# CHAPTER SEVENTEEN
# INFORMATION

This chapter extends investigation beyond narrative and therefore carries true stories into *generalized* information. It comprises factual articles such as those printed in magazines, newspapers, professional journals, encyclopedias, and certain manuals and memorandums that mainly set forth facts. This is expository discourse, dominated by the present tense of generalization and organized around explicit statement.

Personal information is dealt with in other chapters, in the form of sensations, memories, feelings, and reflections. The charting, graphing, and mapping of information are treated in *Labels and Captions*. A large part of task and topic talk, described in *Talking and Listening*, concerns treatment of information. Oral experience in selecting, describing, and ordering facts develops that most crucial skill in the composition of informative articles—explaining one's material.

Creating information entails many fine learning tasks in observing, experimenting, thinking, and using language. It draws on work done in other kinds of discourse—actual dialogue, true stories, directions, ideas, all of which it may also incorporate. Some of the classic problems of exposition and argumentation concern how to synthesize factual narrative, directions, general statements of fact, and general ideas in one or another combination. Sometimes one serves merely as evidence or illustration embedded in another, which serves it in turn as context.

These last three chapters, *True Stories*, *Information*, and *Ideas*, represent continuous stages of making knowledge that naturally overlap as one subsumes the one before. We separate them only to clarify this process for learning purposes. Where a given discourse falls along this continuity depends on whether narrative, fact, or idea *dominates* the organization.

We proceed here, as in *True Stories*, by relating the investigator's sources to kinds of discourse. But since the main ways of investigating and recording have been covered in previous chapters, here we will refer a lot and add a little. Information may be drawn from four main sources: (1) what the environment shows (2) what experiments reveal (manipulations of the environment for purposes of observation), (3) what other people know, and (4) what records store. Help students to determine what they already know about a subject, what they still want to find out, and which of the following resources they'll need to utilize.

# WHAT THE ENVIRONMENT SHOWS

Any environment is beaming information at the learner. The degree to which she's responsive to this stimulation and can perceive, assimilate, and make sense of it is the degree to which, at that moment at least, she's educable. Practice in observing and accurately reporting information that an environment presents is one function of the sensory recording activities described on page 215.

The easiest material to start with is that from a close and familiar environment—objects from home or pets in the classroom. All one has to do is observe and verbalize things with which one already has some personal relationship. To this can then be added the practice of visiting places less familiar for the express purpose of "reading" the environment there.

## ■ THINGS FROM HOME

Personal objects are the focus for show-and-tell oral composition as presented on page 77 for students of all ages. Some show-and-tell presentations can be taped and later transcribed. Others can be written up after sessions in which all members of a small group have spoken about and answered questions on the items they brought in, thereby benefiting from group interaction. Writing-up might be most appropriate when the session is specialized in the direction of, say, explanation—"Bring in something of interest and explain its purpose, use, care, or operation." Having rehearsed while talking, and having received from their audience an idea of how to explain some things better and what emphasis might be most interesting, youngsters should be ready to write. The personal choice of the items and the intention of printing the papers as information booklets should ensure motivation.

Older students can bring in objects they want to write about and explain them first orally to a small group, perhaps their writing group itself. Also, see on page 293 the explaining of whole exhibits through captions. Captioning makes a fine lead into factual articles.

## ■ THINGS IN SCHOOL

All kinds of observing and measuring can go on in the school if it's well-stocked with pets and plants and objects. This occurs best as part of practical projects, discussed later, rather than as exercises in observing and measuring. Just for the sake of the process involved, consider here one staple sort of project—caring for living things. Within the caretaker role children can role-play the naturalist, the scientist as observer rather than experimenter. Students situated so they can observe plants or animals in their natural environment can of course do this better. But for pets and schoolroom plants the point of observing can be, precisely, to understand them well enough to know how best to care for them out of their natural environment.

For elementary school children, the more the subject moves, the better, although once involved in a project children do become motivated to observe small changes from day to day, if, say, they are growing certain plants, culture molds, or crystals. The practical purpose of regular observation can be to learn how the living things behave and what they need so as to care for them well. But of course children want living things around anyway because they feel affinity

with them and are already curious to learn how they differ from themselves. This is all part of the sorting out of life to know where one stands in it that basically motivates people to inform themselves.

When children are new to the process of recording what they observe, they can take notes as they watch for five or ten minutes and then meet with their small group. The function of the notes is, first, to remind each child of what she observed so she can "compare notes" with her colleagues and, second, to provide specific words, phrases, and observations for a group write-up of a journal entry.

Some observing sessions can be devoted to drawing pictures or taking photographs of the subject while watching it. If more than one kind of animal is in the room, children can compare and contrast, making drawings to show the differences in the animals' feet, ears, noses, tails. These pictures can be dated and captioned to explain, for example, what the animal was doing at the time and can be added to the journal. Their drawings might be put together into a presentation for the class, using an overhead projector. If photos were taken, students can make a slide show.

The observers collate their individual notes in a small-group discussion and write together a dated entry for that day in a group journal. Since a lot of the same words are used over and over, these can be gradually added to a long-standing list somewhere, which members can consult for vocabulary and spelling. A scribe writes down what the group decides should go into the report. There may be disagreements about what was actually seen and precisely what the color, shape, movement, and so on was, which may have to be settled by returning to their subject for another look.

At intervals the group meets to read over its collective journal and then tell or write a summary of it in continuous prose to share with others as a kind of information article (see "Collective Writing" on page 201). In other words, they're not after just a story but generalized facts about appearance and structure, what the subject does and likes, how it functions and interacts, and so on. If the journal is about an ant farm, one would not expect the summary to get at development, but at generalities in behavior—the routine operations and labor divisions of the colony. One would expect such a journal to record repetitive behavior on different occasions, so that gradually a general picture builds up. The guiding question might be "What different kinds of ants are there and what does each kind do?" which partners could periodically discuss as they try to pull together observations.

## ■ OUT OF SCHOOL

An appropriate extension of classroom observation is a trip to a zoo, museum, or natural environment. If small groups have been delegated to record there specifics such as eating behavior or diet, or to describe and draw particular parts of the bodies, they're more likely to observe and record accurately.

On the social studies side, youngsters can plan to record what people spontaneously do in various circumstances and locales that the observers often find themselves in anyway or seek out for purposes of investigating. They can keep and summarize a journal as described on page 357. "Eyewitness Visit" on page 371 treats a single sortie to write up as a story, but *repeated* visits afford the opportunity to generalize *recurring* action from particular instances and thus to characterize rather than narrate what is true about some locale or enterprise. See "Profile" farther on.

### STILL PLACES

Reading an environment where little or nothing is happening yields a very different sort of information than recording action. Landscapes and buildings reveal *stored* information, *past* action perhaps as in marks of vandalism or erosion, but the observer usually must infer a lot by piecing together many details. Often one can make some interesting generalizations this way from a single visit. For example, you can say a lot about our society from poking about in a garbage dump or shopping mall.

But take a very specialized place like a cemetery. From gravestones students can discover, for various epochs, the most common names and nationalities and religions, longevity, infant mortality, epidemics, sentiments about death, and so on. The revelations of one cemetery can be compared with those of another. Rubbings of epitaphs or carvings can illustrate cemetery research reports. When trips to the cemetery are combined with research with local archives and documents in historical societies, students have a valuable opportunity to role-play historians.

Of course observation stimulates other fact-finding such as reading and asking experts to extend what students have observed for themselves and to answer questions they know enough now to ask.

### ■ PARALLEL READING AND VIEWING

Elementary school children can read books of observation, such as David Burnie's *Tree*, which focus on distinctions that children can then observe for themselves. Magazines such as *Ranger Rick's, Scienceland, National Geographic, National Wildlife, Natural History*, and *Audubon* feature records of observation. A lot of information comes across best through nature films, television documentaries, and encyclopedic videodiscs.

## WHAT EXPERIMENTS SHOW

When the environment is manipulated, new information emerges. "If you change this, what happens *then*?" The best context for investigating is a project to *make* something, *effect* something, or *discover* something. Experiments are projects to discover something.

The starting point, as in all investigation, is something that somebody wants to know. Even small children should understand early that if you can't find out what you want to know by observing things as they are, then set some conditions so that you *can* observe it. If you want to know which eats more, a hamster or a gerbil, then make a comparison possible by feeding both and keeping records. Which is smarter? What would show that? Which can be taught more quickly to let you know when it's hungry? Students can learn to control experiments by, for example, growing plants of the same species under different conditions of light, water, diet, soil, sand, and so on to find out which conditions allow it to thrive best. This is a matter of practical intelligence, which the "scientific method" merely formalizes.

The combination of manipulating while observing and recording can develop important language skills. While visiting one third-grade class that was recording what happened to candle flames when various things were done to them, one of

us noticed that several papers contained sentences beginning with *if* and *when* clauses—a rarity in the writing of children this age. Then we noted that these sentence constructions were mimicking their physical manipulations of the candles: "If I put a jar over the candle, the flame goes out," or "When we throw alum on the flame, it turns blue." This is typical of the organic linking among physical operations, mental operations, and language operations that brings on sentence complexity.

## ■ REPORT OF EXPERIMENTATION

In groups or alone, students record observations and digest journals as described in the last section and on page 357. Experimental findings tend to be written up as a mixture of narrative and generalization, of telling what happened during the experiment and of drawing conclusions from this story. This kind of narrative is not a tale told just for its own sake; it's a kind of case history in that it substantiates some statement that purports to apply to other instances as well. The sequence, progression, growth, or change informs in a general way: *what happened* to these creatures is *what happens* to others of their kind in similar circumstances. But how far the claim of typicality should go is an important matter for cross-commentary in a small group. Do the conclusions square with evidence from elsewhere?

The experimenter is also the reporter. The natural scientist who tries to isolate a compound or a social scientist who wants to determine how a problem-solving group evolves over time does not simply observe naturalistically; she arranges what she will observe. Because she chooses the subject and situation and sets the occasions and duration, usually in order to test a hypothesis, a lot of what she reports is of her own making. This control over the material creates some difficulties in allowing for one's own influence and for one's personal investment in the outcome—very real problems for all scientists.

## ■ READING

Recourse to documents may be necessary in order to enlighten and orient the lay reader sufficiently for her to grasp the significance of what the experimenter is trying to prove or discover. Whether the experiment deals with animals, things, or people, the writer frequently has to situate her material by referring to the findings of others or to the history of the subject. Her case may be one more instance of a generality previously reported by other people; or perhaps it contradicts prior evidence. The findings may be understandable only if the writer, for example, fills in a bit of welfare history, or sets forth some established facts about ducks or legislative routine. This secondhand information must come from library research, and this is a good way for students to incorporate some reading into their writing—to situate their original investigation.

Magazines like *Science Digest, Popular Science,* or *Psychology Today* report results of experiments that might interest students. The best way to cover the literature of research on a certain subject is to consult the periodical indexes in a library reference room to find out which magazines and journals have published relevant articles.

# WHAT OTHER PERSONS KNOW

The most common way a young child finds out what she needs to know or is curious about is to ask questions. Once she's asking more than one person the same question, she's doing what more sophisticated pollsters call a survey. Asking honest questions and sharing what one finds out are appropriate activities for any age.

## ■ INTERVIEW

Interviews can be part of many different kinds of information-gathering projects, from light reportage to heavy research. One of the best ways for a young person to find out about something is to ask questions of a specialist in the subject. A student can interview an expert to get leads or to supplement information she has already created from observational visiting, experimentation, other interviews, or book research. Some interviews aim to draw out the interviewee herself to the extent she may be the subject. For various uses see the sequence starting on page 373 of "Visit Plus Interview," "Oral History," "Biography," "Chronicle," and "Case." Note the other uses in this chapter also.

### PROCEDURE

Models for the process can be broadcast or transcribed interviews between reporters and experts. Published oral histories like those of Studs Terkel show the fine information that can be obtained but often don't include the questions or other elements of the interview that elicited it.

A good way for youngsters to ease into the unfamiliar role of interviewer is to ask questions of peers, for which an especially strong motive exists early in the school year when learners do not yet know each other well. But classmates can still be appropriate after that if interviews are focused on such topics as books the subject would recommend or the origin of her name and the names of her family members. Aides and older students in the classroom would make fine subjects as well as children in other classes.

A get-acquainted game is to interview each other in groups of two or three, taking turns asking each other questions and answering those others ask. Then take turns telling each other a summary of what you heard each one say about herself, correct any misimpressions, and then take turns introducing each other to the class as a whole, telling as much as you can remember. Another thing to do is to have each person write up a report about another person after the interview and then read that to the class and see if they can guess who is the subject of the report.

After doing oral history with relatives and friends a next step might be interviewing newsworthy subjects to gather material for a newspaper. A small group discusses which people in the school or community would be good to interview for any number of reasons—their involvement in newsworthy affairs of the moment, their representativeness, their kinds of occupation, or qualities of their personalities. In discussing why they want to interview these people, the reporters should help each other crystallize the kinds of questions they would ask. They may want to try these questions out on each other.

Interviewing is an art, and composition of the reportage begins with the selection of questions. Queries about date of birth, education, and so on will read

later like a dossier or encyclopedic entry of a minor poet, though of course some such bare facts may be relevant if inserted into more promising material. Don't attempt to head off this problem, however, by admonishing. Emphasize, rather, the deriving of questions from their original intention in wanting to interview the subject they've chosen.

### SINGLE INTERVIEW

Assume an interview written-up to stand alone, for any number of purposes, as is common today. The directions are to arrange the time and place for the interview, with the idea of catching the person in appropriate surroundings, tape or take notes during the interview, and write it up afterward. The write-ups are exchanged and discussed by a group acting as editorial board for a newspaper, booklet, posting, or other medium for sharing.

### ISSUES FOR DISCUSSION

After their first interview, the group can share any problems they may have had in interviewing and ask for suggestions for solutions. This discussion may range over matters of technique:

- which sorts of questions are most productive
- when to give the interviewee an opportunity to go ahead without questions
- when to skip prepared questions and ask spontaneous ones
- how to ask further questions on the basis of responses to the first questions

Help a beginning group to examine a sample transcript or set of notes and ask the reporter to criticize her own interview in regard to the questions above. Invite her colleagues to say how they would handle some of the same problems. Then together look at her write-up of the interview and ask her to explain how she went about digesting the notes or transcript. When is it best to quote and when to summarize? How much should you shuffle the actual order of remarks for the sake of better continuity of ideas? Should the reporter include her own questions? How much physical description should there be in relation to verbal matter? Are you going to play up surroundings, mannerisms, and dress, or sacrifice some of these for what was said? Do you describe appearances only at the beginning or return to them?

Let's note in passing that these are not only very real decisions that any reporter has to make but also some of the options the novelist or playwright has to play. The way these questions are answered is by referring them to the overall purpose that governs decision-making and that determined the choice of interviewee and setting in the first place. The focus may be on the person as personage, on her expertise, on her relation to the locale, and so on.

### MULTIPLE INTERVIEWS

Interviews might be part of a project to find out the answer to a question such as what school dropouts say about their experience. Each interview would then be a mini case history, written independently but compared later with others for possible generalizations about dropping out. Contrasts, generalities, and other ideas can arise as secondary effects of interviewing if the interviewees are deliberately

selected for oppositions, similarities, and other relationships. What do different dietitians say about a vegetarian diet? What do a retailer and a repairperson say about the same product?

When placed in the service of a project, interviewing can lead to further writing and to a special issue of a newspaper in which appear not only the related interviews centering on a certain subject but also some articles of interpretation and generalization that refer to the interviews as testimony.

### ■ SURVEYS

Information gathered by polling a number of people can be presented as a survey. Young children can poll their classmates to find out such things as what they do on Saturday morning, what TV shows they like best, what time of day they were born or what their birthweight was, what hobbies or collections they have. The results can be displayed on graphs or wall charts (see page 295). Older students may prefer opinion polls on burning issues among their peer group like resisting drugs or on feelings—ambitions and anxieties. They can start by questioning students in the class, then go to others outside of class or school. For example, teenagers might take a survey of what many different sorts of people think about the same current social or political controversy. From these responses they can draw some conclusions about how different people think.

Polls conducted on paper are questionnaires. A group might use a questionnaire to inventory each classmate's personal likes and dislikes, travels, physical condition, ambitions, and so on. Then they could chart or graph or write up a class profile on the basis of the answers. Similar questionnaires could determine the pool of resources and competencies collectively offered by the class. This would help in planning projects.

After some experience collecting information via questionnaires, students can solicit opinions on various subjects, learning in the process how to word questions so they're not "loaded." Unbiased and open-ended questions are often the most difficult for immature survey-takers to formulate, particularly if their own opinions on the subject are strong. Drafting a good questionnaire is a fine challenge to be precise, clear, and objective (see page 408 for ways to scale opinions).

If a computer is available, students may store accumulating results of all sorts of surveys into a database and interrelate them to create further information.

## WHAT RECORDS STORE

Books, periodicals, films, recordings, computer data bases, archives, and documents of all sorts, including family records such as birth and marriage certificates, store information. Marriage of videodisc with computer enables students to summon vast amounts of documents, films, and audiotapes bearing on subjects indexed for searching. Such multimedia electronic "libraries" should not only make research easier and more attractive in schools but facilitate originality by affording students access to a far greater range of documents, including primary sources, than was formerly feasible. In the meantime make students aware of all available local sources, like municipal and county records, historical society archives, microfilms of old newspapers, photographic archives, special museums, and so on.

A high proportion of information is of value only to the degree that it's up-to-date. This provides another reason for students to read newspapers, periodicals, and recently published almanacs, reports, and compilations, such as the know-your-town type of studies done by the League of Women Voters or Chamber of Commerce. Specialized magazines cover a myriad of subjects from electronics and astronomy to consumerism and health. Articles are more inviting for students than tomes, not only as sources of information but also as models for writing. And the more rapidly information proliferates, the more critical becomes publication lag, and the more people rely on either computer data bases like InfoTrac, which can be continuously updated, or on what we will call state-of-knowledge articles.

## ■ RESEARCH WITH DOCUMENTS

Students experienced in the kinds of recollective and investigative writing recommended in *True Stories* and in this chapter should be able to pull together information from a variety of sources to do original research. However, to cull, synthesize, and interpret the content of what others have written presupposes maturity, motivation, experience with abstracting one's own documents, and the capacity to organize a long piece of expository writing. Original research with higher-order documents is, of course, not impossible, but unless one is an authority in a subject area, the likelihood of originality decreases as the abstraction level of the sources rises. In treating historical subjects, for one example, the farther events are from the present, the more likely that previous researchers have already assimilated them. Recent events offer better opportunities for working from primary sources and for synthesizing in an original way.

### SCOPING THE SUBJECT

When a student pieces together information and ideas from several books that are themselves syntheses—encyclopedias, summary articles, synoptic histories, or definitive biographies—she really has little choice but to rearrange, reword, and regurgitate. So often the "long paper" or "research paper" is just a collage of book reports. But if she sifts lower-order documents, many of them of the sort she has previously written herself—eyewitness accounts, transcripts, journals and diaries, correspondences, fragments of autobiography and memoir, cases, and profiles—and some of them of a sort she has not been writing, such as municipal files, archives, and congressional records, then she can do a piece of honest research that no one has done before—the only kind she *should* do. From having created most kinds of primary documents herself, she will know how they come into existence, what the nature and worth of their information is, and consequently how she should assess them.

Conventional school "reports" and "research" have actually generated a lot of bad expository writing by making students digest sources that are themselves synoptic. This sort of writing about books may serve to monitor a student's reading activity or to help her assimilate some material, but checks and study aids should not be confused with either composition or real research. This is a critical matter, because many educators think or claim that students are being taught to do scholarly research when they're in fact just summarizing summaries. A précis is not in

itself research. Such broad generalizations create the delusion that students are investigating at a high level of thought when they're really just absorbing what others have distilled for them. This absorption is necessary, but if we don't also arrange for learners to generalize about some material of their own, we'll have short-circuited their knowledge-making processes and instilled in them a misleading notion of real research.

Furthermore, practically speaking, the scope of an investigative subject must be reasonably commensurate with the length of the paper written about it. Treating too broad a topic in too small a compass has been the bane of school writing. It invites vagueness, dullness, and cliché. We urge you to help individuals and groups keep an eye on this ratio. The more a subject extends in time and space—the more people and places and events it "covers"—the longer the investigation and the composition should be to do justice to it without merely plagiarizing someone else's longer work. Help students frame investigative projects that will accommodate both what they want to find out and what they're willing and able to do. They need to see realistically how much a project and paper of a certain length may and may not accomplish. But a project can be appraised and reconceived after it's under way as the investigator learns more about what her question entails.

Also, groups can investigate a subject whose scope exceeds what an individual is willing or able to do. Airing a proposal in one's group will help define the subject and determine what it may involve. If it seems then too big or complicated, partners may be enlisted to collaborate on it. Indeed, group investigation may solve many problems of matching the scope of the subject to the students' capacities. Members of an investigative team can agree to delve into different sources, documents or otherwise. Help from you and other adults plus some quick reconnoitering will probably help shape projects for greater efficiency and ultimate success. Then, during the gathering of information, students periodically tell their group what they've done so far and discuss problems they foresee.

This approach leaves many more decisions up to the student—from selection of sources to drawing conclusions—but if this is not so, a research paper is not worth doing. Furthermore, she can have plenty of consultants. Subject matter teachers can give leads to sources, librarians and clerks can help in locating documents. The way to teach so-called library skills is not during an arbitrarily scheduled class tour of the library but when individuals are hot on the trail of information to answer a question they have.

For the reasons we've indicated, only well motivated students with much other investigative experience will probably want or be able to do original research based entirely on books and other documents, that is, pure scholarship. So it makes sense to work reading research first into other projects calling for mixed methods. Investigators naturally feel the need to supplement observing and interviewing with information they get from reading, starting with brochures put out by some government agency they're visiting and ranging on to technical articles or basic texts on physics, say, when the enterprise is an electronics manufacturer. Journalists often have to study up on a subject in order both to understand their visits and interviews and to give the reader background when they write their article.

As their interests enlarge and their knowledge structures expand, students increasingly want to know more about remoter things and want to situate their immediate environs in a broader context. For this they have to shift from firsthand

to secondhand sources for both facts and ideas. Exhausting what she can glean from the nearby environment and its inhabitants spurs the learner to look in books as powerfully as any reason can. She discovers one of the main functions of literacy, after all—to find out things the people and places around you can't tell you.

### CITING

Citing sources is a mere mechanical matter, but some teachers have made so much hoopla about it that it has overshadowed far more serious and difficult research issues. It should never appear to students as a kind of scorekeeping. It simply credits other people for quotations or ideas and shows the reader where to pursue certain topics. Publishers issue style sheets to their authors to cover the format they want for footnotes and bibliography along with other printing niceties that vary among publishers. Simply make available a common style sheet for students to follow, like that of the Modern Language Association or the American Psychological Association. Any recently published research with documents that you might obtain as reading material for students will also exemplify for them the handling of citations in the text and the setting up of a bibliography.

## COMPOSITES OF INFORMATION GATHERING

The kinds of informational writing described below *might* usefully be done by some students entirely on the basis of research in stored information, as we'll indicate, but more likely will be done by most students as composite investigation. If the subject is specific or new and not much researched, students will feel a need to investigate it themselves and can perhaps successfully encompass the relevant literature on it in a compositional length they can handle.

### ■ PROFILE

A profile characterizes a person, place, or enterprise. It is about recurring or typical things—traits rather than events. Not progression, but pattern, will provide the shape of the material. But the material is still concrete, as in case writing, and the generalities are exemplified with anecdotes.

Younger students can approach profile by shifting from a character sketch of someone they already know well, which is based on memory, to a portrait of someone they have to find out about. They visit, observe, and interview both the subject and others who know her. The more visits with the subject, and the more viewpoints about her, the more depth to the profile. The goal is to render what the subject is like, not a narrative of her life except as patterns in her action illustrate personal traits.

Another kind of profile describes what goes on routinely at the site of some enterprise—a farm, post office, bakery, factory, or hospital. We remember funny, wry, and fascinating accounts students have written of picturesque or rarely observed activities—at a Vermont country bookstore, on a Hudson River tugboat, and in an organ factory.

Subjects for profiles reflect the student's private interest or her work in other subjects. For a project in science she could visit a laboratory, research center,

observatory, or agricultural station. For government there are municipal operations and state agencies. For social studies, including economics, any business or other enterprise is germane. Seeing for herself how a profession or enterprise is conducted, and who goes into it, can also help a high-schooler deliberate about a career, and reading the printed reports of other students will extend this knowledge of job options considerably.

The gist of directions is:

> Go visit some enterprise, perhaps on several occasions, talk with people there, watch its operation, take notes, and read any printed matter available there—official manuals, company brochures, house organs, sample transcripts or correspondence, and so on. Write afterwards a profile that characterizes the enterprise and gives a lot of information about it.

Some profiles may comprise interviews with many different people, any number of visits on different occasions or to different departments or sites of the enterprise, and considerable background research, like many *New Yorker* profiles. Interviewees can give not only printed matter but leads on how to get other information needed to understand their enterprise. Keeping a journal as indicated on page 357 will facilitate writing up the material later.

A simpler kind of profile may be based on the material of one visit, like some short and casual sketches in the *New Yorker's* "The Talk of the Town." While working on their profiles, students may read examples there or in numerous other magazines and newspapers so they can see for themselves how professionals handle the assignment with different subjects.

## PROCEDURE

Don't try to distill a formula. It's better to let students (1) garner techniques from the reading and (2) try to foresee with partners the problems that their particular subject is going to raise. An insurance office, for example, which offers nothing but desks and papers, is going to limit the reporter almost entirely to relying on conversation and perhaps brochures. The project involves re-creating some of the dialogue of the interviews, recounting actions, describing appearances of things, and setting forth facts. Having received some data directly through her senses, and having received other data in verbal form from her informants, the student is dealing with information of different orders from different sources. She must digest all this and fuse the different modes of drama, narrative, and exposition into a whole piece of reportage that makes some general points about the subject.

For a simple enterprise visited once, a narrative account of the reporter's visit provides an easy frame, but the stipulations about conveying information and characterizing the people and the place force the student to make a lot of decisions that will modulate the narrative toward essay. She may interrupt it to linger over description or to inject explanation she acquired at some other point in the visit. She may digest in her own way information received from the people and feed this in gradually or in blocks, the alternative being to quote everything her informants said at just the moment they said it. Dialogue is a good way to characterize people and a readable, but inefficient, way of conveying information; compromise is necessary. Anecdotes and description will convey automatically a lot of information about the physical aspects of the people and the operation they

carry on but cannot convey generalities and other unseen facts such as background, purposes, and overall method, based on interviewing and reading. When she comes to summarize her journal, a reporter will probably have to organize by generalized aspects of her subject—kinds of matters handled in a court, differences in how several companies solve production problems, what so-and-so does and is like. In this way profiles represent an important bridge from the familiar haven of narrative to a form of essaying, from story to statement.

### WORKSHOP ISSUES

This shift raises a key issue of how to sequence material in *any* nonnarrative kind of discourse. When paragraphs don't follow the order of time, what succession should enchain them? This would be a key question for discussion and cross-commentary while journals are in progress and during the writing-up. Which kinds of court matters, for example, or which comparisons of production methods, should precede which others? Although there are standard logical orders, such as big to little, important to unimportant, and specific to general, discussion and suggestions should especially consider: (1) What's the best organically logical order for the subject—which succession of items or subtopics would allow earlier items to prepare for later ones and allow for the most meaningful juxtapositions and transitions? (2) What is the best *rhetorical* order—to begin anecdotally or with a general frame of reference, to feed in background gradually or to insert it once in a block, to build toward conclusions or assert conclusions first and then substantiate them? And for each item or subtopic, how much anecdotal illustration should one give? The same amount for all items?

Papers tending toward miscellany represent difficulty finding coherence either in the operation of the enterprise or in one's attitude toward it. This common difficulty usually means that the student got lost in the details and never let herself react to the totality of the enterprise. At some point in writing up the material she should survey it for general impressions and try to recall what characteristics were salient about it. Perhaps the enterprise struck her as quaint or inhumane or indicative of some future trend. It's good to have in mind at least a working title while writing, one that keeps at issue the unity of the profile.

## ■ SHOP AND TELL

Consumer research brings together so many kinds of investigation that it works well as a group project. Inasmuch as students are consumers, they understand the practical purpose—to determine which products are best to buy. Elementary children can do some version of this. Different working parties of such a project may

- examine and, if necessary, take apart samples of the products to be compared, noting ingredients or components and how made.
- test out the samples for their purpose but perhaps experiment with them in other ways also to determine characteristics.
- research the technology or science needed to understand and explain to others the results of examining and experimenting.
- poll some users of the brands or types of the product and collate what they say

- compare purchase prices in relation to quantities or qualities and do a cost analysis that takes into account possible later expenses such as maintenance or refills.
- by interview or letter ask manufacturers or marketers to respond to the findings.

Then the groups get together, exchange what they've learned, and write it up as a consumer report that compares products and makes recommendations. Most often, the report will have to include some technical information as background, and might include charts, graphs, photos, and samples. Some anecdotes about the investigators' examinations, experiments, or polling may enliven and illustrate their conclusions. Including company responses can give an extra perspective.

This staple sort of project can be repeated with experienced individuals replacing subgroups for the different functions listed above. It provides excellent opportunities not only to work with science and social studies but also to make measurements, calculations, and other good use of mathematics. And it's a hands-on way for students to generalize some information from particulars and to see the practical value of investigation.

For reading, a number of magazines like *Consumer Reports* are commonly found on newsstands and in libraries, but many other periodicals on particular subjects like cars, computers, and health foods include a consumer department in some or all issues.

## ■ STATE-OF-KNOWLEDGE ARTICLES

Beyond the daily news, most people today get their information from broadcast or print journalism in the form of "feature stories" or "documentaries." These are catch-all terms for articles or shows that go beyond reporting news to inform about topics and issues of current interest. Journalists have developed reportage and research to the point that their investigations often overlap in method and subject matter with that done by specialists in social psychology, political science, economics, public health, and other disciplines. Many so-called feature stories or documentaries correspond to memoirs, eyewitness accounts, interviews, cases, or profiles. There's another sort of feature story which we haven't yet treated and which we'll call the "state-of-knowledge" article, because it pulls together and updates what experts know about some evolving topic or issue that many people are following.

Suppose the subject is solar generation of energy and what is being done to develop it. Unless the investigator can visit some enterprises devoted to making or installing photovoltaic panels, say, she'll have to rely on recent articles and on what she can induce experts to say about it. (Interviews and articles provide leads to each other.) Actually, state-of-knowledge investigation is one kind that, even if based entirely on previous writing, allows a student to make a useful and original contribution, because its very nature is a "review of the literature" and because the subject is changing all the time. The key source for solar generation of energy would be articles in magazines and journals published within, say, the last two or three years and listed in periodical indexes specializing in the various sciences or technologies, or filed in computer data banks. Clearly, though, visits and interviews will increase the immediacy and readability of the final write-up.

Because of their obvious value for their own sake, state-of-knowledge summaries on popular subjects could not only be much in demand for student publication but might be very welcome also in local newspapers or even in specialized magazines. A very large number of feature articles that we read all the time in many periodicals are of this sort. Many serve as running background to recurring news stories on subjects such as the homeless or medical treatment for blocked arteries. In fact, a student team investigating backed-up schedules in local courts might decide to update knowledge of judicial reform as a context so that readers can better understand why delays of justice are so widespread.

## ■ PROJECT-CENTERED LEARNING

If you and your students keep the repertory of investigative techniques in mind, along with the kinds of discourse they can result in, groups and individuals can constantly devise their own projects for fact-finding and knowledge-making. Some investigation may be entailed in other projects than writing but will pay off in writing. Building classroom equipment, for example, such as a pet cage, a terrarium, or a device for watering plants over the weekend, calls for research. Putting on a performance to mark a historical event such as the first opening of a school or a town's birthday will entail interviews, examination of documents, collecting photographs or slides, and seeking out old furniture or props for the stage. Even when investigation doesn't end in a written composition, it often produces a lot of good learning talk, some reading in sources, and valuable subsidiary writing like notes and transcripts or labels and captions.

And here, in investigation, come together the various subject areas and disciplines, because all are engaged in building knowledge structures in culture and in consciousness. Realistic, purposeful projects naturally make for an interdisciplinary curriculum. Language needs real subjects, and subjects need real language (as well as each other). An investigator needs math to quantify and English to qualify what she looks into. And what she looks into can't stop at academic boundaries between science, social studies, arts, and vocations. Holistic learning may not be tidy, but it's closer to the truth.

We have not tried to cover all the possible forms of writing generalized information, because they tend to be very hybridized, perhaps because of the very functionality of investigative writing. Much depends on the purpose and audience. Taken together with true stories, such representative forms as experiment reports, consumer reports, profiles, and state-of-knowledge articles will indicate, we hope, the possibilities for projects students may conceive. Evolving information technology that can integrate text, graphics, and audio presentations will influence investigative projects enormously as they facilitate access to previous knowledge-making and the dissemination of new investigation such as the students'. Be prepared for much of what we have considered here to shift from page to screen. Computers, videodiscs, and allied technology should become tools for youngsters to explore the world with, to do projects no one ever dreamed of before in school.[1]

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[1] The "buttons" on such software as HyperCard enable students to create documents that coordinate text, pictures, and sound—all drawn from original sources.

It's about time, because future operators of the planet will need to reach much sooner and farther into the inherited knowledge wealth than any of their elders ever did. Schools can't afford to be a holding tank whose inhabitants are the last to know. Students investigating government and law and economics, or medicine and genetics and ecology, or psychotherapy and cultural comparison and history, can learn far more than textbooks could hope to teach, and remember it all better. They cannot remain just *recipients* of knowledge waiting to enter the world but must get out there well before graduation and find out for themselves how society and nature work and how they change. As investigators they should witness court sessions, legislative debates, hearings, neighborhood meetings, and observe businesses, agencies, laboratories, and factories. They must know what the problems and issues are *before* commitments about working and mating make it difficult to just *look*.