

# **Intermediate Technology**

Report No.1

Winter/Spring 1976

556 Santa Cruz Avenue Menlo Park, California 94025 (415) 328-1730

#### **Morning Notes**

Some of you receiving this Report #1—which those already with us can correctly regard as being Newsletter #2 or communication #3—may never have heard of 1.T. or may not even know who E. F. Schumacher is. Read on, and we'll try to cover that territory. We regard ourselves as an organization ultimately focused on end-product work beyond that of publications as such. Therefore, we want very much to communicate with you, but the way we do it is to try as best we can to suspend for a few days the flow in and out of letters and phone calls and meetings and site visits, to share with you a time-slice of what's going on with us in what Schumacher calls the three necessary and interconnected realms of human lives fully lived: dreaming, thinking and action.

Day before yesterday, while Jeb Eddy's wife Edith was in the hospital (she's coming along beautifully) and he was being parent and housekeeper, we had to mobilize all the rest of the half- or full-time peoplepower which now constitutes I.T.-Ruth Edwards, Peter Gillingham, Sandy Goff and Pat Long-for meetings first with Bill Van Groenou and the 60 members of his sociology class on Modern Technology at California State University at Hayward, then with 105 members of the Los Altos chapter of the American Association of University Women. To say we and the AAUW have some common interests is an understatement: one of the themes for the whole AAUW nationwide this year is The Economic Facts of Life: Living with Less. This made us haul out and check over the five variously functional tape recorders we have around here and the hundred or so recorded tapes on hand, 60-70 of which have Schumacher on them.

This morning Peter was in the back room pounding away on his 26-year-old Smith-Corona portable and Pat was in the front room working on final preparations for the I.T. two-day program at Arizona State and his subsequent "Circuit Rider" trip to New Mexico and Colorado. We were listening to Steve Addiss and Bill Crofut in concert in Belleville, Illinois, in 1971. Almost one after the other they played three songs—"Winnsboro Cotton Mill Blues," Woody Guthrie's "Roll On, Columbia, Roll On," and "Times Are Getting Hard."

We are not an organization oriented toward a great deal of introspection, but we often find little "epiphanies" cropping up where some little thing sets off a bloom of light in our heads and we understand something, some big or little dimension or interconnection, we didn't before. We are trying to capture them and pass them on where they seem useful or suggestive, a few to our subscribers in this form and probably many others in even more rough and tentative form in working with our members. And it happened with us this morning-we started talking and realized we had seen in ourselves a classic case of what might be called dreaming producing thinking. "Winnsboro Cotton Mill Blues" is not only an itchy foot-tapping song, but a classic expression of the working man telling what he thinks about the boss and the job:

Old man Sargent sittin' at the desk Damn fool don't give you no rest, He'd take the nickels off a dead man's eyes Just to buy a Coca-Cola and Eskimo Pies... Oh, when I die don't you bury me at all Hang me up on the spool room wall, Place a bobbin in my hand I'll keep on a-workin' in the Promised Land...

Social comment in the arts is hardly something new. But soon we found we were listening hard, then talking about ideas we had already been trying to refine and share as I.T.'s specific "operating hypotheses" which may in time evolve into principles. One of these is the concept that right now many of us are in a mood reflecting a range from at least questioning to almost a revulsion against and condemnation of technology. It may help us, as we try to dream and think and act more wisely and more effectively, to rediscover our sense of history, re-examining human experience and particularly the history of technology and industrialization to realize how many trends and processes, which we now increasingly see have gone too far, were at some time an embodiment and manifestation of profoundly positive human aspiration and striving. From the tape recorder speaker came "Roll On, Columbia," a stirring evocation of the vision and hope inspired no more than forty years ago by the Bonneville Dam and its predecessor, the Tennessee Valley Authority: "Your power is turning our dark into dawn, So roll on, Columbia, roll on..."

#### CONTRAST

And now? The contrast hurts to think about. As technology, TVA grew so large, beyond its original purpose of developing and applying hydroelectric power, that it is now said to be the largest single consumer of coal, near the top of any environmentalist's list of strip mining offenders. To think of TVA as an organization, to remember Arthur Morgan and David Lilienthal and the 1930's planning for farmers and small producers living happily on their land in control of their own lives, is to weep. TVA has become an organization beyond effective accountability to Congress or the White House or anyone else. And Bonneville? That same cheap power (we might now think dangerously so, in terms of the distortion it produced in technological, economic and political decisions) which located Oak Ridge near TVA put Hanford near Bonneville. And there, in that beautiful valley where normally there would be human beings living happily for millennia to come, is where they buried the first radioactive nuclear wastes. When they went back to look for them, they couldn't find them.

Next came "Times Are Getting Hard," and we found ourselves realizing that we can look at the Dust Bowl in two quite different ways. One way is people victimized by heartless bankers foreclosing on mortgages, at least until the banks themselves went under. The other way is to think of the Dust Bowl in terms of technology, the coming together of (i) American agricultural development after the Civil War combining with (ii) the development of the first powerful tractors (first steam, then internal combustion) to pull (iii) the sodbusting plow and (iv) the unnaturally high market prices for food grains during World War I, to do what nobody had been able to do before in history, namely to take open plains earlier used only for grazing and produce bumper crops of grain. The long term consequences have proven to be severe, in part because the consistent patterns of rainfall are not adequate.

In other words, we can focus on "the system" or on technological over-reaching and ways to do things differently. Some would say they are inextricably intertwined. We do not agree; or at least, we see the possibility of finding a fulcrum and constructing a lever in relation to thoughtful technology, using the constructive and workable lessons from the last century of evolving political, economic and technological systems. We think it is within the capacity of Americans both to re-direct the course of technology and to make the necessary accompanying institutional changes. We urgently ask your participation in whatever we propose that makes sense, your criticism of that which does not, and your proposals of alternative courses of action which make more sense to you. This is the way we propose to begin.

#### **Two Specific Objectives**

In Schumacher's shorthand, modern industrialized civilization has become too big, too complex, too expensive (capitalintensive) and too violent (on people, resources and the environment). How to begin? Take any part of the real world you can possibly have an effect on, and seek to have your actions work to reverse at least one of those four trends. Start where you are: but start.

Because I.T. is committed to help bring about things some of which run at an angle or counter to the present momentum of industrial society, it will be not only inevitable but desirable for our work to be preceded and accompanied by much talk, conjecture, writing, and discussion of alternatives as they become clearer. It therefore seems useful to set for ourselves some objectives which are as specific as we can make them while still reflecting the full scope of our primary concerns. For I.T., those two "bottom-line" objectives are TECH-NOLOGY and WORKPLACES. This means, for instance, that

Contrary to the hopes expressed in the last newsletter, E. F. Schumacher will NOT be coming to North America at all during 1976, according to his current plans. His deadline for finishing his next book, *A Guide for the Perplexed*, is December 1976, and during this year his only trips beyond Western Europe will be to developing countries. We hope very much that by the time the next REPORT comes out we can give some firm dates for 1977 and invite you to work with us on planning his visit.

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Co-Editors: Peter Gillingham and Jeb Eddy

we believe thinking and research and feasibility studies are not merely important but essential. Yet where academic or writers or professional researchers, for instance, might usually regard the printed result as the proper and adequate end product of their efforts, for us it constitutes staff work for what still lies ahead.

We want to learn how to play an effective role in helping to see more intermediate/appropriate/thoughtful technology actually designed, tested, in production and available "off the shelf." And we want to learn how to help see created more halfto full-time workplaces actually in being, workplaces which embody other desirable qualities but also are created with significantly lower capital cost per workplace and less use of energy from non-renewable sources than is now the case in that particular industry or other sector of economic activity. One area on which we will concentrate, perhaps another "bottom line" objective which should embody the preceding ones as well, is seeing more "mini-plants" produced, that is a Scaling-down of the size of industrial and other productive equipment, in many cases (as with the ITDG's now famous "egg tray" machine seen in The Other Way) to levels smaller than conventional wisdom now regards as economically viable. And needless to say, another objective is primary: something designed and put into production here which might also be usable as it is or with minor adaptation in a developing country would have particular importance for us.

In most cases we will work as facilitators, brokers, or what we think of as "grassroots investment bankers," trying to help others actually create and produce the technology and workplaces. In that sense, we are primarily entrepreneurs of ideas, knowledge and "a sense of the possible." In a few cases we will get into doing it ourselves in order to practice what we preach and learn from it, perhaps to produce something particularly important or appropriate in terms of our purposes (e.g. applicable both domestically and overseas), and if possible to make the non-revenue-producing activities of I.T. less dependent on donations or grants and less of a drain on membership, subscription and other income.

BULLETIN. We have just had word from London that George McRobie, with Schumacher a co-founder of the Intermediate Technology Development Group and now its director of development, will be coming to the United States under the co-sponsorship of I.T. for seven to ten days starting June 2nd or 3rd. We have had no time to make firm plans and we are not yet sure whether he will travel to parts of the U.S. other than Northern California. A witty and superb speaker, George may well be the most widely experienced man on the face of the earth about what has actually been happening in over 40 countries in the development and use of intermediate technology. If you want us to try to send him your way, please let us know *immediately*.

#### Broadcast of "The Other Way"

On Sunday, May 16, at 8:00 pm many PBS stations will be (re)broadcasting the BBC-produced film THE OTHER WAY on E. F. Schumacher and the Intermediate Technology Development Group in England. The broadcast will be that week's offering on the Nova Series, and has an American soundtrack replacing the English English original. Not all local stations necessarily plan to carry the show; if there is any doubt in your own area, call your local public TV station-they are usually proud of their responsiveness to public requests, and could be persuaded to show it if they are not yet intending to. The show itself is probably one of the best ways to get an understanding of the problems which Dr. Schumacher and growing numbers of others are so concerned with, and the tangible steps being taken to do something. We of course would encourage as many people as possible to see it.

Over time, we hope to obtain some similar film/media resources for use by people who write us and request it, but many arrangements must be made before that can come to pass. Can any of you help us get started on the effort?

#### I.T.'s Program

The Working Groups will be the engine room of our "thinking" function not only in the near future but for years to come. You (or we here) start with two or three people, who add others and become a study or discussion group in one place, which we help you to link with your counterparts elsewhere by mail, visits, etc. Becoming a full-fledged Working Group implies a certain stage of maturity roughly equivalent to what ITDG calls its "panels":

- i. "critical mass" of people/time, meeting at least twice a month with actual attendance of 15-20 or more.
- ii. "A-B-C" representation on the proved ITDG pattern.
  "A" is administrators, relevant people from government (Federal, state or local). Schumacher: "They can do very little themselves, but they can prevent a great deal from being done." "B" is business people, those who now actually produce something tangible. "C" is communicators: faculty, students, researchers, designers, professionals—what Schumacher calls "people of the word." A Working Group must have at least 20% of its active membership drawn from each of the three, and no one category may represent more than 50% of the group.
- iii. Recording and transmission of experience: (a) rough but full meeting minutes in the mail to all members and to I.T. within 48 hours; (b) I.T. sends copies of your minutes to all counterparts within 48 hours; (c) all major meetings taped, with cassette copy (edited if you want) mailed to I.T. within 4 days (copies to counterparts from I.T. on request)

- iv. specialized or professional language acceptable for study/discussion groups; Working Groups commit themselves to keep minutes, memoranda, and other working documents as much as humanly possible in standard English, comprehensible to those with 12th grade reading skills and no technical training (jargon in appendices if at all).
- some minimal structure; identified chairpersons, corresponding secretaries, etc., plus at least one HTE (half time equivalent) staff person(s), volunteer or paid by working group from resources it raises.
- vi. specific plan of work for at least three months in advance, kept current and communicated to I.T. (we will copy for counterparts elsewhere if you don't send direct).

## The Working Groups

Working Groups choose their own subject matter focus. We will tend to give more attention to those which; (a) place leadership in the hands of those outside the academic or professional fields normally predominant in the given area, (b) involve the widest possible range of experience, knowledge, points of view. We welcome your suggestions and initiatives, but our preliminary guess is that these will be the *first-stage priorities*, starting one at a time and each reinforcing the others as more start up:

TECHNOLOGY: Existing resources, needs/opportunities, or both. We tend to think there is much good work being done in alternative sources of energy and energy conservation, for instance, but much less in developing economically productive equipment and other technology for rural areas (Schumacher: it is economic idiocy for rural people to produce only food or fiber; you must "take back the value added" in secondary and tertiary activities such as small industry), urban ghettos, arid lands, etc. Note: What is produced abroad which we do not now produce but could use here?

INDUSTRY PROFILES: Scan quickly across a number of sectors of economic activity, or study one in depth, to determine and apply criteria by which we can all judge those sectors which may most *need* change or where specific factors, now or in future, may make them particularly vulnerable and therefore interested in desirable changes such as mini-plants, decentralization, etc. Examples: where the product is particularly heavy or bulky and transport costs are eroding "economy of scale" factors, or where energy costs of processing or manufacturing are particularly high. (Example of both the above: Portland cement.)

DISTRICT SELF-STUDIES: Take a Congressional District (each is roughly half a million people) with high un- or underemployment and regard it as an underdeveloped country. What do we produce? What could we? What do we import (from outside the District); What do we export? In what respect could and should we "take back the value added" (particularly from large urban concentrations)? and so on. GOVERNMENT POLICIES AND PROGRAMS: Which specific legislation, executive ruling or administrative practice—at Federal, State and local levels—tends to favor the large or prevent or hamper the small? How and why did it come to be that way? How might it be changed?

WORK AND PEOPLE: Fewer of us every day know work which is not destructive or exploitative, strengthens human creativity, serves positive values, will be more needed in future, and is adequately rewarding in economic and non-economic terms. Analyze existing vocations (and those you can envision) by these and other criteria you generate (Schumacher: we often forget *repair* can be a deeply satisfying craft). Analyze vocations by *capital cost per workplace*, as they are now and as they could be redesigned

CAPITAL: NEEDS AND RESOURCES: As all the other working groups identify and "staff out" needs which represent opportunities for someone, where could the capital come from? What are non-monetary resources (e.g. human skill, knowledge or creativity)which could be particularly important?

PEOPLE AND INSTITUTIONS: How do we define specific useful roles which people connected with particular types of institutions could perform? For instance, could students, faculty and alumni of a particular university form a corporation to produce particularly needed new technology? Could every large corporation follow Schumacher's "lifeboat" suggestion and divert 5-10% of its R&D budget to help its own employees develop and produce such technology with their own organizations?

#### WORKING WITH I.T.

We have given a lot of space to the working groups because they will be for some time our principal mechanism for involving people who are not near us in Northern California. You may work with others to form a working group, or you may simply give us in writing your background and your particular interests and we will put you in touch by mail with one or more working groups operating somewhere else.

There are almost endless possibilities for other working groups: rural-domestic symbiosis (urban/suburban people bringing their skills and access to information to bear on the needs of rural people, with reciprocal benefits); internationaldomestic; needed changes in economics; the economics of organic and other agricultural methods less dependent on nonrenewable resources; design of mini-plants; positive uses of high technology; specific sectors such as housing, transportation, or wastes as resources; or other parts of our Technology—Organization—Work—Economics—Resources "beat" we have neglected to mention, such as desirable alternatives in organizational ownership and governance ranging from employee stock ownership programs to Workerowned factories. Again, let us know the experience and skills you want to bring to bear in terms of your current interests.

I.T. now consists of two rooms over the Whole Earth Truck Store out of which work five people born from the 1920's to the 1950's. Jeb Eddy graduated from Swarthmore, worked seven years in Asia with the Peace Corps, AID, and the Asian Development Bank, then took an MBA at Stanford and spent three years in business before coming to work on publications and programs. Ruth Edwards took a degree in economics, has years of experience in voluntary associations, and runs the Peninsula Funeral Society when she isn't being our secretary. Peter Gillingham took his undergraduate and law degrees at Yale and spent twelve years in international development and education. He is "the founder" and has the only private office; some might call it the kitchen. Sandra Goff has a doctorate in psychology, long experience in directing professional and community associations, and now the job of trying to stay on top of both our own local meetings and programs and cooperative projects with organizations in the area. Pat Long is an electrical engineer who rolled in from Illinois with his VW camper and a Department of Labor traveling fellowship. He got the files organized for the first time and with his imminent swing through Arizona, New Mexico and Colorado will begin his work as our first circuit rider and link with rural and other working groups as well as with students in local colleges and universities. Preston Burchard has an MA in history and worked for more than twenty years as a tool and die maker. He helps now on special projects, but for seven months he and Peter were usually the whole outfit. We are very grateful to him.

For several months the work of I.T. has consisted mainly of trying to stay abreast of mail, visitors and phone calls, work with our Members when they get hold of us, get organized, do our homework, mull over purposes and activities, and seek the time to get out this REPORT. In the months to come we will be continuing with this and adding areas of work. The biggest challenge of all, in a sense, will be to help the Working Groups get moving effectively on their own and in relationship to each other. Pat will be doing his circuit rider work, but at the same time we will be working with volunteers to prepare more circuit riders, particularly during the summer, and give them necessary backstopping.

What we have been calling the "Resource Center" is at present really material in our heads and a corner of the office and three file drawers filled with clippings, publications and duplicates of our working files. We shall probably have to find a separate place for it soon in order to operate as a workplace in its own right as well as repository and backstop for working groups, circuit riders and others. We will probably name it the "Experience Center" and discuss the whole operation in the next REPORT; we would like to test the idea of having it staffed as much as possible by teams of one person over sixty and one person under twenty.

What we call "public events," the part of our time spent helping others to stimulate their "sense of the possible" and dreaming/thinking, has so far been trying to keep up with outside requests, unless we count putting on Schumacher at the Cow Palace. Within a few weeks we want to move in that direction more actively, with programs of talk and perhaps music, graphics and displays and simple media, about the multiplicity of things going on now and how they are already beginning to add up as the beginnings of a future that works. Our first organizing meetings in Northern California will take place in May and June after a special mailing for this area. From these, we hope and expect, will emerge both local working groups and several committees which will actually do most of the running of I.T. as an organization.

And finally, Peter Gillingham has to finish his part of *Good Work*, the book on which he is collaborating with Schumacher.

We are both exhilarated and almost appalled (the latter because our own energies seem so small compared with what is needed) by the numbers and obvious quality of the people from all over the nation and beyond who would like to work with us in one way or another. From the above description you might think we contemplate becoming a huge organization rolling in wealth. In actuality, our present financing is almost nonexistent. Our memberships and subscriptions totaling just over 100 have kept us going. We have earned some money and had some unsolicited contributions, but we have not yet applied for a single grant. We believe that if we do our best to choose the right objectives and work as effectively as we can, the right people will appear and somehow we and they can find the money and the space and the other things we need. Needless to say, if you are the right person for us, it makes it easier to get to work where you can equip yourself with an internship, a midcareer public service paid leave, or at least your own subsistence and travel. Even so, please don't just appear; it is good but very hard work to prepare responsibly even for volunteers, much less to earn or find the money to pay the people we have and those we could use.

Send \$10 to become a <u>subscriber</u> to the I.T. REPORT; \$25 acquires a <u>membership</u>, including this quarterly publication, more personal attention, and a greater opportunity to get involved.

#### HABITAT

The United Nations Conference on Human Settlements (alias HABITAT) will take place in Vancouver, B.C. from 31 May through 11 June 1976. One aspect of these related displays and functions is intermediate technology.

Less official, less governmental activities will be going on before, during and after the conference at a nearby location on the outskirts of town.

At present, I.T. as an organization in the U.S. has no specific plans one way or the other for presence/participation, despite the obvious attractiveness of the potential audience, domestic and international. Circuit rider Pat Long and his trusty VW bus could possibly make it, especially if there is some local interest and support. Please send any information you may have on planned activities in which you think we could join, and how, and/or local people or attendees who might support our participation.

#### **Request for Response**

People who are in the Social Register sometimes seem never to have to use the regular telephone directory—"well of course, my dear, occasionally I have to find tradesmen." Here at I.T. as we sit happily half-drowned in letters and our own file cards and other people's publications, we have had the fantasy that we could get it all organized in one book: the people we regard as the ones who are doing or trying to do the good work, organized geographically and cross-indexed alphabetically and by past experience and present activities and future aspirations, and so on.

How could we do it? In our minds we are thinking of a working title somewhat clearer than an initial thought, which was *The Human Geography of Intermediate Technology*. Perhaps something like *People at Work*.

Now we are asking for your suggestions and for specific indications of interest from those of you who might want to participate, as well as specific nominations of people and groups whom we should include (and why). From here we presume we will move to a local committee here in Northern California with a wider network participating by mail, and this would develop as quickly as possible into a full-fledged working group which could draw from and feed into the Experience Center.

The results of field research by students in Professor van Groenou's class at Hayward State (see item on this elsewhere in this REPORT) may generate useful contributions; we all have several things tucked away in dusty corners of the mind; Whole Earth, the Briarpatch Network, I.T. Circuit Riders many possible starting points come to mind. But the project won't happen by itself...

#### Writers

Readers who like, and are perhaps even good at, writing are invited to let us know of your interests, talents and possible availability of working with I.T. on both general activities and specific projects as they emerge. As discussed elsewhere in this REPORT, we envision a number of I.T. Committees and Working Groups which will be the core of the organizational base of I.T. Geography suggests that many of the members of these Committees and Groups may come from within reachable distance of Menlo Park, but this is by no means a requirement. For these purposes, writers to do everything from taking minutes to preparing summary reports-in clear communicative language-handling correspondence, abstracting resource materials, etc., will be most welcome. Helping with future editions of the I.T. REPORT; preparing grant applications if we decide to go that route; condensing otherwise disorganized materials-these are examples of energy we can use.

Specifically for friends who are not nearby, we are trying to think of ways to foster participation and involvement (there's that nice decentralization theme again). One idea in the hat is to ask for volunteers to do book reviews. We eagerly solicit other suggestions.

#### Rattling the Bars. . .

While I'm waiting for some more copy to paste up I thought I'd put down a few quick lines about writing to I.T.:

- 1) We want to hear from you.
- We'll try to answer promptly (understand that there's only two of us answering the mail, and one of us can't see very well and the other reads only Russian).
- 3) Don't write a long treatise about how you think you're ambitious, eager to learn, brilliant at 25, etc. We know all that!
- 4) Do tell us specifically what kind of information you need.
- 5) If you'd like to help, take some of the load off our backs and tell us what kinds of things you would like to do in working with I.T.
- 6) If you don't (or didn't) get an answer, or if you didn't like the one you got, WRITE US BACK!
- 7) Also, I at least would like to read some funny letter that doesn't have anything to do with the end of civilization and all that. We're gonna make it!

-PML

## Looking Ahead

The first circuit rider trip commences shortly after this newsletter is breathlessly delivered to our printer. I'm planning an extended trip through Arizona, New Mexico, and Colorado to inaugurate our first working group and to help us clarify more of what we need circuit riders to do. On this trip I'll be stopping in Tempe, Arizona for two days of work, learning some of the solar activity which is centered in this area, with my stay culminating in a speech by Peter at Arizona State University.

The next major stop is Albuquerque, New Mexico, with a possible visit to Zomeworks and the centers of alternative housing in the area and then to Colorado Springs for Passive Design Architecture. Then in Denver I'm going to be seeing an I.T. member who phoned one morning less than a week ago wanting information and offering help.

The essence of the circuit rider function as I see it is to "close the circuit" and make the connection between people needing to get working and the ways we can create our own right livelihood.

The two things I'll be concentrating on will be collecting data on what kinds of technology people could use if it were available, and what kinds of resources we at I.T. can make available to our members. Eventually, I see many local area "circuit riders" carrying out this information and work exchange function all over the U.S.

One of the ideas that is basic to our small organization is encouraging people to take the initiative in creating their own meaningful workplaces. Those who work with us will bring their creative energies and talents to what they do to help realize their own "Right Livelihood." Specific suggestions on circuit riding or any other aspect of 1.T. are invited and will help us take some of the things that are right now just ideas and turn them into concrete, reproducible experience.

## WHAT DO WE MEAN BY "INTERMEDIATE TECHNOLOGY"?

Does the idea of intermediate technology mean a return towards more primitive modes of work? Well, yes and no. In the sense of a return to simpler technology, decentralized and non-violent, yes. In the sense of abandonment of sophistication and elegance—by no means. As Schumacher has said: "We now possess such superlative scientific knowledge and technical ability that we can make things simple again."

What are the technologies that lend themselves to this approach? Let us take the example of solar and wind power. In the application to self-contained home heating and lighting units it can provide us with a decentralized, resource-saving energy system. This would help to save us from the painful choice between increasing use of fossil fuels and reliance on nuclear energy. Yet it could incorporate much sophisticated equipment-sensors, thermostats, improved batteries, photovoltaic cells, etc. To obtain the greatest good it may be wise, it may be necessary to use a great deal of this kind of technology. We think we should be searching out those developments, whether paleotechnic or neotechnic, with which we can construct an appropriate technology and also we should be anticipating the new developments (future tech?) which we can adapt to a decentralized low-capital, humane technology. Obversely we think there is some danger of romanticizing the old, the small or the inefficient.

Some choices will be difficult to make. For instance, should home-based windpower units feed back excess power into an existing power grid? At least one pilot project is trying this. Or should they remain isolated systems? Some isolated systems can be very efficient. Total-energy systems involving total energy uses within apartment complexes, factories, or large building units of any kind can save significant amounts of energy and money. But isolated windpower systems need an inexpensive energy storage. Would not storage in a power grid be a good, more convivial way rather than in very expensive, resource-consuming batteries? Philosophic considerations may come in here. What degree of decentralization and selfsufficiency should we be aiming for, and how do we balance that goal with the need of the community?

There are those among the "small is beautiful" constituency who would prefer to get back to simplicity by a more direct route than we are advocating here, by abandoning sophisticated technology rather than by shaping it to our needs and humanizing it. These are the "primitives" who point out that "primitive" should not have the connotation of "inferior," but rather the connotation of "primary." For instance, according to John Shuttleworth, "... in general, the first and most basic discoveries and developments in any field are the best. They use the least amount of the most readily available resources, they require the minimum energy input for their manufacture, they last the longest, they work within a few percentage points of optimum efficiency with minimum care and maintenance, they're recycled the easiest when their useful life is over, and they leave little or no pollution behind when they're gone."

It is true that Nature is preparing for us a post-industrial revolution. We will eventually have to make substitutes for copper-wound coils and copper pipe in solar collectors, and considerations such as these are among the guides to our thinking. In some sense we probably all agree with the (adapted) message of the sign we see at the bottom of the freeway off-ramp, illuminuated with the flashing red light, (America) GO Back! You are going THE WRONG WAY!! But there are different ways of going back. Intermediate Technology is here to help both those who choose alternatives to the present society, and those who are trying to adapt present society to more humane ways of living and working.

We sense that one of the most difficult questions for some intermediate technologists is how, or whether, we should be relating to computers. In many ways computers fit in with the criteria for intermediate technology. They are skill-intensive, can be fabricated from plentiful resources, run with minimal energy input, and lend themselves to decentralization. With technical advances the cost of the hardware keeps dropping in relation to the cost of the software (programs), and threatens to become ridiculously reasonable. It seems likely that in the next few years there will be an economic imperative leading to computer applications in new fields, and perhaps we should be replacing vague forebodings of "machine takeover" with some intellectual decisions, or anticipations of comfortable coexistence.

The popular negative feelings about computers can be expressed as "mistrust, and even antagonism on the part of the average citizen faced by invasion of privacy on one hand and the irritation of having to deal with unresponsive machinegenerated billing and accounting statements and amazingly individualized mass mailings on the other." At a more serious level, innovations in technology have massive repercussions in history which are difficult to predict, and at the dawning of the computer age there are real questions as to the tendency of computerization.

The computer people we know are those who are attempting to humanize this technology by exploring its applications in fun, games and fantasy (Peoples Computer Company and Peoples Computer Center, Menlo Park) and in community resource sharing (LGC Engineering, Berkeley). There are real, humane and convivial people out there who see a possible rosy future with cybernetics, and who see absolutely nothing wrong with teaching kids to cozy up to computers. Actually, children seem to get along famously with computers at school and in science centers, and don't display the stand-offishness of older people. It is related perhaps to children's ability to absorb new languages. From talking to Bob Albrecht of Peoples Computer Company we understand that there is now a computer selling in kit form for \$400 which will revolutionize the home computer market, and assure that home computers will be available not only for computer freaks, but for the average houseperson and kiddies for fun, games, mindexpansion and eventually record-keeping, accounting and nobody has to commute to the office.

Well, we won't really know. Some wierdo Strangelove type always seems to come along and raise our hackles again. We'd rather get along with brains we have than supplement them with mini-computer implants which are untiring, with unfading memory banks, but we're giving way to gut feelings. The place of computers is certainly arguable and we would like to hear arguments why computers are compatible or uncompatible with a humane and appropriate technology.

Some questions on the other hand are easy. The SST for . example so obviously displays the case of high technology which carried to the extreme becomes inefficient, polluting and dangerous to human comfort and existence. Many of us are coming to think that nuclear power is an even worse example, in fact the ultimate example of what can go wrong, is probably certain to go wrong, when the violence, centralism, and capital-intensiveness of high technology are carried to their logical conclusions.

It is our conclusion that there are no hard and fast rules as to where "intermediate technology" falls between High Technology and Low Technology. It is up from the small, down from the large, and totally new, some of all these three. It is important to abandon routine ways of thinking and



analyzing, and explore the possibilities of new ways of organizing work and production, and old ways, "the road not taken." One practical guideline is to examine the equipment cost per workplace. We will have to steer a careful course, using these and other guidelines from Schumacher and others, and using the knowledge that all high technology cannot be abandoned precipitously because of the human dislocation and suffering that would result, but we should move with all due speed to humanize it, decentralize it, to take away its violent and polluting aspects as quickly as possible.

-Preston Burchard

### Thanks.....

With our fingers full of rubber cement we want to be sure to thank Richie Gordon of Portola Institute, who saved us much grief in letting us use his light table and paste-up materials. Speaking of Portola, we're glad we had enough of Dick Raymond's Shoe Patch (sold by One More Company, a briarpatch enterprise concerned with learning, sharing, and right livelihood in business; write them at 540 Santa Cruz Avenue in Menlo Park) to repair the holes in our shoes from running, between I.T., our typesetter (Trudy Smith) and our printer (Jim Hall of The Robots). We are grateful to our friends at the Truck Store, and to Jonnie Steele and Alice Levine; our particular thanks go to Thom Smith, who designed the I.T. logotype (we'll explain its significance in the next issue), and to Fred Grafton, who gave us a good part of a month's time plus a filing cabinet.

"RFR", request for response. There seems to be something very important in the idea that somehow intermediate technology and women may have a particular affinity in both the income-earning and household/family realms. Hazel Henderson's brilliant article, "Systems, Economics and 'Female' ", in the Fall 1975 Co Evolution Quarterly (copies free on request to I.T. members, otherwise 2 for \$1) gives us all a starting place. Byron Kennard and John Ussery of the National Council for Public Assessment of Technology in Washington D.C., have been compiling a national directory of resources for community organizers in appropriate and intermediate technology and related fields. In a phone call a few days ago Byron said something to the effect that "I've been a movement person for twenty years, but it wasn't until I was going over the draft of the directory that I realized this was the first 'movement' I've ever been involved with in which so many of the leaders are women." So great was his interest that Byron is helping some of the women in question to organize a meeting in Washington. (Peter Gillingham's fascination with the subject is such that he helped organize a meeting for Schumacher and senior editors of Ms. last October.) There is something vital here; let us know your thoughts.