satellites flanked some of the rings, perhaps stabilizing them. The small handful of specialists who deal with the dynamics of rings will be busy sorting out all these surprising new findings.

Saturn's magnetic field is 1000 times stronger than Earth's, but much weaker than Jupiter's. The magnetic axis lines up with the rotational axis, unlike those of the other planets. The field poles are in the opposite direction of Earth's. As with other planetary fields, the solar wind creates a huge, wind-sock-shaped magnetosphere. Moons orbiting within the ion belts trapped in the magnetosphere clear out ions. The rings absorb



Computer enhanced two-image mosaic of Saturn's rings shows approximately 95 individual concentric features across the 45,000 mile span of the rings. Closer-up, the rings show hundreds or even thousands of ringlets, including a faint, outer F-ring that looks like three braided ringlets.

charged particles completely to form the most radiation-free environment in the solar system.

Titan, the only planetary satellite known to have an atmosphere, was the object of great anticipation. What might it look like? Perhaps its atmosphere and its temperature would even be life-sustaining. But even from as close as 2500 miles, Titan's surface could not be viewed at all through its unbroken opaque, orange haze. Titan's atmosphere was found to be nitrogen, with about 1 percent methane, and so cold, -280 degrees F, that there may be ponds, lakes, or even oceans of nitrogen on the surface. Life on Titan seems unlikely. Voyager 1 identified also acetylene, ethylene, ethane, and hydrogen cyanide; their exposure to ultraviolet radiation from the sun could easily produce the smog.

During its excursion of a few days past Saturn, Voyager 1 swung its sensors toward first one and then another of five other moons. Their surfaces all resemble dirty ice; perhaps water ice, or perhaps frozen ammonia or methane. These moons of Saturn were each cratered, and additionally they were seen to have cracks, rills, and canyons. Rhea, 900 miles diameter, seen close up showed massive cratering, with some up to 45 miles across. Little Dione, 75 miles in diameter, displayed light-colored rays on its surface. Tethys is cut by a 750 mile valley across one third of its circumference. From about a quarter of a million miles, Mimas, only 300 miles in diameter, showed troughs, mountains and impact craters, including one crater 62 miles in diameter and with a central peak; the impact must have almost shattered Mimas.

Cratering on these moons is believed to have been caused largely by comets, in contrast to cratering from Earth-crossing asteroids on the inner planets.

Atmosphere, rings, features of Saturn's moons,—all will require extensive study in the light of the new information about them before conclusions can push the frontier of knowledge out a little further.

In August, 1981, Voyager 2 will take a slightly different path through the neighborhood of Saturn. Then it will direct itself to intercepting Uranus. Meanwhile, Voyager 1, like Pioneers 10 and 11, which are measuring particles and fields at the boundary of the sun's influence, is outward bound from the solar system forever; it will clear the orbit of Pluto by 1990.

Pioneers 10 and 11 both carried metal plaques identifying their time and place of origin in a code keyed to the vibrational fre-

quency of a hydrogen molecule. As befits their greater sophistication, the Voyagers each carry a gold-plated phonograph disk, a machine and instructions. Played at 16 $\frac{2}{3}$ rpm, it gives greetings in 55 languages, from the 6000-year old language of Sumer to Wu, a modern Chinese dialect, 35 different sounds, from rain to a rocket, 115 images in analog form and 90 minutes of music. It may be millions of years before Voyager comes anywhere near another planetary system. Supposedly designed for extraterrestrials, these messages are at once a wistful reminder of human loneliness and an assertion of human pride.

What does it all mean?

Our visits to the planets during the last dozen and a half years have given us more knowledge about them than was gathered in all the long preceding centuries. Yet our knowledge remains scant, quite inadequate yet to piece together an integrated picture of the birth and evolution of our part of the universe.

Each object in our solar system is unique. But there are sufficiently strong similarities among some to group them into three classes: the terrestrial inner planets; the giant, largely gaseous, ringed outer planets; and the small primitive bodies. Evidence from the inner group, including our Moon, and by implication Earth as well, shows several epochs in common.

Details revealing these epochs are numerous, especially those from lunar exploration. It is believed that about 4.6 billion years ago the planets initially condensed and accumulated within a few million years from a nebula of composition about like that of the present day Sun. It is not known if all the planets condensed with any initially uniform composition. But bodies condensing at the higher temperatures near the Sun were enriched in the less volatile materials—iron, magnesium, calcium, silicon. Bodies condensing at the lower temperatures far from the sun retained the more volatile elements that comprised the bulk of the nebula: hydrogen, carbon, nitrogen and oxygen. Thus evolved the rocky, dense inner planets and the massive gaseous outer planets.

Although the early evolution of the still molten planets cannot be traced with certainty, doubtless major chemical differentiation occurred as lighter materials floated to the top during cooling and solidification. Also, bombardment by debris from the condensing solar system continued for at least several hundred million years. This violent

period pulverized, remelted, reaggregated and cratered the surfaces of the condensed planets; the primitive surfaces of Mercury, Mars, perhaps Venus, and many planetary satellites are nearly saturated with craters up to 60 miles in diameter.

Then, apparently from about 4 billion to 3.3 billion years ago, the inner planets, at least, were subjected to heavy bombardment by large objects from an unknown source. This massive bombardment produced the huge basins with surrounding mountains that characterize the front side of the Moon and parts of Mars and Mercury, and seem to be prominent on Venus. Impacting objects formed smaller craters, including secondary and tertiary craters. Molten material from large impacts flowed into basins and craters. On the Moon, the entire ancient surface was destroyed. Earth, too, was similarly bombarded, although most evidence has been eradicated.

In a subsequent epoch, accumulation of internal heat from collapse and radioactive decay produced volcanism to various degrees. Mercury's surface shows no volcanoes. After pouring basaltic lava into basins and craters, lunar volcanism ceased about 3 billion years ago. Volcanism is spread over much of Mars' history, but apparently ceased hundreds of millions of years ago. Further

observations are needed on Venus. Earth's volcanoes are still active as the great continental plates shift, permitting magma to break out. Surface upheavals from shifting tectonic plates, erosion from wind and water, and biology continue to reshape Earth and to create its uniqueness.

Much further study remains for the information already gathered and still being gathered. Voyager 2, having reached Saturn the past August, will view Uranus in 1986. A pair of spacecraft called Galileo will orbit Jupiter for long-term observations and will probe into Jupiter for *in situ* measurements. Launches will be in 1985. Work is proceeding toward a 1986 launch of a Venus orbiter with radar to reconnoiter the surface at resolution down to less than half a mile. So this magnificent human enterprise, the exploration of our solar system, which has actually been under way for less than three decades, still goes forward.

In the final analysis, a proper answer to the question why? has been well stated by Arctic explorer Fridtjof Nansen; it is emblazoned on the wall of the library at Carleton College: "The history of the human race is a continuous struggle from darkness toward light. It is, therefore, to serve no purpose to discuss the use of knowledge. Man wants to know, and when he ceases to do so, he is no longer man."

Cyril A. Dostal

TWO POEMS



Photo: Louis T. Milic

Cleveland-born Cyril A. Dostal received his B.A. and M.A. degrees from Miami University, Oxford, Ohio after service in the U.S. Navy Air Force during the Korean War. He has worked for the most part as a commercial and industrial writer since; taught English at Miami, Ohio University, and the University of Akron; and survived five years as a full-time free-lance writer and poet in Cleveland from 1973 to 1978. He is currently employed as supervisor of sales training for a Cleveland-based industrial equipment manufacturer. He and his wife, Lynne, have three children, Douglas, 24, Joyce, 21, and Jesse, 2.

Dostal's poetry has been widely published in magazines and collections since 1969, including a poem selected for the Norton Anthology of English Literature. The CSU Poetry Center published a volume of his poems, *Emergency Exit*, in 1975. He has appeared frequently as visiting poet in secondary schools under the Poets in the Schools Program, and at numerous colleges and universities throughout the Midwest. From 1970 to 1976 he was staff poetry consultant and night poetry workshops leader for the Indiana University Writers' Conference.

The two poems published here focus on childhood memories, a recurrent theme in Dostal's work. Regarding their form, he says, "While I often dismiss this question by saying it's merely an 'experiment with the extended line,' the truth is that I tried to write the first one, 'Mother and the White Slavers,' both as a short story and as a conventional free verse poem, but it didn't feel right either way. I needed room for the redundancies and trite phrasing of an oft-told family tale, but the 'voice' of the piece sounded corny and affected in straight prose. The prose poem form was a compromise. Incidentally, both pieces are considerably fictionalized. My maternal grandfather, for instance, though he did attack a car with a sledgehammer under similar circumstances, was a professional musician."

Mother and the White Slavers

When Mother was a girl, every good Catholic virgin had to watch out for the White Slavers.

The White Slavers would steal a girl right off the streets.

You'd be walking home in the dark after someone's wedding shower, when suddenly, between streetlights, two foreign-looking men in topcoats and silk scarves would slide out of a dark limousine with its motor idling, overpower you, bind and gag you, and carry you away to a fate worse than death.

Or you'd be riding the streetcar home from a hard day behind the counter at Wm. Taylor & Sons when an olive-skinned man with a homburg and cane would glide into the seat next to you, and you'd hardly feel a thing—just a faint prick of the needle in your leg—then, lights out! He'd prop up your head with the cane shoved down the back of your neck, hiss "*My cousin has fainting spells,*" and walk you from the car. You'd wake up on the auction block in Constantinople.

Or in broad daylight in the dentist's waiting room, the Public Library, or the lobby of a respectable hotel, a small man with mysterious eyes would catch your attention, whip out his watch fob and twirl it in the sunlight. The room would blur and tilt, and you'd follow him like a zombie, powerless to stop yourself or cry out for help, right into some desert sheik's silk-hung tent.

That was how the White Slavers carried off many a respectable working girl in Mother's day.

The night they almost got her, she was coming home from someone's wedding shower or maybe it was a hard day behind the counter at Wm. Taylor & Sons. Just around the corner from the streetcar stop, next to the Public Library, she saw a dark Moon roadster parked with its lights out and its motor idling. As she hurried past, two strange-looking young men in fur coats hollered at her out the window.

"*Twenty three skiddoo!*" they hollered. "*Oh, you kid!*" "*Woo, woo!*"

Mother clutched her collar tight, squeezed her purse under her arm, and hurried past with averted eyes. The White Slavers drove slowly along the curb behind her with their lights out.

"*Hey, Cutie!*" they hollered. "*How about a lift?*"

Then with a great clash of gears and a loud roar from its exhaust cutout, the dark Moon roadster tore off up the street. Mother hurried up the block toward home as fast as she could in her long, narrow skirt. Twice more the dark Moon roadster glided up behind her with its lights out, and the White Slavers hollered out the window.

"*S-o-m-e chicken!*" they hollered. "*You take a wing! I'll take a leg!*"

Mother was so scared she let go of her collar and pulled her skirt up past her knees so she could run faster. She ran all the way home and burst into the house sobbing that the White Slavers were after her. Grandpa and her older

brothers were relaxing in the kitchen in their undershirts with a few bottles of home brew, after a hard day on the street gang for Grandpa and Uncle Emil and painting houses for Uncle Jaro.

"*Ježiš Maria!*" hollered Grandpa. "*Gar demmits! Saramabits!*" He and Uncles Emil and Jaro got stuck in the back door all trying to run through it at once. Grandpa got his 20 lb. streetgang sledgehammer from the shed and ran to hide behind the big elm tree in front of the house. Uncle Emil pulled up two whitewashed paving bricks from the sawtooth edging of the side yard flowerbed and ducked in the weeds in the vacant lot across the street. Uncle Jaro grabbed a gallon can of cream yellow house paint from the back porch and hid behind a Rose of Sharon bush in the front yard next door.

The dark Moon roadster was coming slowly up the street with its lights out.

"*Valk!*" hissed Grandpa. "*Valk like before!*"

Mother clutched her purse and started up the street. The dark Moon roadster slid up behind her and followed close by the curb.

"*Ow, wow, wow! The cat's meow!*" hollered the White Slavers.

"*Sakramenské potvory!*" hollered Grandpa, leaping from behind the tree in his undershirt, suspenders flying loose behind him as he swung the 20 lb. streetgang sledgehammer with both hands. *Bang! Bang!* It made two enormous dents in the side of the dark Moon roadster.

Uncle Jaro charged from behind the Rose of Sharon bush with his gallon of cream yellow house paint. *Splash!* The Moon roadster turned half cream yellow. The White Slavers crashed its gears and tore off up the street. Uncle Emil hurled his paving bricks from the vacant lot. *Bang! Bang!* Two more dents in the other side of the Moon.

"*Že do vás neuhodí blesk!*" hollered Grandpa. "*May lightning strike you!*" He whirled the 20 lb. streetgang sledgehammer in a terrible arc and launched it at the Moon. Up, up, up it went, almost as high as the trees. Down, down it came, true as a thunderbolt. *BLAM!* It caved in the Moon's rumbleseat, just like a tin can.

The Moon roadster swerved and bounced off the big tree up the street and turned the corner on two wheels.

It and the White Slavers were never seen again in that neighborhood.

Grandpa and my uncles sat late in the kitchen, cursing, laughing, and drinking home brew. Over and over they told and showed what they had done to the Moon roadster and what they would do if the White Slavers ever came back.

Mother went quickly to bed and dreamed long into the night, of fierce dark sheiks on white stallions, and the silk-hung tents of Araby.

Starting the Model T

It is very early in the morning and the sun hasn't started to melt the frost paintings on the windows of our little house at the dead end of Midvale Avenue in West Park. In the chicken coop out back our big red rooster Trotsky is telling the hens in a loud voice that it's time to get to work. I am sipping hot Ovaltine in my Little Orphan Annie Shake-a-Cup Mug, and Mama is wrapping sandwiches in waxed paper for my Father's lunchbox. Her eyes are red again like every morning and she sniffs a lot like she has a cold. My Father has just banged the back door going out with the big white teapot full of boiling water to pour in the radiator of the old Model T.

Mama shuts the lunchbox and tells me to get my cap and jacket from the hook behind the back door. "*Hurry up,*" she says. "*We have to help your Father.*"

My Father is yelling something in the back yard. I start to cry because I can't find the sleeve in my jacket. She has put on just one of her galoshes over her house slipper and comes *bumpity-bippity* across the kitchen to help me. I start to laugh while I'm still crying and run back across the kitchen to watch her walk some more. She gets me by the shoulders and turns me around, but I am reaching for the Little Orphan Annie Shake-a-Cup Mug and the Ovaltine splashes out across the kitchen table into a big puddle on the floor. Mama starts to cry and this makes me cry harder.

Trotsky crows again real loud out in the chicken coop. Mama shoves me up on a chair and starts yanking my galoshes on. I try to point my toes but she pulls too hard. They go on crooked. "*Stamp,*" she says. "*Stamp the heels down.*"

I stamp but I hear my Father stamping harder on the back porch. The door flies open and he bangs into the kitchen with steam on his glasses. "*Come on, Goddamn it!*" he hollers. "*That son of a bitch will be standing in the door with his watch in one hand and the pay book in the other. He'll dock me the whole Goddamn morning!*" He can't see through his glasses and he slips in the Ovaltine trying to find his lunchbox on the table. "*Oh, GodDAMN IT!*" he yells.

Mama is crying out loud now. She puts her coat on over her bathrobe, grabs my hand, and pulls me toward the door. She still has on one galosh and one house slipper. The slipper goes *slippety-slippety* through my Father's Ovaltine tracks. When we go out the door our tomcat Masaryk runs low on his belly through our legs into the house. "*Catch him, quick!*" she says. "*He'll pee on the furniture!*" I get him by the tail, but he spins around, spits, and hooks me good across the back of my hand. I let go and stare at the bright red drops on my knuckle. I start to scream. Trotsky crows again in the chicken coop. My Father is jumping up and down in front of the Model T with the crank in his hand. "*For CHRIST'S SAKE, Josephine!*" he yells.

Mama gets into the front seat and leans over to lift me up next to her with her hands under my arms. I am still screaming because of the blood. "*Come on! Come on!*" my Father yells. She slides to the driver's side. I stop screaming to suck my knuckle and look at my Father through the windshield. He has put the crank into the hole at the bottom of the radiator and bends down over it with one hand on top the headlight, glaring up over his glasses at us in the

car. "Leave the ignition off while I pull the son of a bitch through a couple times," he shouts. The Model T shakes and jiggles as he turns the crank. His breath makes a little white steam cloud over his head.

"Switch!" he yells. "Turn on the Goddamn switch!"

His face disappears in front of the hood and bobs up again fast, red as a cherry. His lips are back so I can see his teeth set against each other in a tight white line. The Model T coughs and gives an extra hard lurch. My Father ducks down and bobs up again. The front end of the Model T lifts up a little and there is a loud bang underneath like when he shot the chicken hawk with Mr. Schunnmeyer's gun. He leans back against the chicken coop swearing and rubbing his arm. Then he bends over again and gives the crank a big, hard pull.

The Model T shudders, makes two quick, funny bleating sounds and a long wheeze. My Father is leaning over in front with one hand on the fender catching his breath. His face is almost purple. "Choke!" he gasps. "Give the son of a bitch some choke!"

Mama's eyes are closed. Her face is pale. She sits very still with both hands on the steering wheel. My Father is still yelling "Choke! Choke!" In the chicken coop Trotsky crows three times in a row.

I reach past her and pull the bent wire sticking up on the steering wheel post.

My Father nods to me, bends down and sets his feet, and gives another tremendous heave. The Model T coughs. Then its motor suddenly starts running *rackety-rackety-bang-rackety-rackety-rackety-bang* full speed like it had really been going all night but you just opened the door of the house and heard it for the first time. Mama sits like a statue with her eyes squeezed shut holding the steering wheel so tight her fingers are white. The Model T is shaking all over and trying to jump ahead because its transmission doesn't work right. My Father is caught with his feet braced against the front of the chicken coop and both hands against the radiator holding it back with all his might. "Advance the spark!" he screams. "Shut the throttle! Spark! Throttle! JOSEPHINE, FOR CHRIST'S SWEET SAKE!"

Rackety-rackety-bang-bang goes the Model T. Mama sits there turned to stone. My Father holds his arms stiff but the Model T keeps bucking forward *rackety-rackety-bang*. He slowly gives ground until his shoulders press against the front of the chicken coop. His breath is going *puff-puff-puff*. His eyes are popping out behind his glasses and I can see the boards bend behind his back. "JOSEPHINE!" he shrieks. I reach in front of Mama and turn one of the levers under the steering wheel up and the other one down. The Model T coughs twice and stops. For a minute the air is so quiet I can hear Trotsky and the hens flapping on their roost in the chicken coop.

My Father comes around the driver's side of the Model T. His hands are opening and closing back into fists. Sunlight flashes like lightning from his glasses. He gets up on the running board and puts his head and shoulders in the window past Mama. His mouth has two little white triangles of spit in the corners. He lifts me up and says to her, "Move over, Goddamn it." Then he

puts me on the driver's seat, resets the spark and throttle, and says to me, "Next time don't push this one all the way up. Just to here. Pull the other one all the way down."

He goes back to the front and I sneak a look at Mama. She sits very still with her hands in her lap, looking straight ahead at the chicken coop. My Father turns the crank once and the Model T goes *rackety-rackety-rack*. I move the levers like he said and it starts going *medda-edda-medda-edda-medda-edda* just like it's supposed to, without bucking forward. Mama gets out and lifts me down. My Father climbs into the driver's seat and the Model T jumps backward toward the street. The lunchbox falls off the running board where he left it and the sandwiches fall out on the driveway. He's looking backward out the window and doesn't see it.

In the chicken coop a hen is saying *kut-kut-kuddock-kut-kut-kuddock-KUDDOCK-KUDDOCK-KUDDOCK* to tell everyone she's laid a nice, big egg. Trotsky crows again but she's much louder.

Mama holds my hand tight until my Father and the Model T start down the street. Then she steps over the lunchbox with her muddy slipper, tells me to leave it alone, and takes me back into the house.

Patrick M. deWinter

ART, DEVOTION AND SATIRE

The Book of Hours of Charles III, the Noble, King of Navarre, At the Cleveland Museum of Art

Among the treasures of the Cleveland Museum of Art is a small leather-bound book less than six inches wide and eight inches tall, composed of over six hundred parchment pages painted with striking and colorful decorations generally pious in nature, sometimes satirical, and often also akin, in their imaginativeness, to the sculpture of Medieval cathedrals. This stunning volume, the *Book of Hours of Charles the Noble of Navarre*, was produced by a skillful calligrapher and master illuminator in Paris at the beginning of the fifteenth century. In the later Middle Ages many people who were wealthy enough to afford them owned similar volumes, which typically opened on a calendar listing feast and saints' days followed by devotional texts for different hours of the day. Few but a king, however, and in fact a king with a taste for books and beautiful objects, could have acquired a volume of such elaborate and refined workmanship. This *Book of Hours*, subject of the present article, is not only intrinsically an exquisite work of art but it also reflects in a salient manner the sentimental piety, the strength of the arts, and the power of cultural exchanges of this rich and turbulent period of history.

Navarre, one of the provinces of Northern Spain, in the Middle Ages formed an in-

dependent kingdom, its boundaries then including the present-day *département* of the Basses-Pyrénées in France. Toward the center of Navarre, near the banks of the Rio Aragón, under what one envisions as an ever-glowing sun, loom the huge and imposing ruins of the castle of Olite (fig. 1), built from 1400 to 1419 and thereafter principal residence of the rulers of Navarre. Half a millennium ago, this château, inspired by those of the French princes, stood amidst beds of flowers and abundant greenery inhabited by exotic birds and animals, and was the setting of a refined princely life. According to local tradition, the castle had as many rooms as there are days in the year. It was the favorite palace of its builder, Charles III, who ruled pacifically over his kingdom for thirty-eight years—a feat indeed, considering the turbulence of those times. History bestowed on him the epithet "el Noble" which Iberians reserve for that which is proud and rises to greatness, from enlightened rulers to valiant bulls. The tomb of the prince (fig. 2), commissioned by his order and erected in the cathedral of Pamplona, gives fitting tribute to his memory in its manifestation of his discerning patronage. The facial features of the recumbent figure of the King, no doubt a portrait, suggest a perceptive and affable man.¹

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Photo: Nick Hlobeczy



1. *Castle of Olite* (before restoration).

Despite its limited size, Navarre in the later Middle Ages played a fairly important international role. Its rulers had blood and feudal ties with many other royal houses, most importantly with that of France. In fact, it is necessary to recognize these connections in order to understand Charles the Noble's deep commitment to that country and his profound attachment to its culture.

This relationship had actually been sealed by his father's great-grandparents. When Henry I, King of Navarre, died in 1274, his widow, Blanche of Artois, a French princess, and her daughter Jeanne, heiress to the throne of Navarre, took refuge at the court of France. Under pressure from the French king, Philip III, young Jeanne was betrothed to Philip's second son, his namesake and eventual successor. Thus the kingdom of Navarre was joined to France. But when the three sons of Philip IV of France and Jeanne of Navarre all died without male issue, a rival claimancy arose, since France recognized only the male line of succession, represented by Philip of Valois, nephew of Philip IV, while Navarre recognized a female line as well. The conflict was resolved in 1328 when another Jeanne, granddaughter of Philip IV and grandmother of Charles the Noble, married Philip, Count of Evreux, and was confirmed as Queen of Navarre in return for relinquishing all claim to the throne of France.

The question was not to be raised again until her elder son reached maturity. This was Charles II, King of Navarre and Count of Evreux, raised mostly in Normandy, where he was born, and in Paris. He was affable, eloquent and winning, but also ambitious and



2. Jean Lomme, *Recumbent Figure of Charles III* (detail). Pamplona, Cathedral.

covetous, and for these traits he received the epithet "the Bad." The new French king, John the Good, gave his elder daughter, Jeanne of France, in marriage to the young King of Navarre, but this was hardly a fool-proof strategy to guarantee amicable relations. Indeed, Charles soon began resurrecting his parental claim to the French throne and conspired with Edward III of England to overthrow the Valois and partition France between Navarre and England. Their plans came close to realization with the battle of Poitiers in 1360. New threats led the third French king of the Valois line, Charles V, to take stronger measures. He ordered that the county of Evreux and other French domains of the King of Navarre be occupied and subsequently confiscated. Simultaneously, Don Enrique of Castile was encouraged to invade Navarre. English assistance arrived from Bordeaux, but could not save the whole kingdom. Charles the Bad was ruined politically and financially, and spent his last years in hopeless destitution. He died in Pamplona on New Year's day, 1386. According to chroniclers, who perhaps gave their imaginations free rein to provide a fitting end for such a prince, Charles was fatally burned when a brandy-soaked sheet on which he was lying accidentally caught fire.²

The reign of the new king, crowned in Pamplona in 1389 as Charles III, was as peaceful as his predecessor's had been tumultuous. This was probably due not only to Charles the Noble's personal inclinations, but also to his lack of alternatives. The new king had to consolidate whatever he could from the disasters of his father's reign, and for a time he faced stupendous financial problems. By the early fifteenth century, however, he was in a position to emulate the example of French princes as patron of the arts. Charles had been born and raised on French soil where his immediate family lived. His grandfather on his maternal side had been a French king, his sister Jeanne was duchess of Brittany and his brother Pierre de Mortain was then one of the trusty counselors of the French king Charles VI, their cousin. Like his French relatives, the King of Navarre ordered sets of tapestries depicting courtly and martial subjects from the best weavers of Paris to adorn his castles of Olite and Taffala. Statues and implements of gold and silver from Parisian goldsmiths added to the splendor of his chapel. To the extent of his resources, and often beyond, the King of Navarre even enticed foreign craftsmen to come and work in his kingdom. Charles's tomb was carved by the sculptor Jean Lomme



3. Jean Lomme, *Two of the Mourners set around the Tomb of Charles III*. Pamplona, Cathedral.

from Tournai who was largely inspired by similar monuments erected for the dukes of Burgundy in Dijon.³

The King was fond of reading. He owned a library of fair size with titles ranging from treatises to compendia of fables. Manuscripts for his chapel and private devotions also accounted for a substantial percentage of his collection.⁴ In the cortège of eighteen statues of mourners around the pedestal of his tomb, some of the figures (fig. 3) are represented with book in hand as if to ensure Charles of the eternal benefit of the written word.

This is the king who, from all appearances, was the original owner of the very exceptional *Book of Hours*⁵ purchased in 1964 by the Cleveland Museum of Art. The volume contains the royal arms of Navarre quartered with those of Evreux (figs. 11, 12, 16, 25) on twenty-five of its pages (Quarterly: 1 and 4, Gules, a carbuncle of bezants pommé [or chains?] conjoined within an orle of bezants, Or; 2 and 3, Azure, semé de fleurs-de-lis Or, overall a band composing Argent and Gules; all within a simple bordure). The layout and rich decoration of the volume makes evident that it was produced in Paris at the outset of the fifteenth century. According to a handwritten note pasted on the interior flap of the volume, it was Léopold Delisle who in 1869 identified the owner of the book as Charles



4. *Hours of Charles the Noble*, Calendar page: August (detail), p. 15.



5. Lombard, ca. 1385, *St. Ursula and her Companions*. Paris, Bibliothèque nationale, ms. lat. 757, fol. 380.

the Noble. No doubt the French scholar based his conclusion on the evidence that the elaboration of the volume certainly postdates 1386, year of the death of Charles the Bad, while the arms so prominently displayed throughout the volume would not have been heraldically fitting for Blanche of Navarre, Charles the Noble's elder daughter (he had no legitimate son), who had married Juan of Aragon and only ascended the throne of Navarre in 1429, a date also decidedly late for the decoration of the volume.⁶

The period of Charles the Noble's reign was paralleled by an important interchange of creative ideas in the visual arts, and in many respects Paris was a vital point of convergence for painters, weavers, sculptors and goldsmiths who travelled there attracted by its aura of prestige and its wealth. The art of book illumination had flourished in the French capital for two centuries, more than in any other city. The *Book of Hours of Charles the Noble* is an excellent example of the sophistication achieved by the Parisian artists.

Though rarely as lavish as this, books of hours were coming more and more into fashion in early fifteenth-century France among members of the laity who could afford one. These individualized service and prayer books center on a set of invocations addressed to the Virgin, each to be read at one

of the seven canonical hours, stated times which divide the day. The specific texts of Charles the Noble's book provide no indication that the volume was made on order; there are, for example, no special prayers or invocations alluding in any way to a particular owner. Though the book is in Latin, the calendar in the front is written in French and lists the customary Parisian saints. This would be peculiar in a book made specifically for the ruler of Navarre, since no reference is made to the local saints of his own domain. There is, to be sure, the escutcheon of Navarre-Evreux which appears repeatedly throughout the book, but close examination reveals that these arms are not painted with the same pigments as those used elsewhere in the manuscript. They also seem somewhat awkwardly drawn and crowded in their frames. These observations suggest that the insignia were not painted contemporaneously with the rest of the decoration, but were added. The liberal number of escutcheons of Navarre-Evreux distributed throughout the book might in fact perhaps be understood as a desire to offset late ownership in a conspicuous way. Our manuscript was probably produced for the market in expectation of a wealthy buyer. Several other examples are known of volumes with shields left blank, actually to our day, for inclusion of

arms. This is in fact the case for a *Book of Hours*, now in the British Library, painted by the same illuminators as those of Charles the Noble's volume (fig. 9). These are manuscripts that were made at the order of enterprising and generally wealthy individuals like Jacques Jehan, Bureau de Dammartin, and especially those aggressive Italian merchants established in the French capital, such as Baude de Guy, Augustin Daurasse and particularly Jacques Rapondi who, in addition to supplying luxury commodities such as brocades, spices, and goldsmiths' work, acted as *libraires* (publishers) when the venture was worth the trouble.

To my knowledge, no document has been found in the Archives of the Kingdom of Navarre — or for that matter elsewhere — that would shed light on the history of this book. The last owners of the *Hours* before it was acquired by the Museum were the Rothschilds, who probably purchased the book in France after the Franco-Prussian War of 1870. The volume may well have come to France at the time of the Napoleonic conquests when much looting took place in Spain and particularly in Navarre. It is most probable that King Charles the Noble originally acquired the book while on one of his four trips to Paris, which took place in 1378, in 1397-1398, in 1404-1405, and finally in 1409. The first two dates may be discarded as they are too early for the style of the decoration.⁸ The third stay, on the contrary, combines a set of appropriate circumstances: the sojourn was lengthy; the King for once had considerable funds at his disposal; the style of the decoration fits readily with that of several manuscripts which can be dated in this very period. Soon after he arrived in Paris on 15 January 1404, Charles III began rounds of negotiations with the French princes. He was, no doubt, shown all the new acquisitions in the latest styles that these lords, mostly uncles and cousins, had made for their collections.

There is no period of medieval history when accumulation and pure display of wealth more readily coalesced with art collecting in the single image of the magnificent prince. Philip the Bold, Duke of Burgundy, was the wealthiest and most important among them, but he died in April of that year. His brother Jean de Berry, no less formidable a collector, then took the lead as patron. The King of Navarre enjoyed a particularly good relationship with the Duke de Berry, who was by far more intent on epicurism than on diplomacy, and they readily exchanged gifts, primarily goldsmiths'

works.⁹ At that date, Jean de Berry had already commissioned some stunning volumes for his use, one of the latest being a grand *Book of Hours* with large miniatures (fig. 13) by the French painter Jacquemart de Hesdin, and with historiated initials (i.e., decorated with scenes or single figures) by an artist who worked in a definite Italian style.

By July of 1404, negotiations between Charles the Noble and the French had come to a head: the King of Navarre formally renounced any dynastic claims on Evreux and other possessions in Normandy including, finally, the last outpost Charles had wished to keep, the town of Cherbourg. In exchange for these sizeable concessions, the nominal title of Duke of Nemours was bestowed on him with the promise that he would receive an annual revenue of 12,000 livres. To dispel his last hesitations, the considerable lump sum of 100,000 livres was also put at his immediate disposal.¹⁰ In the summer of 1404, therefore, for the first time since the beginning of his reign, the King of Navarre had a sizeable amount of cash, which allowed him to settle debts and follow the example of the French dukes in acquiring some of the fashionable treasures then produced in Paris. The price of a manuscript was hardly negligible, especially if it was an illuminated one, which often cost as much as several houses. To produce a volume of this sort on order was also a lengthy process, involving several months. Rather than suffer the long delay of commissioning a new book, the King bought one on the market which was already nearly completed.

The actual manuscript, a thick volume of 668 pages of parchment, is roughly the size of a large modern-day paperback (8 x 5 3/4"). The text, neatly calligraphed in an elegant French gothic script (*gothica libreria parisiensis*), comprises a calendar with a list of saints in French, and the following in Latin: invocation to the Virgin; excerpts from the gospels; Office of the Virgin; the less standard prayer in special honor of Christ and the Virgin, "Verbum caro factum est de virgine Maria," signed Johannes Petit, a well-known contemporary theologian in Paris; penitential psalms; Hours of the Passion, Hours of the Holy Spirit; Hours of the Cross; Office of the Dead; invocations to various saints (suffrages); and special masses.

What makes the book particularly precious is its decoration. Twenty-four pages bear large miniatures with involved borders. According to convention, these miniatures are painted at the beginning of each of the hours or set of prayers, and represent events from



6. Master of the Brussels Initials, *Visitation*. *Hours of Charles the Noble*, p. 109.

the life of Christ or of the Virgin, evangelists at work, and other scenes conducive to piety. On eighty-two pages there are large historiated initials (figs. 17, 20). With the exception of a few totally blank sheets, every single page has received a striking marginal decoration which differs from leaf to leaf.¹¹

Though of relative aesthetic unity, this work was done by two masters, each with assistants. The productions of most painters of this period bear no signatures, and rare are the records that disclose the artist's identity; art historians, therefore, are obliged to give the artists pseudonyms which generally refer to a major work. In the present case, the painter who was responsible for the planning of the decoration of the book and who produced seventeen of the large miniatures is known as the Master of the Brussels Initials. The second illuminator, head of a more limited shop, who contributed only five miniatures to our manuscript, is referred to as the Egerton Master.¹²

The Master of the Brussels Initials is inventive and alert to artistic trends and newly developed iconographic motifs. For example, he represents the evangelists Luke and Mark each casually using the head of the animal that stands as his particular symbol, respectively the ox and the lion, as a convenient if precarious writing prop. The thatched roof of the stable in the *Nativity* and in the *Epiphany* scenes (fig. 8) is tattered to emphasize the humble surroundings in which Christ was born. In the room where the *Visi-*

tation takes place (fig. 6), a large part of the space is occupied by a neatly-made bed with a festive spread, bolster and tightly-pulled sheets. In this last scene, the homespun detail, charmingly described, contrasts with the fanciful surrounding architecture of the cityscape. In the scene of the *Flight into Egypt* (fig. 12), as Christ and his earthly parents pass a palm tree, the plant bends toward them to offer its fruit, as described in the apocryphal gospels. In several instances, the painter has exploited the possibilities of spatial interweaving. Toward the end of the volume, for example, an archer perched on the acanthus leaves of the page border leans in front of the initial D and mercilessly aims another arrow through the loop of the letter at Saint Sebastian, who is standing behind the plane of the letter (fig. 17).

Particularly striking and unusual for a Parisian manuscript is the type of architecture represented by the Brussels Initials Master, especially in the scenes of the *Annunciation*, the *Visitation* (fig. 6) and the *Presentation at the Temple* (fig. 11). Here are towering and massive buildings with exterior galleries and porticos crowned with domes, involved gables and square or hexagonal towers which are hardly in keeping with the linear French Gothic style. The handling of perspective is unusually successful for the time and there are often deliberate demonstrations of bra-



7. Niccolò da Bologna, late 14th cent., *Crucifixion*. The Cleveland Museum of Art (Gift of J.H. Wade).



8. Master of the Brussels Initials, *Adoration of the Magi*. *Hours of Charles the Noble*, p. 156.

vura foreshortening. Our artist's figures tend to be stocky with rounded faces and fixed iconic expressions and arrested gestures. Flesh tones, rather than being pale and uniform, are applied on a slightly greenish undertone. Colors in general tend to be somewhat acidy in contrast to the usual soft French pastels.

Such elements indeed denote not a French training but rather an origin in North Italy for the Master of the Brussels Initials. His involved scenographic layout derives from Paduan models; the tiered architecture behind the *Annunciation* appears to be a direct quotation from the fresco cycle which the Veronese painter Altichiero executed shortly before 1385 in the Paduan church of San Giorgio. The same is true for his miniature of the *Coronation of the Virgin*.¹³ There is little doubt that the composite structure meant as the Temple in the scene where the Virgin presents the Christ Child to the high priest (fig. 11) is modelled after the architecture of the most famous shrine of Padua, the basilica dedicated to St. Anthony. This involved edifice, very similarly constructed and roofed, had acquired its present form by the late fourteenth century, as is clearly confirmed by a pen drawing (fig. 10) of Altichiero's circle now in the Musée Bonnat, Bayonne.

The essential of the Master of the Brussels Initials' style—colors, proportions, expression and technique—is rooted, however, in Bologna. Comparison of his work with the *oeuvre* of the principal Bolognese illuminator,



9. Master of the Brussels Initials, *Prayer to Virgin* "Doulce dame de misericorde fontaine de tous biens." London, British Library, ms. Add. 29433, fol. 168.

10. Circle of Altichiero, end of 14th cent., *Basilica of Saint Anthony* (pen drawing on parchment). Bayonne, Musée Bonnat.





11. Master of the Brussels Initials, *Presentation at the Temple*. *Hours of Charles the Noble*, p. 165.



12. Master of the Brussels Initials, *Flight into Egypt*. *Hours of Charles the Noble*, p. 175.

Niccolò da Bologna (fig. 7), makes this point rather clear. Our artist had also benefited from his travels; on his way North from Bologna, in addition to Padua and perhaps Verona, he is likely to have made the worthwhile detour to the most famous of contemporary Italian courts, that of the Visconti in Milan. There he probably admired some of the works of Giovannino dei Grassi who was then working on a lavish book of hours for the Duke of Milan.¹⁴ Deriving from that experience, it seems to me, is our master's involved sense of spatial relationship and admixture of the cosmic and the mundane, often dazzlingly combined in Giovannino's

oeuvre. It is most likely that he also examined works such as the famous Lombard *Book of Hours and Missal* now in Paris, produced before 1395 for Bertrando De Rossi, a courtier of the Visconti:¹⁵ the young, fashionably-dressed maiden meant to represent Virgo in the margin of the calendar page for August in Charles the Noble's manuscript (fig. 4), is, for example, clearly a sister of the young court ladies clustered around Saint Ursula (fig. 5) in the Milanese volume.

In the *Hours of the King of Navarre*, the pages with miniatures include a type of marginal decoration (figs. 11, 12, 16, 25) with large curling acanthus leaves partially set on



13. Jacquemart de Hesdin, close to 1400, *Flight into Egypt*. Brussels, Bibliothèque royale, ms. 11060-61, p. 106.

areas of burnished gold ground as in North Italian manuscripts. Clothed men actively take part in the construction and sometimes are even given the task of atlantes, while playful and at times mischievous putti climb or scamper over the stylized stalks which house a mysterious fauna and are often haunted by large impassive faces.

The historiated initials with figures of God, the Virgin and the saints (figs. 17, 20) are in an Italian style. The same is true for initials two lines high (fig. 17) ornamented with floral designs. But the smallest of the illuminated initials, pink and blue with white thread pen designs, are in a pure Parisian style (figs. 4, 18, 20, 22). The calendar illustration representing the pastimes peculiar to each month (fig. 4) and the checkered or floral-patterned rather than natural or burnished gold backgrounds of all of his miniatures, except for the *Flight into Egypt* (fig. 12) and the *Hell* scene (fig. 25), also hark back to a direct French tradition, and the lighter borders of pages without large miniatures are also decidedly French in character. To my knowledge, this kind of dichotomy of style, though extremely rare in a manuscript, is consistent with the artistic inclination and the methods of work of the Brussels Initials Master. He was ready to combine the best of the two traditions and used assistants according to their abilities and their availability

rather than for their particular training. The Master's compositions reveal an awareness of French fashions and of the works of Northern painters. His scene of the *Epiphany*, for example (fig. 8), with an intimate grouping of the Holy Family and the kings, has strong Franco-Flemish overtones: the old Joseph is primarily concerned with the material benefits of the event; the brocaded flowing cloak worn by the young magus follows the latest Parisian styles; this king's large gold necklace probably alludes to the mode among French princes of the time to establish chivalric orders of their own.

The French painter Jacquemart de Hesdin made a particular impression on the Brussels Initials Master, for reasons of circumstance as well as of aesthetic inclination: very shortly before the volume of the King of Navarre was produced, these two artists both worked (though perhaps not simultaneously) on a book for Jean de Berry, his *Belles Heures*, now in the Brussels Royal Library. In this volume, Jacquemart painted large miniatures (fig. 13) today considered milestones in medieval French painting. For this very same book, our master contributed the large historiated initials which give him his name. In the *Hours of Charles the Noble*, the landscape background of the *Flight into Egypt* (fig. 12), with its open panorama and its winding paths spotted with field-flowers and bordered by aggressively-drawn trees, is inspired by its counterpart (fig. 13) in the Berry manuscript. The windmill crowning a high bluff, a motif to be used readily by Northern French and Netherlandish artists of the fifteenth century, was anticipated in another of Jacquemart's compositions in the Brussels manuscript, the *Arrest of Christ*.¹⁶

Two miniatures in the *Hours of Charles the Noble*, *Christ Before Pilate* and *Christ Mocked by Caiaphas's Servants* (fig. 14), quote compositions from Northerners in an even more conscious manner. Pilate is perched crosslegged on a carpeted throne which is shown from an oblique vantage point. The large dais above him protruding beyond the pictorial frame is also used as a spatial accent. These are traditional devices of late fourteenth-century Parisian compositions, seen, for example, in the famous set of tapestries of the *Apocalypse*, now in the château of Angers. In the second miniature, Christ is being jeered at in a tiled irregularly-shaped walled area set amidst wooded hills. This setting, with its unconvincing space, is quite unusual for the scene and cannot be understood from any rational standpoint. Indeed, as we shall see, the walled enclosure was borrowed out of con-



14. Shop of Master of the Brussels Initials, *Mocking of Christ*. *Hours of Charles the Noble*, p. 322.



15. Master of the *De mulieribus claris*, 1402. *Eve*. Paris, Bibliothèque nationale, ms. fr. 12420, fol. 6v.

text from the work of an influential Northern painter. The actual execution of these two miniatures, it must be emphasized, was in large part left to assistants who by their desire to show action and emotion and by their free drawing, reveal themselves as probably Flemings or South Germans, traditionally more intent on emphasizing the possible expressive side of a pictorial work rather than on constructing, as did the Italians, a sound and balanced composition.

Meshing such varied trends so successfully in one volume is a rare accomplishment, but comprehensible given the historical circumstances. One or two years before our Master came to France, Paris had seen, through the agency of Philip the Bold, Duke of Burgundy and Count of Flanders, and of his financial wizards, the Rapondi, the arrival of several illuminators from the North. They are likely to have originated, as I have suggested elsewhere, from the region of Cologne. They travelled down the Rhine, and from the Dutch coast reached the port of Bruges where they were hired to work in Paris.¹⁷ Most noteworthy among them is the artist who in 1402 produced the miniatures of a superb manuscript of the French translation of Boccaccio's *De mulieribus claris* which entered the Burgundian library.¹⁸ The style of this artist, characterized by gracious and noble figures and settings, and by soft, appealing colors, appears as a paradigm of courtly art. It is the enclosed garden ("hortus conclusus") of Paradise in which Eve is seated (fig. 16) while holding an urbane conversation

with Lucifer in the *Livre des femmes nobles et de bonne renommée* (as Boccaccio's work was titled in French) which serves inappropriately as the setting for the *Mocking of Christ* (fig. 14) in Charles the Noble's *Hours*.

That the Master of the Brussels Initials readily collaborated with Northern artists is further attested in this very book when we examine the five large compositions which he farmed out. These were produced by the Egerton Master, whose period of activity in Paris seems to have begun around the time when he worked on the *Hours* and lasted until about 1410. Most often, as is true in the present case, he participated in, rather than took charge of, the decoration of volumes.¹⁹ In his miniatures, this Northerner steps back into space, depicting wider scenes bathed in an atmospheric light which he attains for the most part by grey and blue tones used in a stippled technique. His figures have pungent physiognomies and they gesture expressively. In the *Way to Calvary* (fig. 16), the group exits from an unconvincing cityscape meant to represent Jerusalem. Christ is being tugged and pushed by brutish soldiers. Rushing with the excitement of passion, the soldiery is eager to reach Mount Golgotha, which appears in the distance through haze. Here, as a result of narrative contraction, the Crucifixion, attended by emphatically gesturing silhouettes, has already taken place.

Another very essential aspect of the decoration of this particular *Book of Hours* also resides in its borders. If the Master of the Brussels Initials added significance to the texts

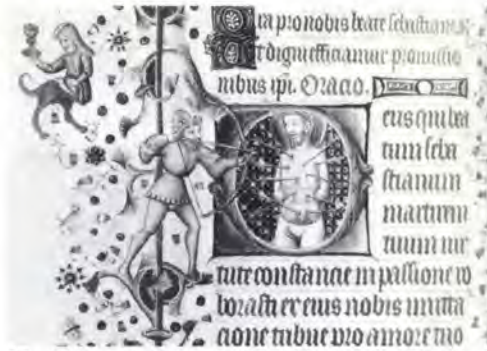


16. Egerton Master, *Way to Calvary*. *Hours of Charles the Noble*, p.355.

with his miniatures, when it came to the borders of the text pages, he and his assistants indulged their sense of satire and wit. Here gold and blue bars run vertically along one or two sides of the text, and are occasionally joined by a third running horizontally along the lower part of the page. From these bars sprout stylized vines bearing gold leaves which proliferate in all four margins. On each page are also included one or more fanciful chimeras, often with human heads, shoulders and arms. These creatures, rarely fearsome, are remote descendants of the satyrs, griffons, sphinxes, and sirens of Antiquity which Pliny and subsequent authors thought of as existing in the East.²⁰ This tradition of monsters, which survived visually through the centuries, had been assimilated in church art by the eleventh and twelfth centuries. Their shapes, however, often varied according to the imagination of sculptors and painters and they were to be an inexhaustible source of entertainment. They thrived, pro-



18. Shop of Master of the Brussels Initials, *Vanity*. *Hours of Charles the Noble*, p.303.



17. Master of the Brussels Initials, *Saint Sebastian*. *Hours of Charles the Noble*, p.570.

tected rather than condemned by the Church, just as much as the animal protagonists of fables, to which popular literature had transferred human aspirations, incongruously inverting roles to show human folly and denounce the arrogance of the powerful. These oddly-shaped beings, whose function is less clearly defined, appear on the lintels and capitals of churches and were soon echoed by gargoyles, those terrifying, spouting wardens of cathedral roofs, and by the frequently encountered wild men at the sides of medieval shields.

The fanciful creatures which inhabit the borders of Charles the Noble's *Hours* for the most part playfully mimic human activities. Some are performing daily chores such as carrying pails of water, while others are involved in more pleasing pastimes, especially that of music-making. A large number also stand as vehicles for mocking or satirizing some of humanity's vices such as vanity, usually represented by time-honored mermaid-like creatures (fig. 18) who seem intent on seducing neighboring figures as they admire their charms in mirrors. Reynard the Fox, personification of deceit in many a medieval fable, also makes his appearance. In one instance, disguised as a pilgrim, staff and rosary in hand (fig. 19), he impersonates false piety. The wit and sarcasm of the Master of



19. Master of the Brussels Initials, *Reynard the Fox as a Pilgrim*. *Hours of Charles the Noble*, p.644.



20. Master of the Brussels Initials, *A Strange Pope Glances at Saint Matthew*. *Hours of Charles the Noble*, p. 552.

21. Shop of Master of the Brussels Initials, *A Distracting Cardinal*. *Hours of Charles the Noble*, p. 319.

22. Shop of Master of the Brussels Initials, *An Octopus-Bishop Admonishing a Bird*. *Hours of Charles the Noble*, p. 82.



23. Master of the Brussels Initials, *A Peculiar Franciscan Quenches His Thirst*. *Hours of Charles the Noble*, p. 603.

24. Shop of Master of the Brussels Initials, *Parody of the Blessing Priest. Hours of Charles the Noble*, p. 427.



the Brussels Initials and his assistants is, however, principally directed at the clergy and dignitaries of the Church: countless hybrids, often satanic creatures, sport red wide-brimmed cardinal hats (fig. 21), bishop's miters (fig. 22), or even, on one occasion, the three-tiered papal tiara (fig. 20). Some, seeming to be part goat, a beast equated with lust, are dressed in Franciscan (fig. 23) or Carthusian cowls. Other similar beings, preaching to or blessing wild roaring dragons, are garbed in the cassock and surplice worn by the regular clergy (fig. 24).

The most direct criticism of the life of those who form the hierarchy of the Church is, however, made in one of the miniatures. A selection of penitential psalms of King David had become an integral part of books of hours. In our volume, rather than being introduced by the traditional miniature representing David in prayer, harp at his side, or else by the scene of the Last Judgment dominated by a looming Christ, these psalms open on a terrifying depiction of Hell (fig. 25). No Northern precedent exists for this scene, and the artist drew the composition after Italian models, mostly large fresco paintings. Hell, in Medieval times, was no metaphor but a literal truth of religious doctrine which nearly everyone professed to believe. Rather than being a state of mind, as modern theologians suggest, it was a concrete and specific realm dominated by an obsessive force, punishment by torture being identified then with the administration of Justice. In our miniature, Hell is indeed a place where the guilty receive just retribution. The picture

is divided into two distinct fields. Above, on the surface of the earth, before a distant background of picturesque vegetation, lies a scorched stretch of wasteland where a naked pope, a cardinal, bare under his purple cloak, a Dominican monk, and a nude tonsured male are inexorably dragged, carried or pulled with ropes by Satan's minions to the entrance of Hell. It is a world pullulating with reptiles and toads. The orifice of Hell is like a gaping mouth, symbol of malevolence and aggression in itself. Pushed and shoved, the condemned souls reach the lower field, a huge cave where the lord of Chaos and Misrule presides. Once the beautiful Lucifer, he fell from Heaven and was disfigured by his rebellion. He is now a gigantic leviathan, a hirsute wild man fitted with a lion's snout and bat wings. Gluttonous and merciless, he crushes a guilty man in his powerful jaws while holding a writhing sinner in his left hand.

The iconography of Hell had become fairly standardized by the late Middle Ages, especially in Italy with the great model of Dante's *Inferno*. Accordingly, the soul being devoured by Satan would be that of Judas Iscariot "which has the greatest punishment" for betraying Christ. Now, as Dante's poem describes it, he "has his head inside [Satan's jaws] and kicks his legs without."²¹ The other sinner, plucked by the lord of Hell's left hand, is another traitor, Brutus, who mercilessly stabbed his protector Caesar. On the right, a bishop, so designated by the only apparel he wears, a miter, is cranked on a spit over fire by a devil who pours molten metal from a ladle on his genitals. This particular punishment, as attested by explanatory inscriptions of the various frescoes of Traini, Nardo di Cione, and Taddeo di Bartolo in Tuscany, is reserved for those who commit the sin of sodomy. On the left of the miniature, a group of souls, among them a king, a monk and a woman, are packed in a large cauldron set over burning fire. We can be sure that they do not enjoy a bath of asses' milk but stand in hot oil, indeed an image of intense suffering, as Medieval chroniclers such as Villehardouin or Froissart make clear in their descriptions of sieges, when burning oil was poured over assailants.

About four-fifths of the population of

Hell, according to the artist, is composed of members of the clergy, a damning comment on their simony and way of life. It is a strong statement but one which visually expressed the beliefs of many contemporaries. The preceding decades had been trying ones for Christendom; the Church, divided by the Schism, had been shaken to its foundation. These were the years when two rivals contended for the throne of Saint Peter, one in Rome, the other in Avignon. With a lack of firm leadership and with allegiances which seem to have wavered according to the law of the strongest, members of the Church more than ever looked after their personal advantage and the satisfaction of earthly pleasures. The prelates and the temporal princes were still involved in diplomatic parleys to settle matters of faith when the *Hours* of Charles the Noble were produced. Indeed, the King of Navarre is recorded as being with the French lords visiting Benedict XIII in Avignon for that very purpose.²² The conception of Hell's population, as envisaged in the miniature of our *Book of Hours*, no doubt appealed to many among the enlightened laity who witnessed the ways of life of the clergy and pondered over the chaotic spiritual anguish brought on by a Schism which the Church, largely on account of personal ambitions and highly lucrative benefices, could not settle.

The *Book of Hours* of Charles the Noble, if devotional by its character, was also a convenient vehicle for social commentary. But the volume is above all an impressive example of miniature painting of the early fifteenth century. Here a new phase in the assimilation of Trecento and Northern painting was reached. A perceptive newcomer, the Italian Master who directed its decoration was affected by his adoptive environment, absorbing the broadening and refining influence of the Parisian milieu. Inversely, his own art was not without leaving a mark on sensitive Northerners who, like the Limbourg brothers and the Master of the *De mulieribus claris*, were influenced by his structures and spatial relationships. In the *Hours of Charles the Noble* they recognized, as we do today, the spirit of a painter who looked as much to the future as to the traditions of the past.



25. Master of the Brussels Initials, *Hell*, *Hours of Charles the Noble*, p.211.

NOTES

¹On Charles III, see Anselme de Sainte-Marie, *Histoire généalogique et chronologique de la maison royale de France, des pairs, grands officiers de la couronne* . . . , Paris, 1736, I, pp.287-288; J.R. Castro, *Carlos III el Noble rey de Navarra*, Pamplona, 1967. On the tomb, see E. Bertaux, "Le Mausolée de Charles le Noble à Pampelune et l'art franco-flamand en Navarre," *Gazette des Beaux-Arts*, 50 (1908), pp.89-112; R.S. Janken, *Jehan Lome y la escultura gotica posterior en Navarra*, Pamplona, 1977.

²Anselme de Sainte-Marie, p. 285; R. Delachenal, *Histoire de Charles V*, Paris, 1909, I, *passim*.

³For the King's patronage, see E. Privat and D. Cau-Durban, "L'Art français en Navarre sous Charles le Noble (1361-1425)," *Mélanges Léonce Coutour: Etudes d'histoire méridionale dédiées à la mémoire de Léonce Coutour*, Toulouse, 1902, pp. 245-255; Bertaux, pp. 90-106; Castro, p. 239, 456-457, 497-498, 501-502, 506, 516-518, 521-525, 530, 580-582.

⁴*Ibid.*, pp. 499-501.

⁵Accession 64.40, purchased from the Mr. and Mrs. William H. Marlatt Fund.

⁶The only serious contender as other possible owner of the book would have been Charles III's younger brother, Pierre of Navarre, Count de Mortain, who was even better placed to select a Parisian book of hours since he was an influential courtier of the French king (F. Lehoux, *Jean de France, duc de Berri, sa vie, son action politique [1340-1416]*, Paris, II [1966] p. 318, n. 5, p. 386, n. 5, p. 477, n. 8; III [1967] p. 163, n. 3; H. Sauvage, "Documents relatifs à la donation du comtépairie de Mortain," *Société de l'Histoire de Normandie*, Mélanges, 5th ser., 1896, pp. 211-231). Pierre's arms, however, differ from those found in our book by having a silver (and wider) border surround the shield as cadency mark. For this particular point see J.B. de Vaivre, "Les Armoiries de Pierre de Mortain," *Bulletin monumental*, 131 (1973), pp. 29-40.

⁷For manuscript Add. 29433 of the British Library, see O. Pächt, *The Master of Mary of Burgundy*, London, 1948, p. 52, n. 19; M. Meiss, *French Painting in the Time of Jean de Berry, the Late XIV Century and the Patronage of the Duke*, 2nd ed., London, 1969, I, pp. 236-237, 325-327; II, figs. 718, 726, 733, 741, 743, 747, 750, 755, 760, 762, 765, 769, 776, 784, 790, 799, 806, 811. For an example of Jacques Rapondi's involvement in the book trade, see n. 19 *infra*. For the Paris market at the beginning of the fifteenth century and for other instances of volumes produced in anticipation of well-to-do purchasers, see P. de Winter, "Copistes, éditeurs et enlumineurs de la fin du XIVe siècle, la production à Paris de manuscrits à miniatures," *Actes du 100e congrès national des Sociétés savantes (1975)*, Paris, 1978, pp. 173-198.

⁸The fourth stay in 1409 would not only provide too late a dating for the decoration but also, in my opinion, for the inclusion of the prayer by Jean Petit in honor of the Virgin after the *petites heures de Notre Dame* (see text *infra*). In 1408, at the command of John, Duke of Burgundy, Petit wrote a widely-circulated tract in which he set out to justify the murder by the Burgundians of the King's brother, Louis d'Orléans. It is unlikely, I feel, that the King of Navarre would have readily acquired a book of hours which included a prayer of Petit's composition after the publication of the latter's highly controversial political text. As records show, when Charles III was last in France, he appears to have felt ambiguous about the Burgundians, even more so than did Jean de Berry. Charles did not take sides openly between the Armagnac and Burgundian clans, but all in his attitude indicates that he condemned the bloodshed.

⁹For example, we find the following entry in the 1413 inventory of Jean de Berry's possessions:

Item, un petit portepaix d'or, ouquel a un ymaige de Saint Antoine en manière de haulte taille et en sa poictrine a une fleur de lis de balay; le quel portepaix le Roy de Navarre donna à Monseigneur.

(J. Guiffrey, *Inventaires de Jean duc de Berry [1401-1416]*, Paris, 1894, I, p. 46, no. 100.) For other gifts made by the King of Navarre to the same prince, see *ibid.*, p. 61, no. 162, p. 93, no. 309, p. 125, no. 413, p. 141, no. 469-470, p. 160, no. 598, p. 161, no. 599, p. 181, no. 685. For gifts to other members of the French court, see Privat and Cau-Durban, p. 246.

¹⁰Castro, pp. 313-317; Lehoux, III, p. 17, n. 6.

¹¹M. Meiss, "The Exhibition of French Manuscripts of the XIII-XVI Centuries at the Bibliothèque nationale," *Art Bulletin*, 38 (1956), p. 195; O. Pächt, "Panofsky's 'Early Netherlandish Painting' — I," *Burlington Magazine*, 98 (1956), p. 115, n. 24; Wm. Wixom, "The Hours of Charles the Noble," *Bulletin of the Cleveland Museum of Art*, 52 (1965), pp. 50-81, 90-91; *ibid.*, "The Hours of Charles the Noble (Cleveland Museum of Art)," *Burlington Magazine*, 108 (1966), pp. 367-368, 370, 373; Meiss, *Late XIV Century*, I, pp. 229-230, 232, 236-238, 240-241, 323-324; II, figs. 729-731, 734, 745, 749, 758-759, 761, 764, 772, 789, 804-805, 809, 812-813.

¹²To the illuminator referred to as the Master of the Brussels Initials or Zebo da Firenze (see below) has been attributed the partial or complete decoration of some dozen manuscripts (see the list given by M. Meiss,

French Painting in the Time of Jean de Berry, the Limbourgs and their Contemporaries, New York, I, p. 377). For a rundown of the *oeuvre* of the second artist and of his direct associates, see *ibid.*, pp. 384-388. In 1949 J. Porcher (*Manuscrits et livres précieux retrouvés en Allemagne*, Paris, pt. II) read "Zebo da Firenze depintore" on the pages of an open book which is held upside-down in the lower margin of p. 414 of the *Hours of Charles the Noble*. Professor Pächt in 1956 linked the name to that of the documented painter Zanobi da Firenze and considered the inscription as an actual signature. Pächt's opinion went undisputed until the publication of Meiss's *Late XIV Century* (1st ed. 1967) where the author rejected, and in my opinion probably rightly so, this inscription as a signature (but Meiss's reading of the first word as "Checho" rather than "Zebo" is unconvincing to me). In keeping with the spirit of the borders, the inscription is to be seen, I believe, as a pun more likely directed to an assistant or friend rather than to the Master. In my view it is improbable that the artist should choose such an awkward way and place for signing his name. Let it also be said that there are a good number of imaginary figures holding open books with imitation of script, and though in the present case an actual inscription does exist, the writing is so small and blurred that no one has been able to read the last two lines with success.

¹³Meiss, *Late XIV Century*, pp. 238, 240. For the work of Altichiero, see G.L. Mellini, *Altichiero e Jacopo Avanzi*, Milan, 1965, especially figs. 77, 185, 188. It may also be pointed out that some of the miniatures in the *Hours of Charles the Noble*, particularly the evangelists, have received an architectural frame which strongly recalls those surrounding some of the fresco scenes in the church of the Eremitani also by Altichiero, for example the *Coronation of the Virgin* (see *ibid.*, fig. 149).

¹⁴See the facsimile of the volume, now in the National Library, Florence, edited by M. Meiss and E.W. Kirsch, *The Visconti Hours*, New York, 1972.

¹⁵On this volume, ms. lat. 757 of the Bibliothèque nationale, Paris, see V. Leroquais, *Les Livres d'heures manuscrits de la Bibliothèque nationale*, Paris, 1927, I, pp. 1-7, pls. VIII-XIII; P. Toesca, *La Pittura e la miniatura nella lombardia*, Milan, 1912, pp. 283-294; L. Cogliati-Arano, *Miniature lombarde, codici miniati dall' VIII al XIV secolo*, Milan, 1970. The identity of the owner has recently been found by Mrs. Kay Sutton of Learnington, England.

¹⁶Page 164, illustrated in Meiss, *Late XIV Century*, II, fig. 191. For the relation between Jacquemart and the Master of the Brussels Initials, in addition to *ibid.*, I, pp. 140, 228, 292, see also the interesting article by R. Calkins, "The Brussels Hours Reevaluated," *Scriptorium*, 24 (1970), pp. 3-26.

¹⁷P. de Winter, p. 184 and *ibid.* in the forthcoming "Christine de Pizan ses enlumineurs et ses mécènes les ducs de Bourgogne," in *Actes du 104e congrès national des Sociétés savantes* (1979), Paris.

¹⁸The manuscript now shelved fr. 12420 at the Bibliothèque national, Paris, is recorded as follows in the 1404 inventory of Duke Philip the Bold:

Item le livre appellé que fist Jehan Bocache et parle des nobles femmes renommées, à deux fermaux d'argent dorés, armoiez aux armes de mondit seigneur.

(Dijon, Archives départementales de la Côte-d'Or, document B301, fol. 36v.) As accounts indicate, the Duke of Burgundy had given 300 gold francs for the volume:

A Jacque Raponde, marchand bourgeois de Paris, auquel on dit seigneur de grace especial a donné la somme de IIIc frans tant pour et en recompensacion d'un livre en françois de plusieurs histoires de femmes de bonne renommee qu'il lui donna aux estraines du jour de l'an derrenierement passé, comme pour les bons services qu'il lui a faiz chascun jour et espere que face ou temps avenir...

(Dijon, ADCO, B 1532, fols. 156-156v.)

¹⁹R. Schilling, "The Master of Egerton 1070 (Hours of René d'Anjou)," *Scriptorium*, 8 (1954), pp. 272-282; Meiss, *The Limbourgs*, I, pp. 384-388; de Winter, *Christine de Pizan*.

²⁰The most famous classical accounts of these monsters of the East was given in 77 A.D. by a man who never went there, Pliny the Elder, who took all his material from much earlier reports by two Greek writers, Ctesias and Megasthenes. Ctesias of Cnidios was a doctor at the Persian court of Artaxerxes in the late fifth century B.C. Megasthenes was sent to Patria as ambassador of Seleucus I to the court of King Chandragupta in 303 B.C. The definitive work on the passage of monsters from Antiquity to the Medieval West is R. Wittkower, "Marvels of the East, A Study in the History of Monsters," *Journal of the Warburg and Courtauld Institutes*, 5 (1942), pp. 159-197.

²¹"Quell'anima là su c'ha maggior penà, "/disse 'l maestro, "è Giuda Scariotto, /che 'l capo ha dentro e fuor le gambe mena." Dante, *Inferno*, XXXIV, 61-63.

²²Castro, pp. 235-236.

Helen Weinberg

THE NOVEL IN AMERICA TODAY

A new avant-garde and a new naturalism vie in the abundant crop of current fiction

When the National Book Critic Circle Journal appears in my mailbox around the first of November with a list of books eligible for the N.B.C.C. prize in fiction, I am always astounded by the number of significant novelists regularly writing in America. Though last year was not exactly a vintage one for quality, as usual there were plenty of books to keep fiction readers busy. The Journal lists new fiction by Walker Percy (whose *Second Coming* is very likely to win the prize this time), John Gardner, E.L. Doctorow, Thomas Berger, William Maxwell, Vance Bourjaily, Ann Beattie, Anne Tyler, Johanna Kaplan, Wright Morris, Louis Auchincloss, Arthur A. Cohen, Joyce Carol Oates, Jerome Charyn, Shirley Hazzard, Irvin Faust, Herb Gold, Paul Theroux, Erica Jong, Woody Allen, Richard Brautigan, to mention only the established writers.

Then there are those on the list for the first time, such as the Southern writer, Barry Hannah. Benjamin DeMott's long review of Hannah's short novel *Ray* in the November 16 *New York Times* Sunday Book Review calls him "a sensational new American comic writer, one with poetry in his pulses, witty hot wires in his sentences. . . ." "I read it; I see what DeMott means, but I think it will take me a while to get used to the style. I am still getting used to Brautigan and

Barthelme—which is not to say that Hannah is like them. Consider this description of a day-in-the-life, which appears in *Ray* without much introductory or concluding material: "It was like a dream. A soft-spoken woman asked us to go up on stage and remove our clothes. We were a little bit ashamed. But once Westy and I were into the act of love, we could not help it. There was a woman in real estate. She was wearing a violet gown, high-heeled silver sandals. She had a lecture stick. She did a lot of pointing with it at Westy and me. She said Westy and me were the newest thing."

Some well-known novelists are on the general non-fiction for 1980: Mark Harris, with a very subjective biography of Saul Bellow; Norman Mailer, with *Of Women and their Elegance*, a pseudo-autobiography of Marilyn Monroe, packaged as a picture-book and out in time for Christmas; and Truman Capote, with *Music for Chameleons*. Mary McCarthy and Vladimir Nabokov, essentially fiction-writers, are under "criticism" this time; and Marge Piercy, best known to some for her feminist fiction, is on both the poetry and fiction lists. I cannot find *A Philip Roth Reader*, not an ordinary anthology, in any category; though it came out in 1980, it is no doubt disqualified for consideration for a prize because it is made up of selections from earlier work.

Helen A. Weinberg, a native of East Orange, N.J., attended college at Wellesley and received a Ph.D. in English from Case Western Reserve University. She now teaches literature at the Cleveland Institute of Art. She is the author of The New Novel in America: The Kafkan Mode in Contemporary Fiction (Cornell University Press, 1970), and is currently at work on a book about the iconography of American painting. She did research on this topic in 1977-8 with the aid of a post-doctoral fellowship awarded by the National Endowment for the Humanities.

Pen drawings accompanying this article are by John D.T. Hronek, a third-year student at the Cleveland Institute of Art.



Photo: Dennis Buck

His short novel *The Ghost Writer* was one of the novels prominently considered for the N.B.C.C. fiction prize in 1979, along with Mailer's pseudo-novel *The Executioner's Song* and Styron's *Sophie's Choice*; all three lost to *The Year of the French*, a historical novel by the relatively unknown Thomas Flanagan.

Other major writers not on this year's list are still active: Barthelme, Barth, Malamud, Coover, Heller, Vidal, Updike, and Vonnegut. Nothing has been heard for the last few years from such serious contenders as Didion, Bellow, Gaddis, and Pynchon, but surely we can assume that each is at work producing The Great American Novel. There was a fine Bellow story in *The New Yorker* a couple of Decembers ago—"The Silver Dish," probably part of a novel-in-progress. Didion's *A Book of Common Prayer* came out in 1977, Bellow's *Humboldt's Gift* and Pynchon's *Gravity's Rainbow* in 1975, and Gaddis's *J.B.* way back in '71. Old talents like Cynthia Ozick, the master of the Jewish-American novella (as distinct from the I.B. Singer story, which seems to me neither very Jewish nor very American but European through and through), keep reappearing: her richly complex novella, "The Laughter of Akiva," was in the November 10 *New Yorker*. An artist friend of mine found this novella especially compelling because he thought it illustrated the triumph of the mute visual artist over verbal oppressors; it does that, perhaps, but its themes are also more reconditely Jewish. A year or two ago Scott Spencer's *Endless Love* (1979) and John Irving's *The World According to Garp* (1978) prompted so much—mostly admiring—talk from so many and such diverse readers that it seemed like old times when new Salinger stories came out in *The New Yorker* and we called one another on the telephone to talk about them.

Looking at this abundance, I see two tendencies—not all-inclusive by any means but real—emerging in the current novel. One of these is a return to an almost naturalistic objectivity which views character as determined by outward circumstance; the other is a kind of reappearing avant-garde insistence that the novel in its old high serious forms, offering an imitation of reality, is dead, and renewable only if it takes the form of an autonomous art-object-in-itself. Sometimes this latter tendency is called post-modernism; I will try later in this essay to clarify the distinction between this and earlier generations of avant-garde writers called modernists.

Naturalism, which seems now oddly re-emergent, first became a conscious literary movement, as we know, in France as a re-

buke to Romanticism and a response to industrialization, urbanization, and the new kinds of poverty they created. Emile Zola, of course, was its great pioneer, not only in his novels such as *L'Assommoir* (1877), but also in manifestos and in literary and art criticism. In this country Stephen Crane's *Maggie, A Girl of the Streets* (published in 1893 at his own expense) was the first naturalist novel: it documented a life of urban ugliness—poverty and alcoholism, classic conditions in the naturalist novel of the nineteenth century. Somewhat less conventionalized were the naturalist novels of the populist Frank Norris, whose *McTeague* (1899) was the basis of Von Stroheim's famous silent film, *Greed* (1925). Theodore Dreiser, the genius of American naturalism, took as articles of faith the naturalist doctrines that character is determined by heredity and environment outside the individual's control, and that character can only be studied by the novelist who observes life objectively like a scientist. Dreiser's novels, such as *Sister Carrie* (1900) and *An American Tragedy* (1925), heavy with sex and money, loomed large in American literary consciousness early in the century, at a time when Gertrude Stein, another American, was in Paris participating in the modernist experiments in literature and art.

Sinclair Lewis's satires of middle-class values in the 20's and 30's are in some ways the heirs to Dreiser's naturalism; in the 20's and 30's Fitzgerald, Hemingway, and Faulkner wrote in a realistic style but with personal distinctiveness about American life as they knew it atypically: among the rich, among Europeans, and among Southern aristocrats, rednecks, and blacks. But it was writers like James Farrell, John Steinbeck, and Richard Wright who kept the naturalist tradition alive in the 30's and 40's, frequently politicizing it, as in *Grapes of Wrath*. (Note: in this essay I use the terms "realism" and "realistic" more broadly than the precise term "naturalism," defined above. By "realism" I mean any fictional style that purports to render or imitate an objectively existing actual world "out there.")

The 1940's brought a new preoccupation, neither naturalistic nor realistic in the sense that Fitzgerald, Hemingway, and Faulkner were. Starting, I'd say, with Saul Bellow's *Dangling Man*, first published in *The Partisan Review* in 1942 as "Notes of a Dangling Man," there has been an outpouring, a kind of non-stop fictional talking about the self or the idea of the self, in a style that appears realistic but that is turned inward. On the first page of *Dangling Man* Bellow has his hero, Joseph,

say, in a fictive journal-entry dated December 15, 1942:

There was a time when people were in the habit of addressing themselves frequently and felt no shame at making a record of their inward transactions. But to keep a journal nowadays is considered a kind of self-indulgence, a weakness, and in poor taste. For this is an era of hardboiled-dom. Today, the code of the athlete, of the tough boy — an American inheritance, I believe, from the English gentleman — that curious mixture of striving, asceticism, and rigor, the origins of which some trace back to Alexander the Great — is stronger than ever. Do you have feelings? There are correct and incorrect ways of indicating them. Do you have an inner life? It is nobody's business but your own. Do you have emotions? Strangle them . . . If you have difficulties, grapple with them silently, goes one of their commandments. To hell with that! I intend to talk about mine, and if I had as many mouths as Siva has arms and kept them going all the time, I still could not do myself justice. In my present state of demoralization, it has become necessary for me to keep a journal — that is, to talk to myself — and I do not feel guilty of self-indulgence in the least. The hard-boiled are compensated for their silence: they fly planes or fight bulls or catch tarpon, whereas I rarely leave my room.

Through the journal device in this first novel Bellow breaks with the sparse Hemingway style that the passage alludes to, and also with the detailed naturalistic objectivity of his fellow Chicago writers Dreiser and Farrell. In effect he announces that he is going to talk a lot about his characters' inner concerns — that is, he will be detailed and realistic, but about the self, not about an objective, external world.

Actually Joseph's rooming-house life and lower-middle-class predicament in *Dangling Man* are suitable subject matter for an old-fashioned naturalist novel, but the journal device makes it possible to avoid Dreiseresque methods. Later, in *The Adventures of Augie March* (1953), Bellow deliberately does a naturalist description of Chicago that is weightier, richer, denser, more thingy than anything Dreiser ever attempted — or, I daresay, ever dreamed of attempting; this is in the first section of the novel which is sometimes called "Life Among the Machiavels." When he wants to do it Bellow can turn naturalist description to gold, rather as a painter who can do figure, landscape, still life, but chooses not to, chooses instead to do abstract expressionist painting for its greater freedom and excitement. In fact, the plot of *The Adventures of Augie March* is an allegory of its own style, which becomes freer when Augie

leaves Chicago for a life of wider horizons, broader personal choice, imagination, more potential for authentic selfhood, and what Augie calls a "better fate."

To discover, to seek, to desire the authentic self—to be in a state of becoming and to strive for fully realized being: this is the situation Bellow presents in *Augie March*, in *Henderson the Rain King*, and—to some extent—in *Herzog*. Beginning in *Herzog*, the sense of a



free self moving toward some sort of completion or fulfillment is diminished: Bellow's typical later hero seems more the sufferer, the endurer of experience, than he does the hopeful adventurer and initiator of acts. By the time of *Humboldt's Gift* there is a lot of heavy, almost naturalistic, environment, much of it Chicago, for the hero to get through.

One thinks of *The Executioner's Song*, Norman Mailer's recent "true-life novel" about Gary Gilmore, the criminal who insisted on his own execution. This book (which had to be called a novel so as to fulfill a contractual agreement) is remarkably naturalistic in the Dreiseresque way that sees man as an animal trapped by his chemistry as well as his environment. It seems that Mailer, whose hero Sergius O'Shaughnessy in *The Deer Park* (1955) was as much an activist in pursuit of an authentic self and a better fate as Augie March was, has gone full circle and come back to where he started with his first novel, *The Naked and the Dead* (1948), an essentially naturalistic novel about World War II.

Naturalism has come back into the contemporary novel through the documentary impulse. Truman Capote was perhaps the trend-setter with *In Cold Blood* (1965), a cold-blooded account of the senseless murder of a Kansas family. What Tom Wolfe in the 60's

named the New Journalism was of course best exemplified by his own writing, but it was also demonstrated in the imaginative *reportage* of Mailer's *Armies of the Night*, *Miami and the Siege of Chicago*, and *Of a Fire on the Moon*. Mailer's early documentation of public events like peace marches, political conventions, and the moon-shot preparations and voyage was not objective in the style of traditional journalism but was in fact a way for him to make his writing self the activist hero and center-of-consciousness in "true life novels" about his adventures in the large world. He did this with such extraordinary energy and metaphysical verve that one accepted his novel-as-history, history-as-novel literary escapades and enjoyed and admired them. However, as Mailer turns to the reporting of details in the lives of a Gilmore or a Monroe and pretends—as he does in *The Executioner's Song*—to keep himself out of it, he is writing in a naturalistic way reminiscent of *An American Tragedy* and *Sister Carrie*, in which the characters have no free will but are shaped by the necessities of their circumstances. In brief, the old naturalist novelist and the new naturalist novelist cannot—or will not—ask the existential questions which Bellow, Mailer, and others so brilliantly asked in the 50's and 60's.

There was nothing the matter with being



Dreiser—or Crane, Norris, Steinbeck, Farrell, Wright—when the industrial and newly urbanized society of the nineteenth and early twentieth century presented a certain kind of vision of man and his predicament. But both vision and predicament have changed—indeed, changed a number of times, but most dramatically after World War II, when all the

old values and social structures seemed to have disintegrated and the very nature of man demanded re-investigation. Such a re-investigation seemed to be the project of Mailer, Bellow, Malamud, Roth, Styron, Updike, Salinger, and others. These writers in the 50's and 60's, after World War II and the decline of traditional naturalism, preserved a realistic convention through the examination of the subjective reality of the individual self.

Writing in "Notes on the Decline of Naturalism" in 1949, the critic Philip Rahv deplores the experimental American fiction of the 40's as an inept imitation of Kafka's inimitable art and makes a plea for the preservation of the realist principle in fiction. He says: "One must protest . . . against the easy assumption of some avant-garde writers that to finish with naturalism is the same as finishing with the principle of realism generally. . . . Of the principle of realism it can be said that it is the most valuable acquisition of the modern mind. It has taught literature how to take in, how to grasp and encompass, the ordinary facts of human existence; and I mean this in the simplest sense conceivable." This principle of realism was maintained for over twenty years, though with a new subjective emphasis, as I have suggested, in such works as *The Adventures of Augie March* and *The Deer Park*, Salinger's *Catcher in the Rye* (1951), Updike's *Rabbit, Run* (1960), Malamud's *A New Life* (1961), Roth's *Letting Go* (1962), and even Erica Jong's *Fear of Flying* (1973).

What of the experimental or avant-gardist fiction-writing that Rahv deplores as he asks for the retention of realism in 1949? Avant-garde writers seem to have emerged, when they did emerge clearly in the 50's, as followers not so much of Kafka, as Rahv suggests, but of Borges (though surely Borges is in some way a follower of Kafka); these American avant-gardists—John Barth, John Hawkes, and later Donald Barthelme, Thomas Pynchon, and William H. Gass, to name only the most important few—have endured and even achieved an audience. I think their audience may be at the expense of the audience for poetry, for who would not rather go from Gertrude Stein to Donald Barthelme, whose prose is often genuinely comic, than from Gertrude Stein to John Ashbery, whose poetry is often genuinely oblique? However, wherever it comes from, the audience exists.

John Barth and John Hawkes were the prominent speakers at a Fiction Festival at the University of Cincinnati on November 2, 1978. At that time Hawkes commented on the principle of realism in fiction in this way:

There are certain fictions that are transparent; you see through them; you read through them. You're not interested in the fiction but in the "life" the fiction seems to be about. Such writers think they are reflecting or reproducing reality. They must think they know what reality is; they must think that "out there" is reality, which I don't think at all. As a writer I'm not interested in "life." Fiction that insists on created actuality is its own reality. . . . The writer wants the reader to speak it, to hear it, to see it, to react to the various aspects of its reality as art. Perhaps something Barth once said has to do with this question; he said: "God was a pretty good novelist; the only trouble was that he was a realist."

The quotation from Barth illustrates his aesthetic: anything which is called art must be fully created and must exist exclusively in its own terms and not in relation to a pre-existent reality or to everyday life. Speaking from that same position, in *Location* (Harold Rosenberg's short-lived journal of 1964, which he started with Thomas Hess and Saul Bellow), Donald Barthelme puts the matter thus:

The literary object is itself a "world" and the theoretical advantage is that in asking it questions you are asking questions of the world directly. This sounds like a species of ventriloquism—the writer throwing his voice. But it is, rather, a stunning strategic gain for the writer. He has in fact removed himself from the work. . . . The reader is not listening to an authoritative account of the world delivered by an expert (Faulkner on Mississippi, Hemingway on the corrida) but bumping into something that is *there*.

Barthelme is saying much the same thing here in 1964 that Hawkes is saying in 1978.

Barth, in his often-mentioned 1967 essay, "The Literature of Exhaustion," talks about the exhaustion, the used-upness of the old forms of modernist as well as traditional fic-

tion and insists that fiction if it is to exist at all must create its own new worlds. Talking about Borges—as he does in much of the essay—he says: "His artistic victory . . . is that he confronts an intellectual dead end and employs it against himself to accomplish new human work." Barth takes us into post-modernism when he speaks of the literature of exhaustion and of Borges.

Let me try to clarify the distinction between modernist and post-modernist avant-garde writing. Gertrude Stein is our literature's first modernist writer, and the post-modernists of the 50's and 60's obviously owe much to her and to Joyce, Mann, and Kafka. But the great modernists achieved so much in their experiments with language and imagery from the unconscious, in their formal deviations from traditional modes of discourse, and in their invention of new methods of aesthetic ordering, that contemporary writers like Barth, Brautigan, Barthelme, Hawkes, and Pynchon—and to some extent Vonnegut, Nabokov, and even J.D. Salinger—have been forced to go past modernism. While what is called post-modernism keeps the idea that the artist-writer invents a world of his own and does not imitate the reality of the everyday world, and while it also practices the modernist experimentation in form, it has its own methods of invention and experimentation.

Borges and Beckett are the most important recent influences on American post-modernist fiction, which can best be defined by a list of characteristics drawn more or less from David Lodge's *The Modes of Modern Writing* (Ithaca: Cornell University Press, 1977). Lodge's list of characteristics includes: uncertainty, subversion of faith in meaning in literature; inconclusive labyrinthine plots; lack of a center-of-consciousness, or use of multiple voices; contradiction; discontinuity (fragmented narrative; clusters of stories, jokes, large and small type, signs—see for example Barthelme's *Snow White* and Leonard Michaels's *I Would Have Saved Them If I Could*); randomness, or "the logic of the absurd"; mixing of modes; rule-breaking generally.

To this list I would add the making of one's own mythology using mythologies of the past either arbitrarily and willfully, or not at all; certainly never using them as Joyce used Greek mythology in *Ulysses* for example; never using past mythologies to make some kind of unified, aesthetically-coherent statement; never using past mythologies for their easy, Jungian-archetypal significances. Barth, who has always played with mythological tales from many cultures, creates his





very own mythology in his new novel, *Letters*, which consists of innumerable letters from various major and minor characters in his previous novels to one another: these characters have now been taken out of their original fictional contexts and put into a new Barthian world so labyrinthine, complex, and inconclusive in its relationships that one suspects Barth of supplying a text for the structuralist critics at John Hopkins, where he now teaches.

Much of this kind of writing is essentially comic; especially comic is the writing of Brautigan, Pynchon, and Barthelme. When Barthelme is truly comic and not just ingenious or clever, his work is convincing. I do bump into "something that is *there*" when I read *The Dead Father*, his most recent long fiction, or *Great Days*, last year's collection of short pieces. The title story in *Great Days* is a kind of life, and it starts this way:

---When I was a little girl I made mud pies, dangled strings down crayfish holes hoping the idiot crayfish would catch hold and allow themselves to be hauled into the light. Snarled and cried, ate ice cream and sang "How High the Moon." Popped the wings of crickets and floated stray Scrabble pieces in ditch water. All perfect and ordinary and perfect.

---Featherings of ease and bliss.

---I was preparing myself. Getting ready for the great day.

About fifteen pages mainly of one-liners later, it ends thus:

---He told me terrible things in the evening of that day as we sat side by side waiting for the rain to wash his watercolor paper clean. Waiting for the rain to wash the watercolors from his watercolor paper.

---What do the children say?

---There's a thing the children say.

---What do the children say?

---They say: Will you always remember me?

---Always.

---Will you always love me?

---Always.

---Will you remember me a year from now?

---Yes, I will.

---Will you remember me two years from now?

---Yes, I will.

---Will you remember me five years from now?

---Yes, I will.

---Knock knock.

---Who's there?

---You see?

This ending is a joke in the style of a stand-up comedian and funny because it is and also funny because of its unexpectedness here. Surprise, playfulness, games—these are the style as well as the content of much of this material, and therefore one wants to notice that as these writers get more oblique and arbitrary they also become more playful, making private games, or game-like worlds, into which the reader is invited as participant.

One might also notice in this short sample from Barthelme some of the post-modernist characteristics listed earlier: one is uncertain about what is going on; cannot discern any explicit meaning in the discourse; hears multiple voices (which in other parts of the story seem to contradict each other); must perceive what one can according to the logic of the fragmented and discontinuous pieces of conversation heard throughout; must accept the inconclusive joke at the end as a kind of ending no matter how ridiculous.



Thus, while the avant-garde writers have become increasingly experimental and maintained their stance against realist literature, realist literature has become first subjective and now, through the documentary impulse, has gone back—perhaps unconsciously, as in the case of Mailer—to an essentially nineteenth-century naturalism. There is also a *deliberate* move on the part of realist writers toward a new objectivity, and this was indicated by John Updike when he was in Cleveland last fall reading his poetry at Case Western Reserve University and commenting on his and others' fiction. He said that he thought the fiction which had explored the subjective truths of the self in the 50's and 60's and into the 70's was now at least for the time being worn out, and that realist novelists seemed to be returning to history for their subject matter. Certainly his own novel *The Coup* (1978) is about history, politics, and life in the world of modern Africa. Updike's Africa is an Africa as totally imagined as Bellow's Africa in *Henderson the Rain King* (1959), but it is imagined for the sake of Africa and not for the sake of Henderson's, or anyone's, selfhood; it is about history and not about the inner life.

William Styron's *Sophie's Choice* (1979) is about the Nazi period in history. Bernard Malamud's *Dubin's Lives* (1979) is about the inner life of a biographer and historian. Joseph Heller's *Good as Gold* (1979) is primarily an attack on Henry Kissinger. Philip Roth's *The Ghost Writer* (1979) involves memories of Anne Frank in the way other late fiction of Roth's involves memories of Kafka, as if to make the past, lost in the Holocaust of Europe, come alive again. Styron, like Mailer in *The Executioner's Song*, presents in his central figure a naturalist character, one without choice—a victim of her own chemistry and society or history. The choice in the title is no choice at all. The other contemporary writers who in their fiction have lately been engaged with history in some way have resisted the pitfalls of naturalism—*Dubin's Lives*, of these

recent novels, seems the most accomplished in maintaining a balance between the personal and the public in American life, and in creating a rich and complex and free (if sometimes woefully self-indulgent) character in the biographer Dubin.

History insists on a kind of objectivity; and whether novelistic material that is engrossed with history is presented in documentary, journalistic, naturalistic, or some other realistic style, such as the flat realism of Joyce Carol Oates, it is surely going in a direction away from the imperatives of self and toward a consideration of cultural or communal values.

This return to history and its concerns seems to me the most important new trend in fiction. The two tendencies that I have described—the realist and the avant-gardist—remain with us in various guises. Within this framework the reader can perhaps locate many of the American writers I have left out, such as Kerouac, Burroughs, Kosinski, and Kesey, and also many of those whom I have been able only to mention. The fanciful pseudo-documentary of E.L. Doctorow's *Ragtime*, for example, seems to bridge the two tendencies. In defining two major trends I do not want to minimize the great variety of styles and approaches that exist beyond my ability to categorize and describe. The current fiction of America is as pluralistic as its society and becoming more so. The comfort, or pleasure, in this is that the tradition of the new—as Harold Rosenberg called it when talking about Action painting—continues in American letters as in American painting; and one can expect newness, changes, surprises, and proliferating genres, styles, and ideas. It is reassuring to me at least that in a time which seems to promise subtle repressions, conservatisms, and limitations in the socio-political realms, a kind of literary subversion has begun, making a democratic assertion of pluralism, expansiveness, and abundance.

Abe Frajndlich

HOMAGE TO YUKIO MISHIMA

Eight photographs from the portfolio.¹

Abe Frajndlich is a self-employed creative photographer currently residing in Cleveland Heights, Ohio. Born in Frankfort, a/M, Germany, he attended Northwestern University, where he received a BA and an MA in English. He studied photography during a three-year residency with Minor White in Arlington Heights, Mass., and a year with Nathan Lyons at the Visual Studies Workshop in Rochester, N.Y. He has exhibited widely in the United States and in Europe, and his work is in the permanent collections of the Bibliothèque nationale in Paris, the Victoria and Albert Museum in London, the George Eastman House in Rochester, and the Cleveland Museum of Art, among other public and private collections. He makes the following statement about his series, Homage to Yukio Mishima.

Yukio Mishima (1925-70) was one of the seminal and prolific figures of twentieth-century Japanese Literature. Born into a samurai family, he organized a group of young men called the *Tatenoki* (Shield Society), dedicated to the traditional ideals of their homeland, including the ancient martial arts. One of the major themes of his novels, plays, essays, and films is the conflict arising in the individual when the multi-faceted culture of the West infiltrates the long-established, more insular culture of the East. He is perhaps best known for his tetralogy *The Sea of Fertility* (which appeared in English in 1972-4) and his semi-autobiographical novel *Portrait of a Mask* (1949, translated 1958). In 1970 Mishima committed *seppuku* (ritual suicide) in protest against the re-signing of the Japanese-American pact whereby his country would not raise its own army. During his lifetime he had been nominated for the Nobel Prize in literature three times.

These images are a tribute to the man whose life and work inspired them. This series grew out of work with the Boston Laboratory Theater's production of Mishima's *Noh* plays in 1975-76. I am indebted to the efforts and energy of William Thrasher, the director of the company, and his actors for participating in these photographs, which were departures both for them and for me. The portfolio did not crystallize into its twelve-image form until early 1980; at some point a longer series of images will be published dealing with this subject.

¹*Homage to Yukio Mishima*, a portfolio of twelve photographs, Arc Press, 1980. Edition size, 35. All photographs copyright © Abe Frajndlich, 1980.

















Grace Butcher

REMEMBERING STELLA WALSH

On December 4, 1980, Stella Walsh, a former Olympic champion and celebrated American track star, was shot and killed in a parking lot in Cleveland, apparently the victim of a robbery. She was 69. Grace Butcher, herself a runner who has set several national records, began her track career under the tutelage of Stella Walsh in Cleveland. Here she quotes from the diary she wrote at 15, recounting her first meetings with the famous athlete, at a time when organized women's athletics was almost nonexistent.

The book is small—maybe four by five and a half inches—dark green fake alligator leather with a green strap that fits into a golden lock. "Five Year Diary," it says faintly across the cover. And inside, in my tight, small, teenage handwriting, a few sentences shimmer on the page as if spotlighted as I read them for the first time since I wrote them thirty years ago.

Mar. 9, 1949 *I think we really are going to have that girls' track team—oh dear God—please. I ran 25 laps of the gym—good workout—legs and ankles and wind couldn't be better.*

Mar. 14 *Was talking to Miss B. after gym—says the track team for sure. Oh if only for sure.*

Mar. 15 *Got in a good $\frac{3}{4}$ mile.*

Mar. 21 *Miss B. said today that chances were quite poor for girls' track. Somehow I'll get into it—I don't know how—but I swear I will.*

Grace Butcher, a pioneer in the development of distance running for women, was the U.S. half-mile indoor champion in 1958 and 1960, and half-mile outdoor champion in 1959. She held the U.S. indoor record for the half mile in 1958-61 and the outdoor record in 1959. Named AAU All-American in 1958-60, she was a member of the United States national team which met the Soviet Union in Philadelphia in 1959. Her list of championships includes the following events: Middle Atlantic AAU cross country in 1963; Ohio and Lake Erie cross country in 1968; Ohio 2 mile in 1972; and U.S. Master's indoor in the 600, 1000, and mile, 1977 and 79. A native of Rochester, N.Y., Grace Butcher grew up in Char-don, Ohio, attended Hiram College, and received an M.A. in English from Kent State University. She is at present an Associate Professor of English at Kent State University's Geauga Campus. Her poems have appeared in numerous magazines, and she has published four books of poetry, the most recent being *Rumors of Ecstasy—Rumors of Death* (Ashland Poetry Press, Ashland College, 1971), and *Before I Go Out On the Road* (Cleveland State University Poetry Center, 1979). She has also competed in motorcycle racing and is Women's Editor of *Rider*, for which she writes a regular column and feature articles on motorcycling.



Photo: Dave Trebing

In March of 1949 I was 15, a sophomore at Chardon High School in Chardon, Ohio, and there was no such thing as track for girls. There was hardly any such thing as track for boys, for that matter, in our small rural high school (52 in my graduating class)—a motley crew of maybe a dozen boys, all doubling and tripling and quadrupling in events. Girls didn't even go to watch. Scarcely anyone did. Girls just barely played six-man (yes, "man"—that's what we called it then) basketball: three guards, three forwards, each group playing only offense or only defense on only half the floor, allowed only two dribbles. These were the rules because everyone knew that girls couldn't run up and down the Whole Floor.

Why then this peculiar obsession of mine with running? I don't know. Was I born with it? As far back as I can remember, I ran. First I played horse: my toothpick legs were the horse, of course, and the rest of me was me. I galloped through my childhood into junior high. There I became vaguely aware that the boys had a sport called Track and that they did something called Running Laps. It seemed a Good and Right Thing to Do, so before and after gym class, my skinny body and I Ran Laps. The other girls would say, "What are you doing?"

"Running," I would say proudly, taking care to breathe easily.

"Can we run with you?" they would ask. "Sure," I would answer graciously, condescendingly. But they would run only a few laps and quit, much to my amazement and delight.

"Tired!" they would pant.

"Hmm," I would say to myself, continuing to run, wondering why they got so tired so fast. Another girl or two would join me; they would get tired and drop out, and so on. I ran and ran, making myself look strong and smooth, making my breathing quiet as I passed them where they stood watching me. I could do something they couldn't. So I was skinny and got teased about it. So what! *They* couldn't do this beautiful thing that I could do.

I started talking to the coaches about track for girls.

"Who would be on the team?" they said at first.

"I'll get the girls," I said, and I signed up a bunch of my classmates who thought running and jumping and throwing things might be fun. I haunted the coaches' office. One day a girls' team seemed a possibility, the next day no one seemed interested.

Finally the coaches said, realistically enough, "You know, Grace, we can't really have girls' track here. To have a team here, you'd have to have one at other schools too. Nobody has girls' track."

They were right, of course, in a kind of chicken/egg way. To have girls' track, you had to have girls' track, and no one had it.

I knew I could be the best runner in the whole country—I just knew it as surely as if God had told me so. But surely, somewhere, there were other girls like me! Wasn't there some place—some mystical kingdom—where girls wore Warm-Up Suits and Ran Laps and Sweated and had Muscles?

Apr. 1, 1949 *Ran $\frac{3}{10}$ of a mile and wrecked my leg. Oh, it's agony.*

Apr. 28 *Well, I'll be darned—Keith asked me on a hayride this Sat. I'm going sure! He is swell—a miler on the track team!*

May 3 *Keith and I ran $\frac{1}{2}$ mile together. My legs are terribly sore—from now on I've got to drop down and keep off my toes—at this rate I'm killing my legs. That way will be better.*

May 6 *Keith brought me this book on How To Be a Track Champion—very good. Worked out and now my right leg is sore. Fine! From one leg to the other.*

And all this time I was brooding, wondering, praying even, for Something to Happen. How did I go about doing something that girls simply didn't do but I did? In addition to all the usual teenage crises—boyfriends, girlfriends, school—my diary of those spring months in 1949 throbs with more than boy/girl catastrophes and delights. "A chance. . . a break!" How, where, for whom could I perform this miracle of Running Track?

How my mother knew about Stella Walsh, I don't know. I suppose any adults who followed sports at all, who read the papers, must have known about her. I suppose I must have told my mother about there being no chance of a girls' track team at school. (How many times had she told me about how *she* had beaten the boys in playground races when she was a kid!) I suppose she got tired of, or concerned about, or interested in, my melodramatic brooding (as only a 15-year-old girl can brood).

May 11, 1949 MOM CALLED STELLA WALSH AND THIS FRIDAY I AM GOING TO CUYAHOGA HEIGHTS TO WORK OUT WITH HER TRACK TEAM! My break! It's unbelievable!

May 12 Boy, talk about being nervous—I'm scared. Will I make good tomorrow? If praying helps any, I should because I've been praying my heart out this past year. I've got my suitcase packed—t-shirt, brown sweat shirt, my slacks, and my shoes. Going to get to bed as early as possible—about 8 or so. I wonder, will I be able to think about school tomorrow? I doubt it. Just thinking about going makes my heart beat faster and my stomach thrill.

Suitcase? Well, I'd never owned a gym bag. Girls didn't usually have any reason to have one. The slacks were in place of warm-up pants. Girls just never wore warm-up pants, those glorious gray baggy things that meant you were a Track Star. My shoes were probably Keds or Red Ball Jets or some such. Or they may even have been high-topped basketball shoes, I don't remember. There was no such thing as *girls'* track shoes anyhow.

Bless my mother. Somehow she had concluded that the world famous Stella Walsh, Olympic champion and world record holder who lived in Cleveland, might know whether such a thing as girls' track existed in the Cleveland area. And come to find out, it did, in just about the only way it existed anywhere at that time: in small ethnic clubs here and there around the country. Stella Walsh—Stanislawa Walasiewicz—who had competed for her native Poland in the '32 Olympics, now coached a small group of girls and boys representing the Polish Falcons. And it was to her stamping grounds on the southeast side of Cleveland that my mother drove me on that day—the Cuyahoga Heights High School track, forty miles from Chardon.

A real track: satiny black cinders around a gleaming green infield. I had hardly ever been on one. Chardon didn't have one. Head and stomach swirling with something I can only label as ecstatic anxiety, I got out of the car, walked down to the track, and over to where a woman who must be Stella was standing with a couple of girls.



Stella Walsh at Cuyahoga Heights High School, 1949.

She had on navy blue warm-up pants—*real* warm-up pants!—and a red, short-sleeved t-shirt, and she stood waiting quietly as I walked up to her. Spikes gleamed out from under her shoes like the claws of an animal. *Real* track shoes! We shook hands. (Lord, we *shook hands*!) Her curly black hair blew in the hot spring wind. I stared at her, awe struck. There was not much small talk.

“Well, Grace, what event would you like to run?” She looked at me intently. Were her eyes hazel?

“Oh, the mile,” I said. The walls of my bedroom were papered with pictures of the world’s great milers—Gil Dodds, Glenn Cunningham. The mile! The greatest glory! No other event had ever occurred to me.

“Girls don’t run the mile,” she said matter-of-factly. “You have good long legs, You can try the hurdles—the 220. Maybe high jump.”

Girls don’t run the mile? It scarcely crossed my mind to question that astounding piece of information, that sudden folding away of a dream. Hurdles? Why not? Hadn’t Stella just said I had “good long legs”? I didn’t remember anyone’s ever referring to anything about my skinny body as “good” before. I would have gladly become a shot putter if she had suggested it. The legendary Stella Walsh was now my first coach.

May 16, 1949 *It didn’t rain, thank goodness. What a workout—hurdles and broad jump, and it was worth every bit of sweat to get the praise I did from Stella.*

May 18 *Boy, some workout!—hurdles all the time except some relay practice at the end. I wore a pair of Stella’s track shoes!*

May 19 *Mom says she won’t take me in anymore after the meet this June 11. That can’t be! I’ve got to keep at it somehow.*

Back in those days parents didn’t drive their kids on 80-mile round trips so they could run around some track or swim in some pool or skate on some rink. But I didn’t know that. My mother *had* to take me. At 15 I had no notion of what that must have been like for her—the time and effort involved even though I was an only child. I didn’t care. I wanted what I wanted.

May 20, 1949 *There weren’t any hurdles out so I practiced the broad jump, relay, javelin. I can’t throw a javelin worth a darn yet. Stella gave me that pair of track shoes to take home and use—her very own! I put them under my pillow the way Stella says she used to.*

May 21 *I made a javelin—cut down a little tree the right size and made a point out of a tin can—was throwing it all day. I worked out alongside Mayfield Rd. in Stella’s shoes.*

May 22 *I built a hurdle—pretty good if I must say so myself. Also will set up a broad jump over on the side lawn if I can.*

May 25 *Am getting better at the broad jump—hit the board most every time right in the middle. Also practiced the high jump. Stella gave me a pair of her sweat pants. They are much better than my slacks by far.*

June 1 *Practice was wonderful! There were nine girls. I’m doing swell. Broad jump and hurdles are good. I took my hurdle in and Stella said I’m a good carpenter and told me to*

make another one. She says I'm doing fine and not to worry about the meet. Ha! I've had butterflies for the last three weeks!

June 6 *Went to bed with my shorts and sweat clothes on and my hair down. Too beat to change.*

June 7 *I worked out but my legs are awfully sore. At home my legs are dead when I try to practice but with Stella at the track—even though they ache, I don't notice it so much.*

At my first-ever meet on June 11, 1949, wearing the bright satin uniform of the Polish Falcons (I guess that really wasn't kosher, seeing as how I'm not Polish), I ran on the winning 440 relay team with Stella at anchor, but we were disqualified to second because one of our runners was out of her zone. I was third in the 220 behind Stella and a teammate and fourth in the hurdles. To run in the same race with Stella! To see her take off her warm-up suit struck me as rather like seeing a statue unveiled. I was almost glad I was so far behind in the race so I could watch her run. She almost never ran like that in training. Her acceleration seemed not of this world.

June 11, 1949 *I'm going to work my head off on speed in hurdles and sprinting and broad jump and get better in my next meet. I sure am proud and happy and did better than I ever expected.*

As it turned out, my mother continued to make that tedious drive—maybe not twice a week, but often enough. Two months after that first meet I was the Cleveland Junior Olympics 50-yard hurdles champion and paraded down Euclid Avenue in my white shorts and t-shirt with the rest of the WJW-Cleveland team. I couldn't have been prouder if it had been the real Olympics.

The following year, Stella's team, always a pretty small, loosely knit group, gradually drifted apart. I read about her competing around the country in track and basketball and softball; she'd send me cards which I put at once into my track scrapbook. She coached track in California; I read about her in *Life* magazine and cut out the story for my scrapbook. I continued training on my own—sometimes with the track boys at Chardon. No, there was still no such thing as girls' track in the schools.

After a few years out for marriage and two children, I found myself back in competition again, and finally in the late 50's after a long and bloody battle with the AAU, women were allowed to run the quarter mile and half mile. (And eventually would come the mile, cross country, the marathon.) Once the only non-Polish member of the Polish Falcons, I was now the only non-Hungarian member of the Cleveland Magyar Athletic Club, coached by Julius Penzes and Alex Ferenczy. Julius was mainly a runner, but Alex became one of the finest women's middle distance coaches the US ever had.

The first official running of the half mile in national competition since the early 30's was in 1958 at the AAU Indoor Nationals at Goodyear Gym in Akron, Ohio. I was now 24 years old, and among the six or eight competitors lined up for this controversial and "grueling" event was—incredibly—Stella! How old was she? Well, if she was 21 when she won the 100m in the '32 Olympics, she was now 47. This was twenty years before Masters competition became a reality—no one then dreamed of people from forty to ninety happily competing in their age groups against other "senior" athletes. For someone her age to go to the line against runners twenty years her junior was mind-boggling, but she must have felt ready or she wouldn't have been there. She looked exactly the same. "I can't picture myself

beating the incomparable Stella Walsh," I wrote in my training diary on Thursday, Mar. 20, 1958, two days before the race, "but I sure will do my darndest to stick with her!"

I had my own shoes now, to be sure, and my own warm up suit, and another coach. But here was Stella, and we shook hands, and the gun went off.

Mar. 22, 1958 . . .and I found myself setting pace, having started on the pole. So I settled into an easy tempo and held it, waiting for two things: first, when was I going to get tired? (and I never did!) and second, when was somebody going to challenge me? And there was nobody.

My coach told me later that a Canadian girl had almost caught me at the finish, but I hadn't known it. The headline the next day for this first national half mile in several decades said nothing about my victory. It read, "WALSH FINISHES THIRD." That seemed only right somehow. I might not even have been on that starting line had it not been for Stella. Afterwards we had shaken hands again. There was not much small talk.

"Nice going, Grace."

"Thanks." She put on her warm-up suit and walked off the track. I signed my first autograph.

Another entry from the old book:

June 13, 1949 Mom and I went to Cleveland and to May's—and I got my first pair of my very own TRACK SHOES!!! Only \$3.95—a great bargain—size 7—the last pair in stock.

But the first pair I ever wore belonged to Stella Walsh. She opened the trunk of her beat-up old car that day in May of 1949 when I was 15 years old and wanted to be a track star more than anything in the world—and from several pairs of spikes handed me a pair that fit. Did she know, I wonder, what that gesture meant to me? I think she made similar gestures many times to many people.

The very first piece of advice she ever gave me was to tie double knots in the laces of my running shoes so I'd never lose one during a race. That's the first thing I tell the runners that I coach now. And even my street shoes sport double knots. You never know when you might have to run a fast half mile for some unforeseen reason.

I watched, fascinated, as she took a trowel from her track bag and showed me how to dig starting holes in the track. Yes, dig holes. Rubberized asphalt all-weather tracks were unheard of then. A track was made of black cinders. If you were lucky, they were rolled firm and smooth; if not, you pretended they were and did the best you could. You dug the



My Mom (Mary Lamb) with Stella Walsh, Erie, Pa., 1950.

holes for your toes sideways to the track so you'd have a straight back wall to push against. Starting blocks? Never heard of 'em.

She never shouted; a gesture would bring us to her side for instructions. We watched her during practice as much as she did us, marveled at her techniques, knew when she wanted us, went eagerly over to hear what she would say.

Stella and my mother—in the cool dimness of the Polish Falcons hall, having a beer after training, talking quietly—grown-up talk—while I hovered in the background, tired, sand in my socks from the jump pits, glad for every extra minute together before the long drive home.

Stella in our car—my mother driving us to Hamilton, Ontario for an indoor meet in March of 1950, heater on full blast—Stella with a blanket around her legs to “keep loose.” I suffered the heat gladly. At the meet in Hamilton we all ran the 50 yd. dash down the middle of the infield surrounded by the steeply banked wooden track. The sprint ended abruptly just a few yards from a brick wall, and at the end of each lane stood a member of the 91st Highlanders, sponsors of the meet in full Scotch regalia, to catch the runners so they wouldn't crash into that wall. While the girls on the team and I argued happily about which of us would have the best looking catcher, I looked down to the end of Stella's lane. Two Highlanders manned her lane, ready to brace themselves for the onslaught of her hurtling body.

July 14, 1949 *The praise I got from Stella was worth every sore muscle I've had. She said she'd never seen me stronger than I was today—more speed and good form on hurdles—more endurance in the 220—ran my best in the relay and am high jumping well.*

The truth is that I was never really very good in any of those events—the sprints, the jumps, the throws. I wasn't physically suited for them—never fast or big enough. But that's all there was for girls back then, and Stella always encouraged me to continue, nevertheless. Somehow I always knew that if I could run longer races, I'd be the best runner in the whole country. I never doubted it. And finally it all happened, beginning with that first half mile in Akron. And Stella was there, just as she'd been at my very first meet. I wonder what her thoughts were as, from somewhere behind me in the race, she watched me winning, just as I had watched her nine years earlier. I've had many fine coaches since then, and am even a coach myself at Kent State Geauga Campus where I teach English, but it all started with Stella.

To have an Olympic champion and world record holder for my first coach at a time when girls running track was almost unheard of in this country—a woman whose silent and powerful presence at trackside somehow made me feel like the star I'd always dreamed of being—was an experience beyond my wildest imaginings as a 15 year old. My track career has continued now for over thirty years, just as Stella's did, and I am extremely grateful. But it began that day in May, 1949, on the track at Cuyahoga Heights as I felt my hand taken in her strong grip, those intense eyes studying me (“ . . . good long legs, Grace . . .”). She wore real track shoes and real warm-up pants and she was the greatest all-round woman athlete I have ever known.

Earl R. Anderson

ATHLETIC MYSTICISM IN THE OLYMPICS

The Olympic Games at their height in ancient Greece

reflected assumptions totally different from those of modern times

Most of us think we know what the "Olympic spirit" is: amateur competition at its best, young athletes from many nations vying in an aura of good sportsmanship for gold medals—and, perhaps, the chance to endorse athletic equipment for a lucrative fee. But the first Olympic Games took place over twenty-seven centuries ago. How can anyone talk about "The Olympics" as if they have always embodied a single, unchanging ideal? Over such a great span of history profound changes have occurred in people's assumptions about the nature of man, society, and the universe—changes that are inevitably reflected in all aspects of life, including athletics. This essay looks back to a period spanning about 150 years in Greek history when the Olympic Games reached an apex: the Archaic Age, which for our purposes began around 600 B.C. and gave way to the Classical Age in the 440's, at the end of the great poet Pindar's career and the beginning of that of Socrates.¹ The differences between that time and the present are indeed profound, yet after two and a half millennia cer-

tain attitudes are still recognizable.

In 1894, when Pierre de Coubertin organized the Olympic movement at an international conference held in Paris, the ideal of the "Olympic spirit" emerged as a prominent theme in modern sports history. The Olympics, of course, had long served as an ideal of athletic competition. As early as 1636, a collection of English poems published to honor the promoter of the Cotswold Games (a rural Whitsuntide festival) described these games as a revival of the ancient Olympics.² Since that time, various sports movements have looked back in one way or another to this ancient festival. In the nineteenth century influential clubs like the Achilles Club, the Olympian Club, and the Spartan Harriers in London, and the Olympic Athletic Club in San Francisco, all bore names which recalled the Greek past. But it was Coubertin who popularized the now familiar "Olympic spirit" as a combination of physical fitness, athletic achievement, and international friendship. Even in recent years, when this ideal has been threatened by political inter-



Photo: Louis T. Milic

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Dr. Anderson became interested in sports history when he took up distance running eight years ago ("I describe myself as a 'runner,'" he insists, "never a 'jogger'"); he competes in about five marathons a year as well as other distance events. His training includes running from home to work in the morning and back in the evening, a practice which adds up to about eighty miles a week. He has published several articles on running and is currently working on a book, Sport and Anti-Sport, dealing with comparative sports history.

ference and by mounting costs to the host cities, the solution most often proposed for the Olympics' problems is a return to their original site: hold the Games in a location as near as possible to that of the ancient Olympics in Greece, the reasoning seems to be, and the "true" spirit can be recovered.

We should keep in mind, however, that the first Olympics is traditionally dated 776 B.C., the last (until the modern revival), 393 A.D.: that is almost 1200 years. Besides this, one must allow for similar games going back at least to the Heroic Age represented in the *Iliad* and the *Odyssey*, around 1000 B.C., and also for a continuation of organized athletics into the fifth and sixth centuries A.D. in some places: the stadium at Nemea, for example, was maintained into the fifth century, and the Olympics at Daphne, a suburb of Antioch, continued until their abolition under Justinian in 520.³ Obviously Greek athletic ideals must be dealt with not in terms of a single ethos, but rather in terms of systems that evolve in response to changing cultural needs.

The modern Olympic spirit may include political, cultural, commercial, and other elements, but religion is not a major component. Plato's approach to athletics in his influential *Republic* and *Laws* was similarly secular, and indeed Plato is merely reflecting the attitude of his contemporaries in the Classical Age. So it is not surprising that we tend to assume the athletic ideals of ancient Greece in general to have been, like ours, secular. But in the Archaic Age the athletic ideal was a religious one. In this essay I shall refer to the Archaic ideal as "athletic mysticism."

Archaic athletic mysticism evolved out of the mythic and aristocratic ideas and values of the Homeric Age, and by the fourth century B.C. gave way to the rationalized, secularized, educational ideal of the Classical Age which finds expression in Plato. In Books III and V of the *Republic*, Plato represents Socrates as proposing, for his ideal city-state or polis, a system of athletic training which has military defense as its purpose; which includes women as well as men; and which, as a sort of practical application of the ideal "a sound mind in a sound body," is closely associated with music. In Books VII and VIII of *Laws* he proposes a more strenuous system of training and competition than the one then in use in Athens—a system which, again, includes women and has military preparedness as its purpose.

Plato's ideas are what one would expect to find in Athens during the age when the center of education was the gymnasium—the

place for both intellectual and physical training. Even his views about the use of music were drawn from common practice: gymnasium scenes on Panathenaic amphoras depict boxing workouts, for instance, accompanied by flute-players. The Classical Age was the age of the gymnasium not only because Greek men and boys spent so much time there, but also because the athletic values, which a century earlier had been associated with contests in the stadium during religious festivals, now were associated with gymnasium activities. Without the change in the Classical period from stadium to gymnasium, secularization could not have occurred. By Plato's time the contest in the stadium was, symbolically, a display of the human perfection which had been developed in the gymnasium. The religious associations of the stadium were of secondary importance, or rather were allowed to co-exist like some outmoded piety alongside the more up-to-date rationalizations of a secular age.

The first decades of the Archaic Age were a period of growth for Greek athletics. The Pythian games at Delphi were held first in 586 as a chrematistic festival (that is, one offered in obedience to an oracle) to celebrate a military victory; then in 582 they were established as quadrennial, stephanitic games (games in which the victors won symbolic garlands).⁴ Sometime between 582 and 570 the Cypselides, tyrants of Corinth, reorganized the Isthmian games to offer biennial, Panhellenic contests. The biennial Nemean games seem to have begun about 573 B.C. Sometime after 594 B.C. in Athens, Solon established handsome cash awards for Panhellenic victors: 500 drachmas for an Olympian, 100 drachmas for an Isthmian, at a time when a sheep or a bushel of grain were reckoned at one drachma (Plutarch: *Solon* 23.3). This policy made training and competition accessible to families of modest means and must have greatly increased the numbers of men involved. During the 560's also in Athens, the tyrant Peisistratus reorganized the annual Panathenaia to include quadrennial athletic contests for which generous awards were given.

These events represent only the top layer of evidence for a great athletic revival. To judge from the Olympionikon—the list of victors, begun c. 400 B.C. and preserved, though only in fragmentary form, in the third century *Chronicle* of Eusebius, bishop of Caesarea—the representation of athletes at the Olympics also changed during this period. During the first half century of the



Runner in the *stadion* race (a sprint). Panathenaic amphora, 460 B.C.; Bologna, Museo Civico. Reproduced from *The Eternal Olympics*, ed. Nicolaos Yalouris (New Rochelle, N.Y.: Caratzas Brothers, 1979), courtesy of the publishers.

Olympic games (776-724 B.C.), the victors came from Elis or nearby states (Pisa, Messene, Corinth, etc.). This was followed by a period of Spartan domination (720-700), then by a period of rivalry between Sparta and Athens (696-592). In 588, however, the victor list suddenly begins to show great variety in the city-states represented, so as to include Croton, Sicilian Naxos, Syracuse, Samos, Phigaleia, Pharsalus, Corcyra, Aegina, Chios, Rhodes, and many others.⁵

Like prisoners of war limited to name, rank and serial number, the Olympic victors are usually known to us only by name, polis (city-state) and athletic event, but with creative interrogation they can be caused to reveal more about themselves. One thing they reveal, through the pattern of polis identifications, is their participation in a general athletic movement beginning in the 580's, and this is confirmed by other evidence.

Expansion of athletic festivals in the early sixth century brought prosperity to athletic-related institutions in the fifth. The temple of Zeus at Olympia, and its statuary, were made in the 460's, and so, also, the Temple of Poseidon at Isthmia, built in the same style and possibly designed by the same architect.⁶ From 498 to 446 B.C., Pindar, one of the greatest lyric poets, enjoyed a career composing *epinicia*, victory songs for winners in the Panhellenic games. Pindar was able to live by his verse thanks to the patronage of great families like that of Hieron, tyrant of Syracuse, who led his polis to stephanitic glory through his support of athletes and epinician

poets as well as through his own equestrian victories. Contemporary with Pindar's career was that of Phidias of Athens, the best sculptor of the Archaic Age, who resettled in Elis and there created the chryselephantine Zeus, one of the seven wonders of the world, a monumental statue of gold and ivory. The quality of Pindar in poetry, of Phidias in sculpture, and of the architect of the Olympic and Isthmian temples, was matched in the field of numismatics by the anonymous "Master of Olympia," whose coins for the Olympic festivals were imitated for generations.⁷

To cite these masters is to rehearse only the top layer of evidence for cultural prosperity in the last decades of the Archaic Age. Six centuries later, Lucian, in his *Herodotus, or Aetion*, would look back on this period as a time when the Panhellenic festivals, especially the Olympics, offered intellectuals a "short-cut to glory." For in the Archaic Age victorious garlands were bestowed not only on winners of physical competitions, but also on those who achieved mastery in artistic and intellectual endeavor. Among the earliest to benefit was Herodotus, now remembered as the father of history writing, who presented himself at the dazzling new Temple of Zeus not as a spectator, but as a competitor for an Olympic honor. He proceeded to recite his *Histories* before a great and noble audience, and thereby won glory surpassing that of any athletic victor. Nowadays this would be like Richard Wilbur reading his poems to the greatest acclaim at the Superbowl. In Classical times the example of Herodotus was followed by rhetoricians, artists and poets, who displayed their talents at the festivals in hopes of gaining patrons and clients.

So much for the environment in which the cult of athletic mysticism flourished: it was a time of athletic expansion in the sixth century, and cultural prosperity in the fifth. A cultural movement of such sudden magnitude and sustained magnificence must have enjoyed the support of a philosophy which could unite its participants in their common commitment. The *religious* nature of this commitment should be understood. It was not a commitment to athletics in a religious setting. It was a commitment to religion which had athletics as one of its most important modes of expression.

It should also be understood that Archaic Greek society, like other early Indo-European societies, was what Margaret Mead would call a "shame culture," one in

which the distinction between good and bad behavior depended primarily on approval or disapproval by the social group. Our own Judeo-Christian heritage is a "guilt culture": we think of good and bad behavior in terms of an internalized moral sense or moral principle. As a first step in understanding the Archaic athletic ideal, we must set aside our accustomed association of ethics with conscience, and think instead in terms of public praise or blame. That which the group praises is good; that which the group condemns is bad.⁸

An Archaic athletic event was experienced by four social groups: the state or polis, the festival community, the athlete's family, and the athlete himself. The concepts which constitute Archaic athletic mysticism may be arranged into four clusters of ethical value, each associated with one of the four social groups. The values associated with the polis may be termed "aristic": the central concept is *areté*, self-assertive behavior that leads to approval by the social group. The values associated with the festival community we shall call "agonistic," that is, related to competition: the crowd at the festival acclaims the victor and confirms his identity as an "athlete" or prize-winner. The values associated with the family we shall call "charistic": the central concept is *eugeneia* or "family charisma," a belief that the charism (luck or divine favor) of the family is transmitted genetically from one generation to another. With respect to the individual athlete, the larger concept is *aidos*—reverence for the gods, combined with a sense of duty to polis and family. In the context of athletic competition, *aidos* finds its expression in *ponos*—the experience of joy and pain in physical struggle, and of satisfaction and exhaustion afterwards.

The athlete and polis: *areté* and its evil twin, *hubris*. When Pindar's Alexandrian editors in the third century B.C. arranged his victory odes, they awarded pride of place to *Olympia 1*, the ode which honors Hieron of Syracuse for his victory in the horse race in 476. Was this because *Olympia 1* tells part of the legend about the origin of the Olympics?—*Olympia 10* does so in better detail. Was it in deference to Hieron, the recipient of the ode?—surely no Alexandrian editor felt that he owed deference to a Syracusan ruler two centuries removed.

The motive for placing *Olympia 1* first can be found in its beginning lines, which set forth the conceptual framework for *areté*, the fundamental ethical value in Pindar's odes.

Water, we are told, is the foremost of elements; gold is the best of possessions; the sun is the brightest star; the Olympics are the best of contests; Hieron is the best of rulers. These details recur in other odes, but only *Olympia 1* presents them all together. *Ariston*, "the best of its class," describes objects as well as people, but in the *Iliad* this adjective takes on ethical significance from the formulaic phrase *aristos Achaion* "the best of the Achaeans," usually an epithet for Achilles.⁹ A man is *aristos* only when the social group acclaims his *areté*, his superiority to others in some physical or intellectual prowess.

In the feudal world of Achilles, *areté* was the qualifying mark of nobility, or aristocratic standing, *aristeia*. During the eighth century, the polis became the basis of political life, and older aristocratic values were modified to accommodate new social realities. *Areté*, previously the basis for a family's aristocratic standing, now became closely associated with the needs of the polis.¹⁰ A man was *aristos* only if his self-assertive behavior was acclaimed as beneficial to the polis. This new ethos is the subject of an elegy by Tyrtaeus, a sixth-century Athenian who had resettled in Sparta:

I would not mention in my song nor call to mind
a runner swifter than the northern winds of
Thrace, nor wrestler strong and tall as Cyclops,
or fairer than Tithonus, nor yet would call to
mind even a king greater than Pelops, son of
Tantalus, and had Adrastus' gift to speak per-
suading all who hear, and had all fame, all
honor and every gift—excepting warlike valor.
No man is good in war until he's stood in
bloody slaughter, reached forth, struck the foe.
This is true *areté*, the best prize, good for a man
to win, good for the polis, too, when a man
stands firm at the front of war.

(Tyrtaeus, fragment 12)

In one respect Tyrtaeus is nonrepresentative of his age: in his endeavor to inspire men to warlike valor, he limits the concept of *areté* to military achievement, when in fact it applied as well to athletics and to intellectual arts such as politics and rhetoric. But underlying this idiosyncrasy there is a commitment to the fundamental ethical ideal of the Archaic Age, the concept from which all other ethical concepts are derived: that *areté* exists only when the polis is well served. Plato in his *Laws* (629^a) quotes Tyrtaeus with approval on this one point, though elsewhere (858^d) he regards Tyrtaeus as evil; and Tyrtaeus' contemporary, Xenophanes of Colophon, who in his later years dwelt in the court of that patron of athletes, Hieron of Syracuse, complains (in an elegy which imitates Tyrtaeus)

that the polis is no better off for having a victorious boxer or wrestler or runner; its needs are better served by wise counselors. The acclaim and awards which the polis is wont to bestow on athletes should be given, instead, to philosophers and poets. Xenophanes, like Tyrtaeus, is unrepresentative of the Archaic Age, when he complains about the polis bestowing honors on athletes; but he shows the same linkage of *areté* with the welfare of the polis.

A victorious athlete wins glory for his polis and therefore his *areté* is acclaimed by the polis. This idea appears over and over in Pindar's odes, in every one of them: for the odes are a vehicle whereby the athlete's *areté* is acclaimed, and their contents have to do, in large part, with the mythohistorical background of the polis for which glory has been won. The four components of *areté* are (1) self-assertive action that is (2) consistent with the welfare of the polis and (3) acclaimed as such by the social group; and (4) risk. The fourth component, risk, presents a paradox which brings the athlete into contact with the gods.

In the struggle to be best, expense and labor contend to win a deed whose end lies veiled in danger, though the crowd thinks it sees wisdom in success.

(Pindar, *Olympia* 5.15-16)

A deed done without danger . . . lacks glory, but men remember if someone dares and wins.

(Pindar, *Olympia* 6.9-11)

It is not enough to say that the athlete risks defeat. If that is all he can risk, defeat is certain, and he will be among those who, afterwards, "slink down back alleys, avoiding hostile eyes, nursing the painful bit of defeat" (Pindar, *Pythia* 8.86-7). Tyrtaeus, in the elegy quoted above, says the same thing about defeated warriors who presume to return home alive. A true athlete risks *hubris*, the other side of the coin of *areté*, which we may define as "that quality of self-assertion which leads to behavior that the social group condemns." It is an error of later critics to equate *hubris* with the Christian sin of "pride." The difference between *areté* and *hubris* depends not on motivation or moral character, but on the *result* of self-assertive action, and this is usually decided by the favor or disfavor of the gods.

The fine line between *areté* and *hubris* is illustrated by a conversation which took place shortly before the battle of Salamis, 480 B.C., when the Greeks were debating how best to deal with the crisis of a Persian naval attack.



Black figure oenochoë (wine Jug), Greek, early 5th century B.C. The Cleveland Museum of Art, gift of A. Canessa.

Adeimantus of Corinth, advocating a cautious (not to say timid) strategy of retreat to the Isthmus, said to his Athenian rival, "Themistocles, at the games those runners who start before the signal is given are flogged." "True," answered Themistocles, "but those who wait too long win no prizes" (Herodotus 8.59). Put another way, Adeimantus was saying, "Let's not risk *hubris*; let's retreat to the Isthmus and avoid a radical change in the status quo." Themistocles' reply: "Let's achieve *areté* by meeting the Persians at sea now!" Themistocles won the debate and led the Greek navy to a great victory which effectively ended the Persian invasion.

The fine line between *areté* and *hubris* was, in fact, a well established concept by Homer's time, long before the Persians made their unwelcome appearance on the scene of western history. Just before the funeral games for Patroclus, the aged counselor Nestor instructs his son, Antilochus, concerning the chariot race. He points out that the chariot race is not necessarily won by the man who owns the fastest horses or the finest chariot. The key to victory is that the charioteer must gain control of the events at the turning post, or at any other narrow and dan-

gerous stretch of the course. If he can do so, he can win even with inferior horses (*Iliad* 23.301-48). Antilochus, following Nestor's advice, competes so furiously at the turning post and at a narrows, that his nearest rival, Menelaus, frightened, shouts at him with accusations of recklessness, that is, *hubris*:

Antilochus, this is reckless horsemanship!
Hold in your horses!
The way here is narrow. Soon it will be wider
for passing.
Take care not to crash your chariot and wreck
both of us.

(*Iliad* 23.426-8)

Antilochus' response is to drive all the harder, forcing Menelaus to hold in his own horses, and he complains,

Antilochus, once you had sense! See what
you've done!
You've defiled my horsemanship, befouled my
horses
by throwing your horses in their way, though
yours are much slower.

(*Iliad* 23.570-2)

Nevertheless it was Antilochus who won Achilles' praise for his performance.

The athlete and the festival community: agonistic values. The word *athletēs* "athlete" first appears in Homer's *Odyssey*. Odysseus, a guest at a festival in the court of king Alcinous, is publicly insulted by Euryalus:

You never learned skill in any of the
games. . . .
You must have been the skipper of some cargo
boat
. . . not, by your looks, an athlete!

(*Odyssey* 8.162-4)

Odysseus, angered by this insult, leaps to the playing field and demonstrates his ability at the discus, winning that event; and he challenges all comers to contests of wrestling, boxing and archery. His self-respect is closely bound up with his standing as "athlete" in the festival community. The word *athletēs* is derived from the noun *athlos* "prize"; cf. verb *athleo* "compete for a prize." The festival community, by awarding an *athlos*, prize, to the victor, confirms his identity as an *athletēs*.

I refer to this cluster of ideas as "agonistic" values. Greek *agon*, cognate to English *acre* and Latin *ager*, originally meant "a field," then more specifically, "a field where a military or athletic contest took place." Eventually *agon* came to refer to the military or athletic contest itself, though the word still carries with it the memory of men who gathered at the *agon* "field" to form a festival com-

munity, there to serve as witnesses for those who strove to achieve the status of *athletēs* in their eyes.

In the funeral games for Patroclus in the *Iliad*, Odysseus wins the foot-race despite the fact that he is the oldest of the competitors, and afterwards, Antilochus describes him as being blessed with a "green old age." At Alcinous' court he proves that looks can be deceiving. Pindar, in *Olympia 4*, also uses the "green old age" motif to develop, in sharp outline, the figure of an unpromising-looking competitor who proves his status as *athletēs* before a skeptical festival community. Erginus, one of Jason's followers who sailed aboard the Argos in search of the Golden Fleece, entered the race in armor, or hoplite race, at a festival in Lemnos. Before the race began, his gray hair inspired laughter among the Lemnian women. Erginus then won the race and came forward to claim his crown. So Erginus

silenced the Lemnian women's laughter. . . .
He said to Queen Hypsipyleia, as he went for
his crown:
"This is the man I am for speed. . . .
Gray hair often grows on young men also,
concealing their true age."

(*Olympia* 4.19-27)

The athlete and his family: charistic values. Pindar's female spectators make a more honorable appearance in *Pythia 9*, which celebrates a victory in the hoplite race by Telesicrates of Cyrene in 474. Pindar recalls that Telesicrates had competed at the Panathenaia and at other festivals in Athens, and remarks

how many times they saw you win at Athens,
girls who wished in silence and each one apart
that you were their husband; and women, Tele-
sicrates,
who prayed that you might be their son.

(*Pythia* 9.92-100)

Pindar elsewhere takes notice of the physical attractiveness of his athletes, and his comments here suggest that Telesicrates was of marriageable age. More than this, the passage is one of many which attests to the importance of *eugeneia*, "family charisma." Many early Indo-European cultures maintained, in one form or another, a belief that the luck or success or "charism" of the family was transmitted genetically from one generation to the next. In such cultures, restrictions on marriage were intended primarily to protect the family charisma—to prevent its dissipation among genetic unworthies, and to prevent the charism from passing to some enemy tribe.¹¹ This genetically transmitted



Discus thrower, early 5th century B.C. Munich, Antikensammlungen. Reproduced from *The Eternal Olympics*, ed. Nicolaos Yalouris (New Rochelle, N.Y.: Caratzas Brothers, 1979), courtesy of the publishers.

charism must be maintained through heroic action or *areté*, and is sustained as a result of the favor of the gods. Sometimes Pindar expresses the concept directly, by attributing *eugeneia*, "inborn greatness," to a hero like the charioteer Theron of Acragas (*Olympia* 2.8-14); but most often he does so indirectly by mentioning that a victor belongs to a family which has earned many athletic victories in the past. Of Alcimedon of Aegina, victor in the boys' wrestling at the Olympics in 460, Pindar writes that his victory inspired in his grandfather "new strength against old age," and that Alcimedon's was the family's sixth stephanitic victory. Past achievements must not be forgotten, for "the dead have a share, also, in the due performance of the ritual" (*Olympia* 8.74-80).

The opposite of *eugeneia* is *aphoria*, that is, failure in one or more generations of a family. Pindar deals with both concepts at length in *Nemea* 6, to honor Alcimidas of Aegina for his victory in the boys' wrestling in 465. Alcimidas was one of the Bassides, a noble Aeginetan family with twenty-four stephanitic victories to its credit; Alcimidas' victory was the twenty-fifth. Alcimidas' grandfather, Praxidamas, was a great athlete: his name is set down in the Olympionikon as victor in the boxing in the 59th Olympics, 544 B.C., a generation after the era of athletic expansion, and besides this, he won five victories at Isthmia and three at Nemea. Praxidamas' grandfather, Hagesimachus, was also a stephanitic victor; but his father, Socleidas, had not been, and so during the generation of athletic expansion, the Bassides suffered *aphoria*. Alcimidas' father (whom Pindar does not name, as though to give immediacy to the threat of obscurity which *aphoria* must bring) also was not a victor. Alcimidas, like his

grandfather Praxidamas in earlier years, saved his family from obscurity by his Nemean victory. In Pindar's analysis, the history of the charism of this family has an advantageous point and a disadvantageous point. The disadvantageous point is that the race of men is not like the race of gods: the gods maintain their glory forever, but men are subject to adversity. The advantage is that the fortunes of a charismatic family may be compared to Earth in her seasons, sometimes fallow and in good times bearing fruit, according to the determinations of Zeus (the god to whom the Nemean games are sacred). *Aphoria* in one generation need not plunge the family into obscurity forever. There is always the chance that the gods will restore *areté*. Continued *aphoria*, however, will cause a family to lose its aristocratic status.

As for Telesicrates of Cyrene, the women of Athens desired him not as a sex object, but as a source of *eugeneia* to ensure the success of their family in future generations. To the family, and to potential family members, the games display charistic virtues as evidence of *eugeneia*. This was probably the rationale behind a ritual which for two days preceded the opening of each Olympic festival: a stately procession from Elis to the temple of Zeus at Olympia. This procession was led by the priests of Elis and other Olympic officials, followed by the athletes together with their male relatives. Why include fathers and uncles and brothers in the ritual? Because the athletes bore witness to the charism of the whole family.

The final illustration of "charistic values" comes from real life, rather than from poetry or ritual. Cleisthenes, tyrant of Sicyon, had brought his family to the greatest eminence it had ever known, and was determined to find

for his daughter, Agarista, the best husband in all Greece. When he won the chariot race at the 52nd Olympics in 572 B.C., he caused a proclamation to be made that "Whoever among the Greeks thinks himself worthy to become Cleisthenes' son-in-law, let him come, sixty days hence, or sooner if he will, to Sicyon, for within a year's time, counting from the end of sixty days, Cleisthenes will choose the man to whom he shall wed his daughter" (Herodotus 6.126). The suitors who arrived at Sicyon found there a gymnasium, complete with foot-race track and wrestling ground, which Cleisthenes had constructed for the occasion. The king chose his son-in-law on the basis of athletic performance there, as well as on the basis of decorum and intellectual performance at a banquet which he gave at the end of the festival period (6.127-30).

The athlete and the gods: *aidos* and *ponos*. The companion words *aidos* and *nemesis* are constantly invoked by Homer as principles of moral conduct. *Aidos* as a moral principle combines reverence for the gods with a sense of duty toward one's colleagues (or toward the polis, in the Archaic Age), and, further, a sense of mutual respect and restraint or self-control among men. Without it, one cannot achieve the favor of the gods. *Aidos* is manifest in the courtesy shown to elders and superiors, in kindness or mercy shown to inferiors or defeated enemies, and in steadfastness on the battlefield. *Nemesis*, "disapproval or condemnation by the social group," is a closely related concept: through self-control, *aidos*, one seeks to avoid condemnation by the social group. These words return us to that other positive and negative pair, *areté* and *hubris*, for *areté* can be achieved only if there is *aidos*, and *hubris* is the negative counterpart of *areté*.

Sometimes Pindar refers to *aidos* directly; for example, in a proverb, "Respect (*aidos*) for forethought puts success and joy on men also" (*Olympia* 7.44), and in a prayer to Zeus that he continue to grant *aidos*, success and joy (again linking these three) to the family of Xenophon of Corinth, who won the stadion race and the pentathlon at the 79th Olympics, 464 B.C. (*Olympia* 13. 114-15). Most often, however, the concept of *aidos* is expressed indirectly through Pindar's own reverence for the gods. Through this reverence, the poet assimilates himself to the victorious athlete: just as Pindar has achieved an *areté* of poetic composition through the Muse, thereby becoming famous among the Greeks everywhere (*Olympia* 1.110-16), so

the athlete owes his victory and glory and *eugeneia* to the gods.

Associated with *aidos* as an athletic ideal are three paradoxes. First, *aidos* is usually defined as some form of restraint or self-control, but in an *agon*—either on the battlefield or in the stadium—*aidos* manifests itself only in self-assertive action, and in risk. One could say that the warrior or competitor "restrains" himself from cowardly behavior, but such a negative expression does not come close to describing battlefield conduct in a heroic environment. The paradox stands: in a conflict or contest, "restraint" is manifest through assertive action which borders on recklessness.

As a second paradox, Pindar (though not Homer) places this assertive action, this grievous struggle, this *ponos*, in collocation with joy. In the *Iliad*, *ponos* refers usually to the struggle which takes place on the battlefield, though in book 23 the boxing and wrestling are described as "grievous" contests, and in the third century A.D. this is echoed by Flavius Philostratus, who remarks that the Olympic officials at Elis "rank wrestling as a test of strength and a 'grievous' contest, to use a poetic expression" (*Gymnastics* 11). For Pindar there is always expense and labor, *ponos*, in the effort to achieve "a deed whose end lies veiled in danger" (*Olympia* 5.15-16), but this *ponos* is also manifest, along with sweetness, in the "cellwork" of bees (*Pythia* 6.54). As the honeycomb links sweetness with grievous labor (i.e., of the bees), so also does athletic struggle. A charioteer like Theron of Acragas, who must negotiate the dangerous turning post twelve times with his chariot and four horses, "forgets the strain of contending" when he wins (*Olympia* 2.48-54). Pindar prays to the gods that Hieron be allowed to continue in his wealth, his bountiful gifts, and in "the joy of his struggles" (*Pythia* 1.41-6). Ergoteles of Himera, exiled from Cnossus, Crete, experienced the pain of exile but also joy in his Olympic victory in the *dolichos* (a middle-distance foot-race); in like manner the foot-race itself is a painful struggle which suddenly brings great joy (*Olympia* 12.7-12). The gods favor such men, who rejoice in the grievous struggle.

As a third paradox, *aidos* in its aspect as reverence for the gods requires neither humility nor self-abasement before them, but rather, the athletic victor achieves something like equality with the gods, if only for a brief time. There is rejoicing for him in his polis; hymns are sung to him as though to a god. Pindar repeatedly describes his poetic tribute as the athlete's due, as if the occasion were

one of divine worship. A statue of him is set up in the festival sanctuary. Such statues or "victor monuments" sometimes bore the likeness of the athlete, but often they assimilated the athlete to a god, usually Hermes or Apollo: in some cases it is difficult for the archeologist to decide whether he is looking at a victor monument or a cult statue.¹² Pindar recognizes the divine moment of victory as the time when a glow, a shining, comes on the athlete and radiates from him. Whenever the charioteer, in first place, rounds the turning post for the twelfth time, "Grace pours a gleam of glory on him" and he rises above the lurking envy of his inferiors on the sidelines (*Olympia* 6.71-77). The Olympic victor is awarded a wreath of wild olive branches, said to be a "shining garland" from Zeus, god of the "flashing bolt"; it is a "golden crown" (*Olympia* 8.1-14), so called because gold is the best of possessions and the Olympic is the best of festivals, but also because gold gleams like the athlete's countenance in his divine moment. Our knowledge of Christian and Oriental mystical cults has led us to associate "mystical experience" with some form of "union" with godhead; usually there is a paradoxical combination of self-abasement and transcendence as the identity of the individual is lost in, or merged with, divine being. Archaic athletic mysticism is not of this sort. It is not a mysticism of union, but a mysticism of similitude. There is no self-abasement, no sacrifice of identity, not even an intention of sacrifice. At the moment of victory, the athlete is "like unto" a god, luminous in *aidos* with its uniquely Archaic paradoxes, and he is honored by the festival community and by the polis "as though" he were a divine being.

The Archaic cult of athletic mysticism, as we noted at the outset, during the Classical Age gave way to a secularized athletic ideal which placed central importance on training in the gymnasium, rather than on winning in the stadium. *Aidos*, an aristocratic ideal prominent in the ages of Homer and Pindar, was pushed into the background, as Werner Jaeger observes, "under the influence of the democratic trend, which endeavoured to embody all moral standards in the rational form of law."¹³

The process of secularization began even during the lifetime of the Archaic masters. Herodotus had told stories in which gods sometimes showed up at human contests. The historian Thucydides, only a generation later, would never have allowed such stories.

Phidias, some time before the Eleians commissioned him to make the statue of Zeus, created a monument at Delphi to honor the Athenian victory over the Persians at Marathon (c. 477-461). For this monument he created a group of bronze gods and heroes, and included among them a human figure, Miltiades, the general who in 490 had led Athens to victory. The inclusion of a human figure among the gods was unique in its time, but not inconsistent with the Archaic cult which we have discussed. In 438, however, Phidias, commissioned by Pericles, created a great chryselephantine (gold and ivory) Athena for the Parthenon, and included in the portraiture on Athena's shield the likenesses of Pericles and himself, as well as gods and heroes. On the basis of these details, Pericles' enemies put Phidias on trial for sacrilege (Plutarch: *Pericles*, 31). He was exiled and took refuge in Elis.¹⁴

The first step in the process of secularization is to insist on a sharp distinction between the divine and the human; and then on a segregation of religious affairs from other aspects of life, so that the religion, reduced in importance, can begin to atrophy in its isolation. By 438 the process was well under way, at least in Athens, and by 400 it was complete, thanks to the teachings of Socrates and Plato. And so Phidias was put on trial by members of a younger generation who had received their education from sophists in the gymnasium. For Phidias, the artistic mingling of divine and human figures displayed a deep mystical devotion to the gods. For the younger generation, it was a sacrilegious mixing of categories.

Though some nations now exclude religion per se from public affairs, such modern separation of church and state exists for reasons different from those operative in Classical Greece, and cannot be called a direct continuation of that tradition. Yet as we look back over twenty-four and twenty-five centuries, it is remarkable how many familiar human responses we can see clothed in apparently alien institutions and customs. Is it legitimate to see in Antiochus' assertive chariot driving an ancient instance of "nice guys finish last"? Is not the joy and pain of Archaic *ponos* a formulation of what every modern distance runner knows? To ask such questions is to justify the study of history: it allows us to view our own assumptions and practices from a different perspective, and by showing us what is timelessly human, teaches us to know ourselves.

NOTES

¹The "Archaic Age" is usually dated from 750 B.C. (the period when the polis or city-state began to emerge as the basis for political life) to 480 B.C. at the latest. For reasons which will appear in my discussion, I am using the term to refer only to the second half of what is usually called the "Archaic Age"; and I consider the 440's as a more crucial decade than the 490's for cultural changes which led to classicism. The various Heroic, Homeric, Archaic and Classical Ages are, of course, academic fictions invented for the scholar's convenience. The usual dates are convenient for art historians and students of literature; however, the sports historian must necessarily emphasize a somewhat different set of cultural changes, and so must assign somewhat different dates to the various "Ages."

²Robert Dover, a London lawyer, beginning in 1612 sponsored the Cotswold Games, which through his influence became a blend of rural and courtly sports traditions; the *Annalia Dubrensia* (1636) is a volume of poems in his honor, contributed by a number of authors. The authoritative study (collected with an annotated edition of the *Annalia Dubrensia*) is Christopher Whitfield, *Robert Dover and the Cotswold Games* (London: Henry Sotheran, 1962).

³Coins struck during the reign of Theodosius II (408-450 A.D.) have been found in the stadium rubble at Nemea: Stephen G. Miller, "Excavations at Nemea, 1975," *Hesperia*, (1976), 194-96; for Antioch: Glanville Downey, "The Olympic Games of Antioch in the Fourth Century A.D.," *Transactions of the American Philological Association*, 70, (1939), 428-38.

⁴Miller, "The Date of the First Pythiad," *University of California Studies in Classical Antiquity*, 11 (1979), 127-58.

⁵The tradition of the Olympionikon or list of Olympic victors is discussed most authoritatively by Luigi Moretti, *Olympionikai, i vincitori negli antichi agoni olimpici* (Rome: Atti della Accademia Nazionale dei Lincei, 1957). The first such list was compiled in about 400 B.C. by Hippias of Elis, the sophist who debates with Socrates in Plato's *Greater Hippias* and *Lesser Hippias*. In the fourth century, the list was revised and updated by Aristotle, then again by Eratosthenes, by Phlegon of Tralles, and others. Since none of these lists survive, the Olympionikon has to be pieced together from inscriptions, anecdotes in historical and geographical writings, and fragmented catalogues of victors.

⁶Oscar Broneer, *Isthmia I, Temple of Poseidon* (Princeton: American School of Classical Studies at Athens, 1971), p. 71; Broneer, "The Isthmian Sanctuary of Poseidon," *Neue Forschungen in griechischen Heiligtümern*, ed. Ulf Jantzen (Tübingen; Ernst Wasmuth, 1976), pp. 39-62.

⁷Charles Seltman, *The Temple Coins of Olympia* (Cambridge: Bowes & Bowes, 1921); Seltman, "Greek Sculpture and Some Festival Coins," *Hesperia*, 17 (1948), 71-85.

⁸For applications of the "shame culture" ethos to Greek poetry, see Donald Ward, "On the Poets and Poetry of the Indo-Europeans," *Journal of Indo-European Studies*, 1 (1973), 127-44; and Paul Friedrich, "Defilement and Honor in the *Iliad*," *ibid.*, pp. 119-26.

⁹For discussion see C. Segal, "Nestor and the Honor of Achilles," *Studi Micenei ed Egeo-Antolici*, 13 (1971), 90-105, and Gregory Nagy, *The Best of the Achaeans* (Baltimore: Johns Hopkins, 1979), pp. 26-41.

¹⁰Werner Jaeger, *Paideia*, 3 vols., trans. Gilbert Highet (London: Oxford University Press, 1939), 1, 3-14 and 87-98.

¹¹See Roger Pearson, "Some Aspects of Social Mobility in Early Historic Indo-European Societies," *Journal of Indo-European Studies*, 1 (1973), 155-61, and Earl R. Anderson, "The Armenian Sasun Cycle: Folk Epic Structure and Theme," *Revue des Etudes Arméniennes*, 13, (1979), 175-86. *Eugeneia* is also discussed by Carl Roebuck, "Three Classes (?) in Early Attica," *Hesperia*, 43, (1974), 484-93.

¹²Walter Woodburn Hyde, *Olympic Victor Monuments and Greek Athletic Art* (Washington: Carnegie Institution, 1921), pp. 71-109.

¹³Jaeger, *Paideia*, 3, 122.

¹⁴Charles H. Morgan, "Pheidias and Olympia," *Hesperia*, 21, (1952), 295-339.

W.B. Clapham, Jr.

ACID RAIN AND OHIO COAL

Fish, forests, and Ohio's coal industry are all dying: what can be done to revive them?

With mounting pressures on industries to switch from gas and oil to coal, acid rain has been receiving increased—though not always accurate—coverage in the media. Acid rain is in fact a complex phenomenon, chemically, ecologically, economically, and politically; and the problems it poses do not lend themselves to easy solutions. Since 1960 the acid content of precipitation in some parts of Sweden (where it has been most carefully monitored) has increased by a factor of 200. In some areas of the world rain has been measured with a pH level comparable to that of vinegar.¹ Hundreds of lakes in the northeastern quarter of North America are too acid to support fish, and the International Joint Commission of the U.S. and Canada has estimated that some 50,000 additional lakes will have no fish within fifteen years if present trends are allowed to continue. Acid rain has been implicated in declines in agricultural and forest productivity.

The phenomenon is of special interest to Ohio, a major coal producer; Ohio coal has a high sulfur content, and sulfur from coal burned in the industrial Midwest is responsible for much of the acid rain that falls in vulnerable areas such as the Adirondacks of New York. The air pollution control strategies of many industries have concentrated on switching from Ohio coal to more expensive

low-sulfur coal from other states. Thus acid rain affects both northern Ohio, where heavy industry burns coal, and the southeastern part of the state, where it is mined.

The acid rain phenomenon

Acid precipitation has been known for over a hundred years; it was discussed in a treatise published in England in 1872 (Angus Smith, *Air and Rain*). But it was not until 1952 that a network of stations to monitor acid rain across Europe was established (at the request of Sweden).² By 1960 this network included 150 measuring stations, and it has demonstrated a startling rise in the acid content of precipitation throughout northern Europe over the last twenty years. Monitoring in North America has not been as systematic. Several networks have been set up within the last ten years, but they have not been coordinated until recently. Even so, there is abundant evidence of the phenomenon and its effects throughout North America.

The basic process of acid rain formation is well known. Sulfur impurities in fossil fuels and smelter ores burn to produce sulfur oxides, which go up the smokestack into the atmosphere. Similarly, nitrogen and oxygen combine chemically under very high temperatures and are emitted as nitrogen oxides. Sulfur and nitrogen oxides undergo a series

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of chemical reactions in the atmosphere to produce sulfuric and nitric acids (Figure 1). The conversion process is quite slow: each hour roughly one per cent of the sulfur and nitrogen oxides is converted to strong acids. The larger acid-producing particles (called "dry" deposit) settle out of the air by gravity or are removed by impact against buildings, plants, soil, etc. The remainder (the "wet" deposit), about half the total emission, stays in the air for days or even weeks, long enough to oxidize completely into molecules of acid. Once formed, acid molecules eventually dissolve in cloud droplets and fall as rain.

Acid deposit is greatest close to the sources of emission, where the larger particles settle out. Such urban acid dustfall is most serious for its effects on health and on the deterioration of buildings, monuments, and other man-made objects. As a smoke plume moves away from its production area, progressively more of the sulfur and nitrogen oxides are converted to the strong acids which wash out of the atmosphere in rainfall. Acid particles carried long distances produce heavy acid deposits on ecosystems which would not otherwise be affected by air pollution. The deleterious effects from these long-range deposits are less dramatic than those from immediate fallout, but they may ultimately be more serious.

The areas most susceptible to damage tend to have the highest esthetic and tourist value. Some other areas seem to be virtually unaffected. Certain kinds of destruction can be reversed if they are caught in time; others are very difficult or impossible to reverse. Some effects are so subtle that it is often difficult to pinpoint which ones are due to acid rain *per se* and which are due to other environmental phenomena, such as normal weather fluctuation, pests, etc. The ecological effect of acid rain is analogous to the chronic health hazards of air pollutants or most cancer-producing substances. But ecosystems do not have an analogue to labora-

tory mice which can be used to evaluate long-term dangers quickly. One must observe them directly and try to understand them. Danger signals are often based on very fragmentary and preliminary evidence that is not universally compelling. Yet the signals must be taken seriously before irreversible damage occurs.

Perhaps the most obvious effect of acid precipitation is the deterioration of buildings and monuments, especially those made of limestone and marble. These building stones are forms of calcium carbonate, which has many valuable properties as a building material, but which is extremely vulnerable to acid. Many limestone and marble buildings of the ancient world have sustained more damage in the last twenty years than in their first twenty centuries. The most famous example is the Acropolis in Athens, where several of the temples have been closed to tourists, and the famous caryatids supporting the roof of the Erechtheion are so eroded that they have had to be removed for conservation.

The decimation of lakes by acid precipitation has been well documented around the world. Numerous soft-water lakes in Ontario, Pennsylvania, the Adirondack Mountains of New York, the Boundary Waters Canoe Area of Minnesota and Ontario, and Scandinavia have become so acidic that all the fish have died. Some species are killed directly by high acidity; others can survive but cannot reproduce. Acid waters inhibit the zooplankton and algae that form the base of the food chain. When the fish die, it does not really matter whether the immediate cause is the direct influence of acid water or its indirect effects on algae or zooplankton: the result is the same. Aside from ecological questions, the economic impact on an area's tourist industry following the collapse of sport fishing is often substantial.

Damage to forests and crops is less easily measurable. There is evidence that forest

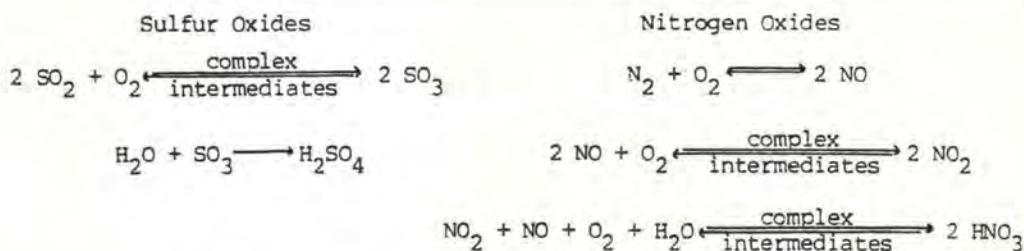


Figure 1: Reactions involved in the formation of the strong acids typical of acid precipitation from sulfur and nitrogen oxides.



The caryatids of the Erechtheion in Athens. The scaffolding is necessary because they have been so weakened by air pollution that they can no longer hold up the temple securely. The face on the one in the front has been virtually obliterated by acid precipitation.

production can be reduced by about 10% by acid rain in certain areas, but the effects of several interacting mechanisms are difficult to distinguish. Controlled experiments using simulated acid rain on crops have demonstrated that acid rain can reduce their production as well. Observations in volcanically active regions, where the rainfall is naturally acidic, reinforce these conclusions. The U.S. Environmental Protection Agency is now making a concerted study to determine the sensitivity of every major field crop in the U.S. to acid precipitation.

But controlled experiments do not reflect all of the stresses on plants in the real world. The acid content of rain is not even constant over the duration of a single storm, much less over a long period. The extreme values of environmental stress are at least as important as the average.³ Definitive studies will have to include the variability of pH through storms and the relationship between rain chemistry and the soil in which the plant is growing.

Acidic precipitation introduces great quantities of hydrogen ions to the water percolating through the soil and can thus reduce soil fertility. Valuable nutrient ions are leached from the root zone and replaced by these mobile hydrogen ions. But fertility de-

cline does not show up immediately; it is progressive, and it can be serious in the long run. Several areas in the Northeast and in Europe have experienced more than a doubling in hydrogen ion concentration between 1955 and 1976. Indeed, rainfall has been measured in the Allegheny National Forest area of Pennsylvania with an extreme pH of 2.32 (a 150-fold increase since 1955, and considerably more acidic than vinegar).⁴

Some areas are much more vulnerable to acid precipitation than others. Lakes and streams are buffered by natural alkalinity against changes in pH, but the buffer capacity varies for each lake or stream. In general, well buffered lakes are those whose watersheds drain soils formed from sedimentary rocks or which are subject to sewage or agricultural runoff. Those whose watersheds are in areas of granitic or silicious rocks, on the other hand, are likely to have very soft water with low buffer capacity. That is, it is precisely our cleanest, least polluted, most desirable lakes and streams that are most vulnerable to damage by acid precipitation.

Figure 2 shows the response of different kinds of lakes to an essentially uniform regime of acid precipitation. Alkalinity is used as an indicator of buffering capacity. In those

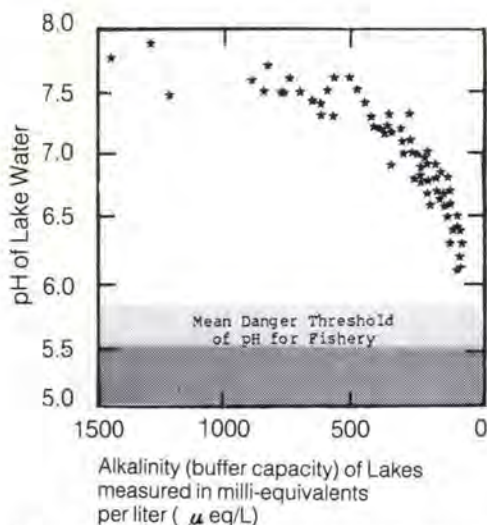


Figure 2: Responses of different lakes in the Boundary Waters Canoe Area (Voyageurs National Park area of Minnesota and Ontario), which have received an essentially uniform amount of acidity in the rainfall. Lakes with low alkalinity have been severely affected.⁵

lakes whose alkalinity is low, the pH has fallen so low as to begin to affect fish. In the same way, soils are buffered by their calcium and magnesium content. Many soils, notably those of dry regions, are rich in these ions. Those of wetter regions, including most of northeastern North America, are more highly leached and have lower concentrations. Such soils are already acid, with a pH in their upper layers about 4.0-4.5. Addition of rainwater with a lower pH can bring a marked increase in the rate of nutrient leaching. This is especially true in areas of leached soils built over an acidic base such as silicic rocks and granites.

There is much we do not know about acid precipitation. It is not clear, for example, what pH level in rainfall is required to avoid serious nutrient leaching in soils. It is also not clear how much the sulfate loadings into vulnerable lakes must be limited in order to prevent further deterioration. It is not always clear whether recovery of acid-damaged lakes is feasible. The recovery process can be aided in some areas by judicious addition of lime and other chemicals, but this is a holding action at best. The costs of treating out-of-the-way forests and lakes in this way are high, and chemical treatment has some negative by-products of its own.

Acid rain does not seem to present a direct hazard to human health, although many researchers believe that the small sulfate particles in dry acid deposition are very dan-

gerous. The evidence, which is not at all clear, consists of statistical records of severe chronic health problems. Such data are taken quite seriously by public health epidemiologists who are accustomed to dealing with chronic problems of populations, but are considered inconclusive by many clinically oriented physicians who deal with acute problems in individuals. What one makes of the statistical inferences about health hazards depends on one's philosophical viewpoint; the objective truth is almost impossible to pin down.

As with most subtle environmental phenomena with chronic influences, it is extraordinarily difficult to place monetary values on the damage done by acid precipitation, though estimates are likely to fall grossly short. Who can state the dollar-and-cents value of pristine lakes and forests to the present community or to future generations? It is possible, in principle, to assign monetary losses to acid damage done to commercial forests, sport fishing, and crop production, but even these estimates take into account only the most immediate costs.

The dying lakes in the Adirondacks and in Scandinavia are like the canaries that miners used to take into coal mines. Both have an esthetic value. But the function of the canaries was not to sing sweetly and entertain the miners but to provide an early warning of danger. The fact that acid precipitation affects as wide a range of ecosystems as it does indicates that we need to understand more about it. Are the soft-water lakes the canaries of our planet? Is the decimation of lakes in the Adirondacks an early warning of a larger problem, or is it a phenomenon that does not need to concern people in other areas? The fact that we do not know does not mean that we need not be concerned. Indeed, if anything, we should be more concerned because we do not know.

Coal, air pollution control, acid rain, and the State of Ohio

Most of the acid precipitation in eastern North America is derived from combustion of sulfide impurities in coal or sulfide ores. Though the largest single source of sulfur oxides in the world is a smelter in Sudbury, Ontario, no state or industry has a monopoly on sulfur oxide production (Figure 3). Ohio is deeply implicated in the problem; for various reasons, it has gained the reputation of foot-dragging on control of sulfur oxide emissions, whereas it would actually benefit if it took the lead in emissions control.

Ohio is one of the most heavily industrial-



Smokestack of the smelter at Sudbury, Ontario, the largest man-made producer of atmospheric sulphur in the world.

ized states, and it is a major producer of electric power. Over 40% of the state's primary energy production comes from coal (Figure 4), and this percentage can be expected to rise as plants burning oil and natural gas are replaced by those burning coal. Over 60% of Ohio coal is consumed in electric power generation, mostly in large power plants. Thus the position of coal in the state's energy picture is assured, and Ohio's pattern of economic development insures that sulfur oxide emissions will always be at least a potential problem.

About one-fourth of the total sulfur emissions from the industrial Northeast comes from Ohio, and it has the highest emissions density of sulfur oxides in tons per square mile of any state in the union.⁸ Indeed, Ohio emits one twenty-fifth of all the atmospheric sulfur from all human sources anywhere in the world. At the same time, the state has some unique features that may offer some novel strategies for the improvement of its emissions delinquency. Any of these which prove feasible should benefit the economies

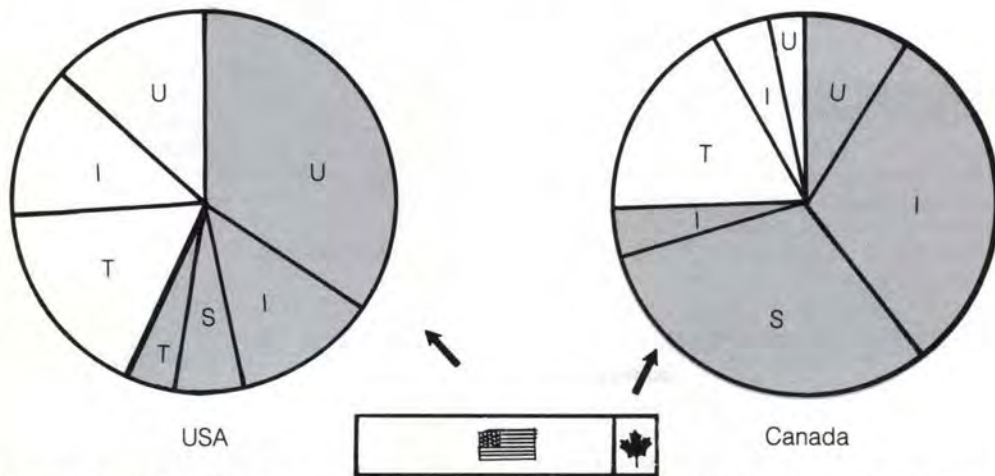


Figure 3: Source of strong acids in acidic precipitation in North America. Data from U.S.A. and Canada are shown separately; relative contribution of the two countries is indicated on the bar beneath the pie diagrams. Shaded area refers to Sulfur Oxides; unshaded area refers to Nitrogen Oxides. Sources are indicated by letters: U — Utility combustion; I — Industrial and other combustion; S — Smelters; T — Transportation.⁸

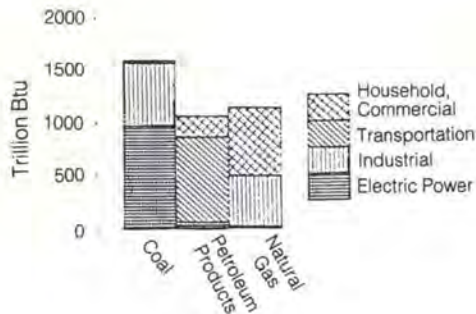


Figure 4: Profile of energy consumption in the State of Ohio.⁷

of Ohio and other states with similar problems, while reducing the effects of acid rain throughout the Northeast.

Ohio is rich in high-grade bituminous coal. Several hundred mines operate in the state's Appalachian region, most of them small surface mines. The coal industry employs about 15,300 people, of whom two-thirds work in the mines. The annual payroll in the mines is on the order of \$230 million, and the industry contributes over \$800 million annually to the state's economy. Unfortunately, the average sulfur content of Ohio coal is among the highest for coals in the Appalachian and Midwestern regions (Figure 5), and eastern coals are higher in sulfur than the coals and lignites of the Great Plains.

One effect of current air pollution control strategies has been to put a price discount on high-sulfur coal and a premium on low-sulfur coal, coupled with a strong regulatory incentive to use low-sulfur coal. The average price for high-sulfur Ohio coal used by Ohio utilities in 1977 was about \$20.00/ton.¹⁰ The lower-grade coals of the Great Plains used in Ohio power plants were somewhat cheaper (\$17.00/ton), but they are also lower in heating value per ton, and the shipping cost from Utah or Wyoming to Ohio is more than the coal's entire value at the mine (\$19.00/ton), so that the cost per BTU is substantially higher than that of high-sulfur coal. The Ohio coal-mining area is adjacent to the great complex of power plants along the Ohio River valley, and it is convenient to the industrial centers of Ohio and the Eastern Seaboard. Bringing coal from other regions into Ohio is a case of "bringing coals to Newcastle." The only excuse for doing so is a failure to find a way to produce and burn Ohio coal in a responsible fashion.

Several laws affect the role of coal in Ohio. The most important is the United States Clean Air Act, as amended in 1977. This Act divides the United States into "Air Quality Control Regions" and sets maxima for pollutant concentrations beyond the normal "background" level. The Act recognizes that conditions differ around the country and gives each state the responsibility for devising a plan by which the ambient air quality standards are met in each region. States are free to adopt whatever strategy they choose for reaching compliance with the National Ambient Air Quality Standards, as long as their so-called State Implementation Plan (SIP) is approved by the U.S. Environmental Protection Agency. As might be expected, the various states have based their implementation strategies on their own perceptions and needs, and each is different. All SIP's set maximum permissible sulfur emissions for fossil-fuel-fired plants in terms of pounds of sulfur emitted per million Btu's of fuel input (lb./MMBtu). This is the most reasonable way of relating emissions to the wide variation in fuels used in industrial and power plants around the country.

The Act also draws a significant distinction between plants which were in operation before the Clean Air Act Amendments went into effect and those which went on line afterward, since it is much easier to design the best available control technology into a new plant from the beginning than to add equivalent control devices to an older plant. It was left to the states to determine how best to apportion the responsibility and cost for retrofitting older plants to meet ambient quality standards. Most states have set limits for existing stationary sources on a case-by-case or region-by-region basis, though a few have set statewide limits. New plants are required to meet stringent "New Source Performance Standards": for power plants burning high-sulfur coal outside of urban areas, the sulfur emission limitation has been set at 1.2 lb./MMBtu.

The SIP for sulfur oxides in Ohio has had a checkered history. The first was submitted in January, 1972, and accepted by U.S. EPA in May of that year. It was successfully challenged in court by a consortium of utilities and withdrawn in August, 1973, then resubmitted in May, 1974. A portion of the regulations was overturned in September, 1974, by the Ohio Environmental Board of Review, and the SIP was again withdrawn in July, 1975. In August of 1975, a suit by the Northern Ohio Lung Association under the provi-

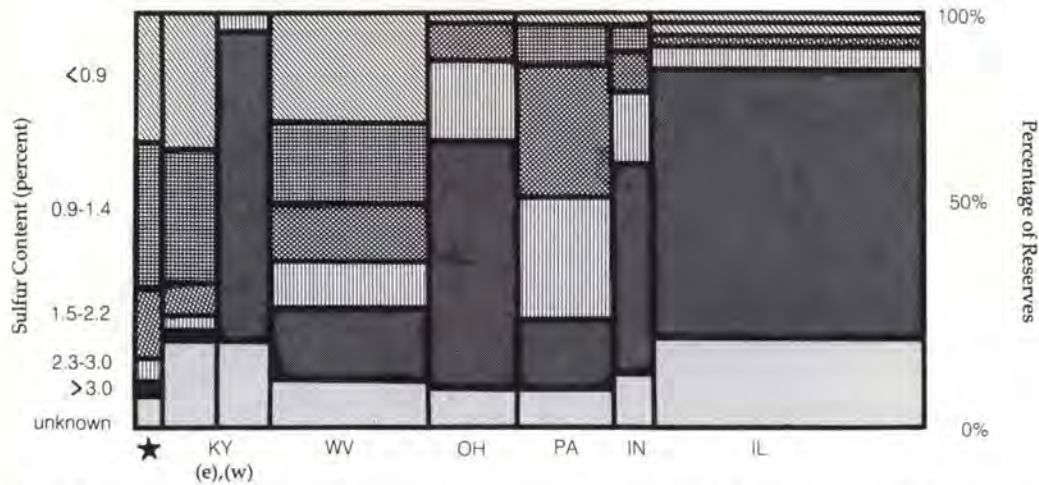


Figure 5: Profile of bituminous coal reserves of the coal-producing states of Appalachian and Midwestern regions. The width of the base of the diagram for each state is proportional to the size of the known reserves in the state. The distribution of sulfur content is shown by the shadings. The states included are * (the combined state totals for Alabama, Tennessee, and Virginia), Kentucky (with the eastern and western coal provinces shown separately), West Virginia, Ohio, Pennsylvania, Indiana, and Illinois.⁹

sions of the Clean Air Act forced the U.S. EPA to enact a SIP for the state. This was issued a year later. It was challenged by industrial and utility petitioners in November, 1976, and certain corrections were ordered by the court. These were included by May, 1977. Various court actions led to continuing readjustments in the limits over the next 2 years. Finally, at the end of August, 1979, the Ohio EPA formally adopted the revised SIP, and Gov. James Rhodes signed an executive order making the regulations immediately effective. Two weeks later, the state submitted a new SIP to the U.S. EPA for review.¹¹

The Clean Air Act is designed to protect human health in urban areas. It does not consider acid precipitation, and its ambient air quality standards are for sulfur oxides, not sulfate particles. Thus, neither the environmental influences of acid rain nor the health effects of airborne dry sulfate particles need to be considered in establishing a SIP. Furthermore, the concept of ambient air quality standards for Air Quality Control Regions focuses on pollutant sources in individual regions without necessarily considering "upwind" or "downwind" regions which may be affected. One consultant to Pennsylvania reported that fine sulfate particles derived from sources in Ohio and other upwind states made it impossible for parts of Pennsylvania to comply with the ambient air quality standards by regulating only Pennsylvania sources.¹²

Focusing on Air Quality Control Regions in developing control strategies is not always

consistent with efficient regulation of interstate pollution. The U.S. EPA felt constrained to enact the least restrictive regulations that would meet ambient air quality standards for Ohio's Air Quality Control Regions when it issued the SIP for Ohio. It did not consider the effect on downwind areas outside of the state; nor did it consider the fact that the other states surrounding Ohio had enacted SIP's with more stringent levels of sulfur oxide control. The EPA endorsed strategies such as tall stacks, which spread air pollutants more widely and reduce their ambient air concentration, but which do so by adding greatly to long-range pollution.

Given EPA's position that it was limited to a minimal regulatory stance, it is not surprising that numerous plants in Ohio have requested further relaxations from those mandated by the federally enacted SIP. At this point, some 50 applications for relaxation of sulfur emission standards nationwide are pending with U.S. EPA; of these, 21 are from Ohio. It is easy to see how Ohio has gained an obstructionist image in its implementation of the Clean Air Act, and why the issue of acid precipitation is a critical one for the state.

As long as the effects of air pollution could be considered local health matters, a minimalist strategy could be justified. But long-range transport of air pollutants and acid precipitation means that Ohio's sulfur emissions must be viewed in a much broader context. Because the allowable sulfur emissions from these plants are relatively greater than those of neighboring states, Ohio con-

tributes more than its "share" to acid rain in the Northeast. Downwind states are thus penalized for having enacted stricter limitations than Ohio, while being victims of acid precipitation from Ohio sources. Legal proceedings have already begun, and some changes will be forthcoming soon. It is not clear whether the issue will be resolved by massive relaxations of emissions limitations, with the concomitant increase of acid rain, by Ohio's adoption of a more restrictive sulfur oxide control strategy, or by further amendments to the Clean Air Act that recognize equity among states as a criterion for EPA approval of a SIP.

It is of course easy to say that we need to reduce sulfur emissions from sources in Ohio and other upwind states in order to lower long-range transport of acidic sulfates. But doing so in a practical and efficient way is not so easy. The implementation of the Clean Air Act has allowed a legal status quo to exist, at least for the time being, which is incapable of bringing about this goal and which is being challenged in court. Furthermore, this status quo has been purchased at the cost of reducing Ohio's use of its own coal and replacing it with coal from other Appalachian states and from the Great Plains.

We cannot solve the problems posed by acid rain by concentrating on acid rain *per se*. We have a problem because utilities and industrial plants in Ohio and neighboring states have been encouraged to meet the provisions of the Clean Air Act in a way that was not in the State's best interests. Plants in Ohio have spent a lot of money on pollution control despite the near certainty that court challenges will require them to alter their strategy and pursue a different approach. Downwind communities are suffering from acid precipitation derived from Ohio and other Midwestern sources. As coal increases its role as our nation's primary fuel, and as more coal-fired plants are built in the Midwest, it will become increasingly difficult for these downwind communities to meet their ambient air quality standards. The depressed situation of the Ohio coal industry denies several billion dollars to the State's economy from direct and indirect sources, while requiring additional services and benefits for unemployed miners. Almost half of the coal used in Ohio must be purchased outside the state, for an annual bill of over \$1 billion.¹³ In addition, the state cannot sell its coal in other states which have adopted stringent air pollution control regulations.

The system is extraordinarily complex. No decision-maker is in a position to imple-

ment a feasible way of minimizing sulfur emissions without disrupting something or someone else. There are too many competing interests, and too many factors which cannot be controlled by anybody.

A view of the system

In order to visualize this kind of system, consider Figure 6. It shows 3 interacting subsystems, or domains. The first, or "environmental domain," behaves according to the laws of physics, chemistry, and biology. It includes the phenomena of human health, dispersion of air pollutants, atmospheric chemistry, and the responses of ecosystems to excess acid loadings. The second, or "management domain," behaves according to the decisions made by individuals or companies as they manage their own affairs. It includes utilities, industries, citizens' groups, etc. The third, or "policy domain," includes the way in which policy signals are generated by government and the economy.

The environmental factors germane to the acid rain phenomenon include the distribution of sulfur in coal, the chemical processes by which it is oxidized, and the responses of people, animals, or plants to acid precipitation. These processes cannot be altered by legislation or government regulation. Individual managers can choose the coal they burn and design the boilers in which combustion take place. They can also choose whether or not to remove sulfur from the coal before it is burned and/or to remove it from the flue gas afterwards. Such decisions depend on how utility and industrial managers survey the market and respond to the relative costs of various options, government regulations, their own physical plant, and their economic position. Their decisions are oriented to their own goals, and will continue to be as long as we have a market economy. The essential role of the policy-maker is to devise ways of meeting the needs of all elements in society. When the actions of one group have a pronounced effect on the health or welfare of others, policies are established which attempt to supplement market forces to insure that the best interests of society are served.

In evaluating the actions that are capable of influencing this complex system, we can start with the premise that coal-burning boilers and industrial plants in Ohio ought to be able to use Ohio coal. It is wasteful to bring in coal from other areas at a premium price when our own coal-mining region is economically depressed and when it ought to be possible to burn Ohio coal in a responsible way,

Let us also assume that acid rain in the Northeast can be substantially lowered if sulfur emissions throughout the Midwest and Northeast are reduced to a level close to the New Source Performance Standards. This statement is based on faith. We do not yet have the data to determine how much sulfur emissions must be reduced in order to reverse the impact of acid precipitation. The New Source Performance Standards simply represent a feasible, and probably effective, target. Ohio utilities would have to reduce their sulfur emissions to about 23% of the current level in order to meet this standard.¹⁴

Technological solutions

Different technological approaches to removing sulfur from coal exist, and the sulfur can be removed at any of several stages between the mine and the smokestack. Because there is this kind of choice, it is meaningless to discuss sulfur removal as a technical issue without also considering the rationale for the choices. There are three different times when sulfur can be removed from coal. A significant percentage can be removed before combustion (so-called "coal washing"). New techniques also exist for removing it during the burning. Finally, flue-gas desulfurization can remove it from the stack after combustion.

Coal-washing dates to the 15th century,¹⁵ and it is widely used as a means of reducing ash content of coal. Raw coal is crushed and subjected to various physical separation methods. The coal, whose specific gravity is about 1.3-1.7, floats. Most of the sulfur is found in the mineral pyrite, which has a specific gravity of 5; it sinks. A relatively simple version of coal washing can remove 30-40% of the pyritic sulfur in high-sulfur coal; more advanced methods can remove somewhat more. The cost of coal-washing has been estimated by EPA to be about \$12-28 per ton.¹⁶

Other types of pre-combustion desulfurization include chemical coal washing, in which sulfur is leached from coal by chemical reagents. This technology is quite new, as there was no call for it before the early air pollution laws were passed about 10 years ago. No method is commercially available at this time, but one or more is likely to be feasible within 5-10 years. It appears that chemical washing will be able to remove upwards of 90% of the pyritic sulfur from coal. This would be sufficient to allow practically any Ohio coal to meet most SIP standards for coal-fired plants. Probable costs are on the order of \$14-30/ton.

Combustion-site desulfurization is also

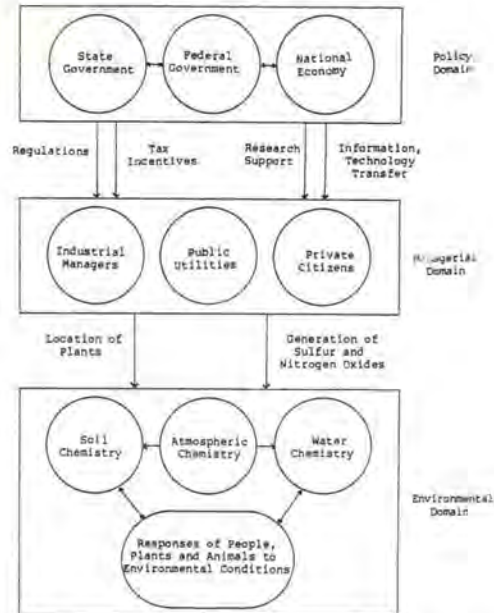


Figure 6: Schema for the system linking coal and acid precipitation from sources in Ohio.

the subject of intense research. The most promising approach is "fluidized-bed combustion," in which a mixture of coal and limestone is supported on a stream of air injected beneath it. The sulfur reacts with the limestone to form calcium sulfate, which can be landfilled or reused. Sulfur removal is also quite efficient with this process: 90% of the sulfur from a high-sulfur coal can be trapped. Fluidized-bed combustion is a fairly new process. A demonstration plant has operated in Renfrew, Scotland, since mid-1975. The Central Ohio Psychiatric Hospital in Columbus has modified its boiler to a slightly larger version of the system at Renfrew, and the conversion of several other institutional and industrial plants in Ohio is planned.¹⁷ Fluidized-bed boilers will be limited to small or moderate-sized industrial boilers for the foreseeable future, so that their impact on acid rain control is limited. But they represent an attractive alternative for these installations.

Post-combustion sulfur control is carried out by flue-gas desulfurization, or "scrubbing." This is a complex technology in which water jets are sprayed into a flue along with reactants such as lime and limestone. Sulfur oxide molecules impact on the water droplets and react with the lime to form gypsum (hydrated calcium sulfate). The scrubber water is collected, and the gypsum slurry is landfilled or used for some other purpose. The gypsum

produced by scrubbers in Japan was all sold to make wallboard until recently, when the market became saturated. In North America, the scrubber slurry has been considered a waste product which must be disposed of.

Scrubbers are controversial. Estimates of their costs vary widely, depending on who makes them and what assumptions are used. They are large in size, and they cannot be added to all existing plants. They also have a reputation of being unreliable. They are subject to corrosion, clogging, and freezing in winter. They have been implicated in the down-time of electric power plants disproportionately to the other components. Their reliability appears to vary considerably from place to place. Whereas in Canada they are not considered a feasible mechanism for air pollution control,¹⁸ in Japan scrubbers are operational 96-98% of the time, and several new scrubber systems are capable of removing nitrogen oxides as well as sulfur oxides, with high efficiency and reliability. They are capable of meeting the Japanese national ambient air quality standards, which are much more stringent than those of other industrial countries. The greater apparent reliability of Japanese scrubbers may stem from the fact that the Japanese Electric Power Development Company requires manufacturers to repair all problems that arise within one year. As a result, the initial cost of Japanese scrubbers is higher than in the United States, but their reliability is much higher. It is not totally reasonable to compare American and Japanese experience with scrubbers, however. The coals used in Japan are low in sulfur, and scrubber reliability appears to be higher for low-sulfur coal.¹⁹

Most new coal-fired plants in the United States meet their New Source Performance Standard by scrubbing the flue gas. Utilities have complained bitterly about the expense of installing them, but most have opted for scrubbers to meet the required standards. When flue-gas desulfurization can be designed into a plant from the beginning, it is cheaper than retrofitting an older plant, and the ultimate reliability of the scrubber system is higher.

One technology which is not yet commercially available, but which shows promise for sulfur emission control from electric power generation, is coal gasification. Some methods of gasifying coal produce sulfur as a by-product. High- or low-Btu gas could easily be used to run either a peaking-power or a base-loaded generator. This plan is being considered seriously in the Netherlands, and it has been suggested as one way of convert-

ing gas-fired generators to coal in the southwestern United States at minimal energy penalty.²⁰ Unlike a scrubber, a gasification plant does not have to be an integral part of a power plant. It simply has to be connected to it by a pipe, thereby avoiding some of the area limitations of older plant sites.

Institutions and sulfur emission control

We obviously have the technological capacity to burn Ohio coal in a way that discharges much less sulfur into the atmosphere than is now the case. Scrubbers, coal-washing, novel combustion techniques, and combinations of these would allow emissions on the order of 1.2 lb/MMBtu instead of the 4-10 lb/MMBtu characteristic of large coal-fired boilers in Ohio today. That we do not take advantage of existing technology is a function partly of the cost of desulfurization and partly of the institutional framework characterizing the system. Regulations limit the options all industries can consider for pollution control. I shall focus on electric utilities, as they constitute the greatest source of sulfur oxide pollution. But most of this argument applies equally well to other industry in the state.

An electric utility company is a manager, in the sense of Figure 6. It decides what fuel to burn, what types of boilers to build, and what pollution control devices to install, all on the basis of what will produce the greatest profit, within the constraints imposed by regulatory agencies. The Public Utilities Commission, which is charged with safeguarding the public interest, does so almost exclusively by keeping down the price of electricity. Because pollution control is expensive, it is unlikely that an electric utility will spend more than it has to in order to burn local coal or to produce cleaner emissions than the EPA says it has to. An electric utility is not designed to solve economic and social problems; its goal is to make a profit. Economic and social problems that grow out of electric power generation can be addressed only through public policy.

Virtually all public policy governing air pollution control in North America has been through regulations that limit the emissions from individual plants. This approach provides a solid rationale for including pollution control in utility rate bases, but it gives little incentive to devise more effective ways of protecting air quality. Because acid rain is a regional phenomenon, its control will probably require a more flexible approach which encourages cooperation among the various elements of the system, and which involves

new or refined technologies, and new agencies, as well as existing policy tools.

One of the long-standing arguments between industry and the EPA concerns the costs and benefits of scrubbers. Both start with the same figures but calculate vastly different annual costs, because each reflects different interests and perspectives. As an example, one of the key steps in the process by which a power plant is retrofitted with a scrubber is the preliminary engineering design. A basic design is chosen and adapted to the particular plant, and plans are drawn up so that detailed costs can be estimated. Only then can the final decision be made to go ahead with construction. This preliminary design step may cost several hundred thousand dollars, and it cannot be justified unless the utility has already made the commitment to scrubbing. Electric companies may simply be unwilling to commit themselves to retrofitting older plants with scrubbers unless they are forced to do it, and then will do so only under pressure.

In this case, the public interest might be best served by establishing a state-chartered company analogous to Comsat or TVA which would build and operate scrubbers for the utilities at a contractual cost. The fact that the responsibility for sulfur emissions would be transferred to the scrubber company and that the utility would be able to identify a precise cost for flue-gas desulfurization might make them more willing to participate. It is also possible that a quasi-public company whose function was to control pollution from coal-fired power plants might be able to raise money and do the job more cheaply than the utility itself.

One reason for the depressed state of the coal industry in Ohio is that neighboring states with relatively strict emission standards (notably Michigan) will no longer purchase Ohio coal in quantity. Nothing the State of Ohio can do will change this fact unless it develops a capability for pre-combustion cleaning to render Ohio coal as low in sulfur as Great Plains coal. This means advanced coal washing or chemical coal cleaning. At this time, Ohio has no advanced coal washing plants, although one will shortly begin operation near Cadiz.

One of the significant features of the Ohio coal industry is that it is highly fragmented, and most mines are small. They cannot afford basic coal-washing facilities, much less the very expensive plants required for advanced coal washing. Only centralized facilities serving many mines can service the small independent operations, and the State

may need to take steps to insure that small mines have adequate access to advanced washing facilities. The state might well encourage companies to construct such facilities.

The best thing that could happen to the competitive situation of Ohio coal would be the commercialization of efficient chemical coal cleaning. The State can take a lead in developing these technologies and in providing markets for their products. This means support for research and development, but it also means providing incentives for construction of new facilities, and it means adapting emissions standards such that market forces will influence Ohio industry and utilities to buy cleaned Ohio coal. One should not forget that Ohio utilities spend over \$1 billion annually on low-sulfur coal from other states and that market losses for the Ohio coal industry in Michigan alone total \$2/3 billion annually. The overall additional contribution of the coal industry to the State's economy would be over \$5 billion per year from sales in only these two states.

The experiences of other countries suggest that imaginative public policy can bring economic pressures to bear on coal consumers that will incline them toward more socially responsible decisions. The state already sells bonds to support construction of pollution control devices. Another approach would be for PUCO to require power plants that meet New Source Performance Standards to run at full capacity. Excess power over the owner's needs would be fed into the power grid, and other utilities would have to buy it, reducing their own production from dirtier plants. Dispatching power on the basis of emissions in this way would be an easily administered way of moderating the state's overall sulfur emission. An emissions tax on sulfur or particulate emissions would provide an incentive to reduce emissions from all plants and increase the use of the cleanest facilities. A coal consumption tax levied on all coal burned in facilities throughout the state would generate funds for supporting ways of using coal more efficiently and responsibly.

Utilities have often been urged to build new power plants that come under New Source Performance Standards and to retire older, dirtier plants. This improves sulfur emissions, but at considerable cost to the utility's consumers. It also forces the State to invest in a new infrastructure (roads, service facilities, etc.) to service the plant. It would be better to find ways to encourage power companies to rebuild their older plants so that

they could realize a measure of capacity growth with a minimum of social dislocation and requirement for new infrastructure. A creative renovation program should increase the efficiency of electric power generation at less cost to society than building totally new facilities. In addition, the renewed plants would be subject to New Source Performance Standards.

Many other suggestions might be made. Some will be feasible in some cases, and none represents a solution for the acid rain problem in general. Some have been introduced into the General Assembly or formally proposed by regulatory agencies. We need to find effective ways of using existing institutions to deal with a significant regional problem. Acid rain will grow in significance unless we develop a viable strategy to deal with it. We know what causes it, although we do not understand all of its details. It is a regional phenomenon which requires a regional solution. State and federal govern-

ments must cooperate with each other, energy departments must cooperate with regulatory agencies, and government must cooperate with the private sector to devise emission control strategies which are in the best interests of the entire affected area.

Ohio has a special interest and responsibility in the acid rain issue. We have two alternatives. We can go as slowly as possibly, delaying investment in pollution control as long as possible. Or we can take a more creative role and try to find ways for the individual decisions of managers in the private sector to meet the public interest in the region. The latter seems far superior. It should cost no more than the former, although certain investments would have to be made earlier than if a delaying tactic was used. But the benefits of an increased market for the state's resources and an improved image nationally would appear to be compelling.

NOTES

¹Acid content (concentration of hydrogen ions) is most commonly expressed in terms of pH ("potential of Hydrogen"), a logarithmic measure in which 7 is neutral. Acidic solutions have a pH below 7, with the acid content (i.e., hydrogen ion concentration) increasing by a factor of 10 by each unit decline in the pH value. The pH of vinegar is about 3. For the increase in acid precipitation in Scandinavia, see N.R. Glass, G.E. Glass, and P.J. Rennie, "Effects of Acid Precipitation," *Environmental Science and Technology*, 13 (1979), 1350-5.

²A.J. Vermeulen, "Acid Precipitation in the Netherlands," *Env. Sci. & Tech.*, 12 (1978), 1016-21.

³T.C. Weidensaul, Testimony presented at the Public Hearing to consider changes in Sulfur Dioxide standards by the Ohio Environmental Protection Agency, 31 July, 1979.

⁴G.E. Likens, R.F. Wright, J.N. Galloway, and T.J. Butler, "Acid Rain," *Scientific American*, 241, no. 4 (1979) 43-51; Commonwealth of Pennsylvania, Position Paper on the Interstate Transport of Air Pollution, 24 October, 1979. See also Glass, note 1.

⁵Glass, note 1.

⁶A.P. Altschuller, G. A. McBean, et al., The LRTAP Problem in North America: A Preliminary Overview, prepared by the United States-Canada Research Consultation Group on the Long-Range Transport of Air Pollutants. (Downsview, Ontario: Environment Canada, and Research Triangle Park, N.C.: U.S. Environmental Protection Agency, 1979).

⁷L.H. Crump, *Fuels and Energy Data: United States by States and Census Division, 1974*; U.S. Bureau of Mines Information Circular IC8739 (Washington, 1977).

⁸J.H. Shinn and S. Lynn, "Do Man-Made Sources Affect the Sulfur Cycle of Northeastern States?" *Env. Sci. & Tech.*, 13 (1979), 1062-7.

⁹R.D. Thomson and H.F. York, *The Resource Base of U.S. Coals by Sulfur Content, 1. The Eastern States*, U.S. Bureau of Mines Information Circular IC 8680 (Washington: U.S. Bureau of Mines, 1977).

¹⁰W.F. Spratley, Consumers' Counsel for the State of Ohio, Testimony before the hearing held under section 125 of the Clean Air Act., St. Clairsville, Ohio, 15 August, 1978.

¹¹*Sulfur Dioxide Control in Ohio: Issues and History* (Chicago: U.S. Environmental Protection Agency, Region V, 1979).

¹²Teknekron, Inc. *Characteristics and Origins of Sulfur Dioxide, Total Suspended Particulates, and Sulfates in Western Pennsylvania. Report to the Pennsylvania Department of Environmental Resources*, April 1979.

¹³H.F. Metzenbaum, Testimony before the hearing held under section 125 of the Clean Air Act, St. Clairsville, Ohio, 15 August 1978. K.A. Schweers, ICF, Inc., testimony before the hearing held under section 125 of the Clean Air Act, Cleveland, Ohio, 22 August, 1978.

¹⁴Calculated from figures given by Commonwealth of Pennsylvania, cited in note 4.

¹⁵K.E. Yeager, "More Coal Per Ton," *EPRI Journal*, June, 1979.

¹⁶J. Strauss et al., *Technology Assessment Report for Industrial Boiler Applications: Coal Cleaning and Low Sulfur Coal*, EPA Contract No. 68-02-2199, task 12. J.D. Kilgroe, "Coal Cleaning for Sulfur Oxide Emission Control," paper presented at Acid Rain Conference, 8-9 April, 1980.

¹⁷J. Josephson, "FBC: Coming of Age for Industry," *Env. Sci. & Tech.*, 13 (1979), 512-3.

¹⁸R.W. Shaw, "Acid Precipitation in Atlantic Canada," *Env. Sci. & Tech.*, 13 (1979) 406-11.

¹⁹T.K. Corwin, "The Economics of Pollution Control in Japan," *Env. Sci. & Tech.*, 14 (1980), 154-7.

²⁰Vermeulen, note 2; A.M. Squires, "Clean Fuels from Coal Gasification," *Science*, 184 (1974), 340-6.

BACK MATTER

A word from the editor

If you've already looked through this issue, you will see that it lives up to the promise of *Gamut* Number 1 in variety and substantial content. Several of the articles are on timely topics, and, more important, all contain material of lasting interest, which will not soon become outdated. Perhaps you don't think some of the topics are your particular cup of tea; try them anyway—you may find them more interesting than you thought.

Along with articles on such obviously important subjects as government, science, and business, each issue of *The Gamut* is devoting a considerable number of pages to the arts, in the belief that they are also an indispensable part of civilized life. Whereas politics, technology, and business are necessary means to desirable ends, art, like virtue, is an end in itself, and needs no further justification than its own illumination. Most works of literature, painting, and music of course have some value merely as entertainment; this is an honorable function, but the arts also play a more profound role in our lives. They are a pure form of that essential quality which makes us human: consciousness, the activity of *knowing*. When we listen to a symphony, read a novel, or look at a painting, we are not merely learning *about* reality, we are actually sharing a direct perception of reality which the artist has been able to convey through his particular medium. Because art stimulates our imaginations, lifts us out of our private concerns, and permits us to see ourselves and others in a larger perspective, it is a powerful force for morality and civilization. Like all animals, human beings seek food, shelter, sex, and safety; but the person who looks for no satisfactions beyond these is a stunted creature. Currently our country is taking a close look at its priorities; as it does so, let us hope that the arts are not rejected as frills because they do not seem immediately "practical." Beethoven and Shostakovich are not frills, Shakespeare and Emily Dickinson, Picasso and the Master of the Brussels Initials are not frills. Neither are our community orchestras, galleries, theaters, and poetry workshops. John Adams, second President of the United States, once stated his own priorities: "I must study politics and war; that my sons may have liberty to study mathematics . . . navigation, commerce, and agriculture; in order to give their children the right to study painting, poetry, music, and architecture." Well, we are still studying commerce, politics, and the rest; let us remember, however, that, for us as for John Adams, the arts are not a trivial indulgence but a goal to be pursued and cherished.

I'd like to repeat the invitations made in the first issue. We welcome suggestions for articles: write me at the address on the front page or call me at (216) 687-3971; and we welcome shorter contributions to this more informal department, *Back Matter*. Finally, I'd like to ask your help in encouraging new subscribers. We think *The Gamut* makes a useful contribution to the intellectual life of this region, bringing together the best minds in every field. Cleveland State University is generously underwriting our initial costs, but we need to attract several thousand subscribers to remain alive. We think that, considering the quality of its contents and printing, this journal is a bargain. So tell a friend about *The Gamut*. You'll be doing everyone a favor.

—Leonard Trawick

Beethoven's grave revisited

In the article "Mozart at Beethoven's Grave—A Chronological-Historical Speculation" (*The Gamut*, No. 1, p. 35) a rhetorical question was asked: "Whom have we forgotten?" There was bound to be at least one glaring omission, in the discussion of those composers who died too young. It was none other than the Advisory Editor of *The Gamut*, Prof. Louis T. Milic, who drew the author's attention to the error—alas, too late for inclusion in the body of the article. The omission was, of course, Henry Purcell, who died in 1695 at the age of 36 (just slightly older than Mozart was)! It is now seen as an incalculable loss to music. Had the "Orpheus Britannicus" (as he was regarded even in his short lifetime) lived a full span, he—and not the German-born G.F. Handel—might have been the leading composer of his country in the first four decades of the 18th century. In any event, his legacy is large, and precious.

Although Berlioz's *Symphonie Fantastique* was mentioned, as a work that Mozart might have known had he lived to be 75, it should have been observed that Berlioz composed it at the age of 26. In 1830, it was certainly the most avant-garde composition of the period, and even today continues to amaze us by its daring and imagination, its prophecy of things to come, its path-breaking orchestration, and its irresistible propulsion.

Now if Rossini had died at the age of 38 instead of 76, it would indeed have been regrettable—but no catastrophe for the world of music: for he had retired at 37. Yes, retired; after writing nearly forty operas, the last of which was *William Tell*, he simply quit, and devoted the rest of his long life largely to fine cuisine of his own concoction. Only a few pieces of choral, piano and chamber music came from his once indefatigable pen, and to some of those he referred as "sins of my old age." Posterity has also absolved him of any possible extra-musical sins, among which could be counted gluttony and venery; for had he not given us *The Barber of Seville* at the age of 24?

The author has received a letter from his distinguished teacher of nearly four decades ago, the great musicologist Karl Geiringer, now 81 and living in Santa Barbara, California. Although he found the article "very stimulating," he has one objection. He disagrees with Franz Grillparzer's famous eulogy for Schubert, whose death at 31 left a "rich treasure, but much fairer hopes." Dr. Geiringer writes: "I cannot imagine that Schubert could ever have surpassed his String Quintet in C major or his *Schwanengesang*, and even a magnificent libretto could never have helped him to write a great opera. Before he was 20 he wrote *Erkönig* and *Gretchen am Spinnrad*. . . . I believe he has given us more than we had any right to expect from one man, and the same is true of Mozart, Pergolesi, Wolf, Mendelssohn, Reger, etc. Had they lived longer their work might have deteriorated (Strauss!) or they could have stopped composing altogether."

Well, of course, these are speculations also; we cannot know for certain. As the article said, Grillparzer's words "touched the truth," but they too could not predict a future that never was. It is likely that the Austrian poet was not even aware of most of Schubert's later instrumental works; in fact, hardly anyone knew of the last two symphonies. Had he known that music, perhaps he too would have agreed with Dr. Geiringer's view that the composer's life-work was in its way complete and unsurpassable.

In short, we are dealing here not so much with fact as with fancy; and the subject may be as boundless as our imagination permits.

—Klaus G. Roy

Somebody's mistake

To the Editor:

It is unfortunate that Dr. Gorsky should devote only one paragraph of his article, "Aristotle's Mistake" (*Gamut*, No. 1), to Aristotle's so-called "mistake." Had he been seriously interested in Aristotle's view of pain, he could have consulted some such reference work as Troy Wilson Organ's *Index to Aristotle* (Princeton, 1949) for references to pain and sensation in the Aristotelian corpus. The most damning piece of evidence against Gorsky's contention that "Aristotle listed pain among the senses" (p. 28) is found in *De Anima*, 424b21 ff.: "That there is no sixth sense in addition to the five enumerated—sight, hearing, smell, taste, touch—may be established. . . ." (J.A. Smith trans. in the Oxford Aristotle). In the lines following, Aristotle constructs an intricate argument *against* the notion that there could be any senses other than the five listed above.

Another possible strike against Gorsky is his view that "the concept that pain is a sense lasted almost to the twentieth century" (p.28). According to Harold Merskey, pain was viewed by "theorists, physicians, and others" *not* as a sensory experience but "as an emotion" *before the 19th century*. (*Encyclopedia Britannica*, 1978, XIII, 866.). . . .

Mark O. Crist, student
University of Toledo

Honi soit. . .

Gentlemen:

It is not necessary to be S. Freud to appreciate the tribute to Father Moses Cleveland on the cover of your issue Number 1.

A.C. Woodrich
Chagrin Falls, Ohio

Wait till you see our cover featuring Municipal Stadium. —L.T.

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