

New China Hands—American Scientists Visit

BY HENRY ABARBANEL

**A Caltech alumnus (BS '63)
reports his enormous enthusiasm
—and severe reservations—
about the new China**

From the moment we left the hotel that evening, we were sharply aware of the quiet, historical nature of our little visit. As our cars turned left off Tung Ch'ang An Chieh and into the diplomatic area of the city, we could see the American flag flying over the Liaison Office, guarded by two alert members of the People's Liberation Army. We entered the building to join what was for most of us an activity which we would consider attending in no other foreign country: a Fourth of July party—given by the Chief of the American Delegation in Peking, David Bruce.

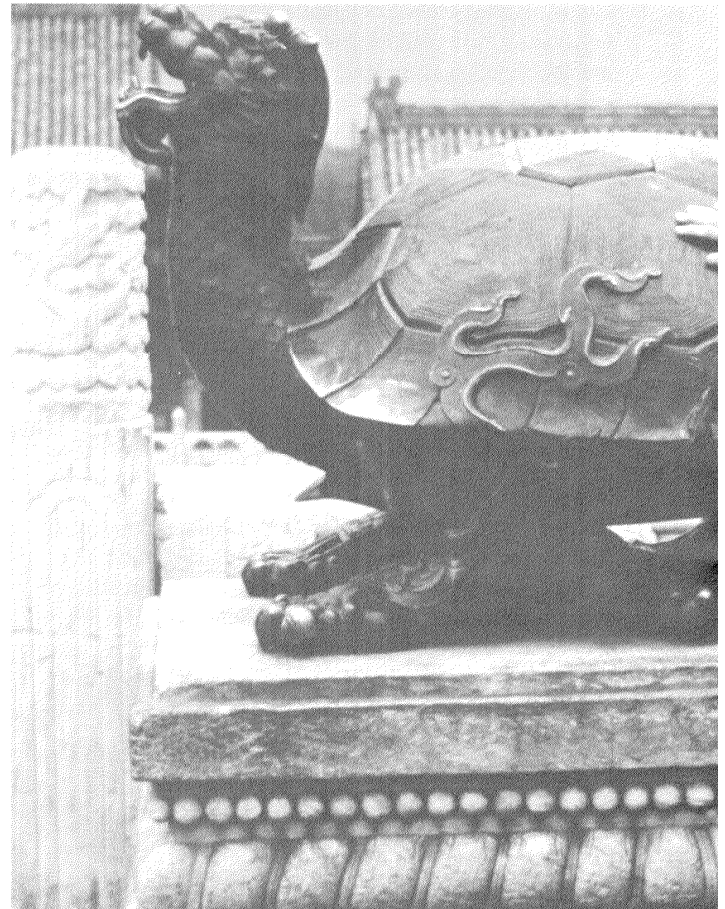
The reception was simple, with excellent Chinese hors d'oeuvres and fiery mao tai liquor accompanying the conversation. American mixed drinks were also provided, and with a good old gin and tonic (all of us already understood the dramatic effects of 120-proof mao tai), I sat down to talk with Wu Yu-hsun, a vice president of the Chinese Academy of Sciences, one of our hosts in China, and Al Jenkins, the deputy chief of the American Liaison Office.

Jenkins is an "old China hand" who had spent considerable time in Peking before Liberation in 1949 and had been present at the last Peking Fourth of July celebration 24 years ago. He spoke a bit about the contrasts between the old China and the China he now saw. "The thing that has amazed me most," he said, "is that in China today no one is fantastically rich, but no one is desperately poor. When it rained yesterday, everyone had a plastic raincoat. Before 1949 only the rich could protect themselves from the rain."

My presence at that remarkable Fourth of July celebration was possible because of my good luck in being a member of the first American physics delegation to the People's Republic of China. My fellow travelers were Luis Alvarez of the University of California at Berkeley, and Jan Alvarez; Owen Chamberlain, also from Berkeley, and his friend June Steingart; Murph Goldberger from

Princeton University, with Mildred Goldberger and their son Joe; Ned Goldwasser from the National Accelerator Laboratory, and Lizy Goldwasser; Francis Low of MIT and Natalie Low; David Pines of the University of Illinois, and his wife Suzy. Each of us had applied in one way or another to visit China, and the delegation was assembled by the Chinese government at the end of May 1973 and invited to come to China as the guests of the Chinese Academy of Sciences during a period of three weeks in July 1973.

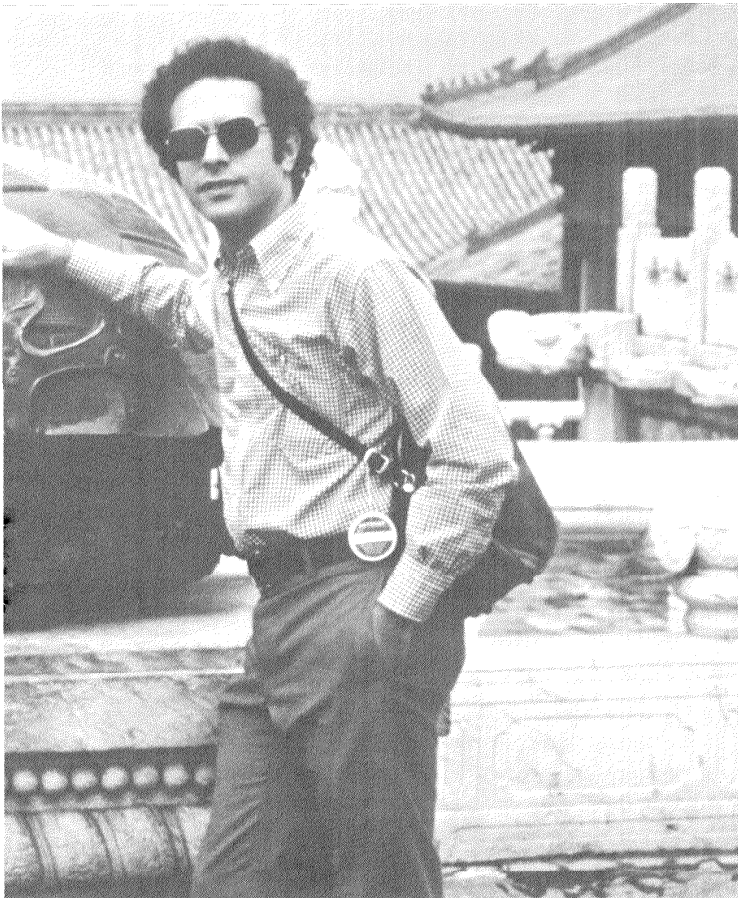
The purpose of our visit was certainly not clear to any of us. The scientific interest among the seven physicists is primarily in high energy physics. There were three theoreticians (Abarbanel, Goldberger, and Low) and three experimentalists (Alvarez, Chamberlain, and Goldwasser). Pines has worked as a theorist in both solid state physics and more recently in astrophysics. It goes without saying



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that we all shared an intense curiosity about both the standard tourist sights of China and the life and culture of the new China. Beyond the very beginnings of a satisfaction of that curiosity and the constantly repeated announcement that our visit served "to enhance the mutual understanding and friendship between the people of China and the people of America," no definitive purpose ever did emerge.

We had rather significant contact with our scientific colleagues in Peking, Shanghai, and Canton. And members of our delegation delivered lectures on their various interests in physics that were well attended and were followed by vigorous, informative question periods. In general, however, our journey consisted of rather more formal visits to factories, people's communes, research institutes, universities, hospitals, primary schools, national monuments, and museums.



In offering this brief account of some of the highlights of our trip, I feel I ought to make it clear from the outset that I am not a China expert. My command of the language is hardly notable: I speak perhaps 25 words in the "absolutely necessary" category with an accent that only a generous teacher might agree resembles the Peking dialect now taught in China. My conversations were, therefore, either through or with the interpreters accompanying us. I am a very amateur student of Chinese history since the Opium Wars of the 1840's and listen happily to anyone who speaks with even minimal authority about Chinese art. I am at best a "new China hand" who has been quite impressed by my one visit to the new China and who has at once both an enormous enthusiasm and severe reservations about it.

Even the most casual student of China has read of the poverty, disease, hunger, and pervasive deprivation that haunted the cities and countryside alike during the last years of the Ch'ing dynasty and the 38 years of civil strife that followed its fall in 1911. This is certainly on one's mind as he visits the cities and countryside of the new China. The impression that comes across most strikingly is that the people are now well fed, well clothed, and reasonably, if not elegantly, housed. Everyone except the severely handicapped and aged appears to be employed.

Wages are, of course, regulated by the State. In a city a beginning worker may earn 30-40 yuan (\$15-\$20) each month while a veteran worker will earn up to 120 yuan per month. From this income one must pay 3-4 yuan a month for an apartment of three to five rooms and approximately 15 yuan a month for each person for food. The diet consists of fish, chicken, pork, duck, and occasionally beef, rabbit, and delicacies, in addition to vegetables and the staple grain foods: rice in the South and wheat in the North. This food is brought into cities from the people's communes each day, and is sold in areas along the streets that appear to have been designated as neighborhood markets. The fact that we saw no refrigeration or freezing facilities in any of the homes or apartments we visited clearly implies that these marketplaces are frequently visited by housewives.

A digression on "Women's Lib": It is a modern Chinese

Henry Abarbanel may be around for a long time. Touching this bronze turtle in a courtyard at the Palace Museum in Peking is supposed to guarantee living for 10,000 years.

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saying that at Liberation in 1949 “men were liberated once, but women were liberated twice.” To a significant extent this is true. Women do seem to perform all tasks that employ men. We were told they receive the same salaries. They are, however, under-represented on the administrative bodies of China (called Revolutionary Committees) and in membership in the Chinese Communist Party. Further, when we asked who does housework and tends the children, the answer was, “The women, of course.” From the point of view of several of us, it seemed that Chinese women would probably someday be liberated a third time.

Peasants (synonymous in China with farmers) own their houses on the communes. These houses appeared to be very clean and, in the heat of the Chinese summer, were cool and comfortable. The peasant's income is received both in food—according to the annual production of his commune—and in cash. The amount he earns is based on a system of work points which are assigned by discussion among the members of his “production team.” Private garden plots and the raising of domestic animals are permitted and are used to supplement the income and diet of peasant families. One family we visited on a commune outside Peking sold three pigs last year at approximately 60 yuan apiece. Added to a peasant family cash income of perhaps 400 yuan a year, this is significant.

Eighty percent of China's 800,000,000 people live on the 70,000 communes around the country. Thus, it seems worthwhile to describe in more detail the Double Bridge People's Commune about 10 km southeast of Peking. Our translator told us that this was a “poor” commune and that he was almost embarrassed to bring “distinguished foreign friends” there. My reading indicates that it is a typical commune. It was organized during the Great Leap Forward in 1958 by combining 46 neighboring villages which had been working as members of smaller co-operatives since shortly after the land reform of 1951-52. Forty thousand people live on the 90 square km of the commune. The administration of the commune is in the hands of concentric sets of revolutionary committees. At the center is a body of 40 members—only 6 of whom are women. The next division is into six “production brigades,” which more or less coincide with the cooperatives existing before 1958. After that, the workers are members of production teams consisting of 500-1,000 people. It is at the level of the production team that the detailed decisions

are made about who works where and who receives how much reward for what work. The revolutionary committees at each level are, in principle, separate bodies from the local communist party organization. In fact, of course, there is a large representation of party members on the various revolutionary committees. Among other reasons, this is to be anticipated since the party chooses its membership from the most industrious and articulate part of the population. Precisely that kind of person could be expected to be elected to the revolutionary committees.

The members of a production team are thoroughly involved in each other's lives. After leaving school to work, and before marriage, men and women live in sex-segregated dormitories with fellow team members. Each Chinese citizen is strongly “encouraged” to attend six hours a week of study sessions of “Marxism-Leninism-Mao-Tse-tung Thought”; and these study groups are organized among members of a production team. (When we asked, in a Peking neighborhood, whether one could choose not to attend these “voluntary” study sessions, we were told it was possible, but that “the comrades will come to talk to you” to persuade you to join. As far as we could tell, everyone attended.)

Marriage is very straightforward in China. A couple must first receive permission from their production unit. Then they go down to a local police station and register—and that's it! Permission for a couple to marry, by the way, is not always forthcoming just for the asking. A young American-Chinese student studying for the summer at Fu Dan University in Shanghai told us that when he spent some time on a local people's commune, he arrived in the midst of a big controversy over the refusal by his production team to allow a couple, each aged 25, to marry. Controversy is perhaps an inappropriate word. The production unit had made its decision several weeks before, and now the male comrades were talking to the young man—and the female comrades to the young woman—to convince them of the validity of the “decision of the masses.” There was no question of the decision's being reversed by discussion—only how long it would take the comrades to persuade the couple to accept it. The same couple probably would be allowed to marry, if they still want to, in two or three years, when they are more “mature.” For reasons of population control, women are encouraged to marry at around 25-27 and men at 28-30.

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One's life in China, then, can be seen to be very much involved in the lives of one's fellow workers—indeed, so much involved that privacy as we understand it appears to be absent from Chinese life. (The fact that in the Chinese language there is no really acceptable translation of our word “privacy” seems consistent with this observation.) A society which is organized with such mass involvement and with the intense level of social pressure prevalent in China is also able to be organized by a central authority to achieve impressive social and economic tasks. In my observation the present government, while having made some well-publicized mistakes such as the Great Leap Forward, has used this aspect of Chinese society to enormously benefit the majority of the population.

In such a situation it is natural to ask whether the people are happy. Well, to be frank, how could any visitor ever really find out? In my opinion, the questions of personal privacy and volition are *at this time* almost secondary in China, which has only barely emerged from the degradation that large segments of its population can vividly remember into a thriving country which provides every citizen with food, clothing, medical care, housing, and employment. Probably the people are happy. The fact that I (and probably you, the reader) find the social pressure and “persuasion” by comrades unacceptable must be quite irrelevant. Needless to say, it would be rash of me to conjecture how long the Chinese people are likely to remain “happy” on these standards.

It was my feeling that life in China, though it was rather well organized, tended to be rather drab. Young men and women are married only in their middle to late twenties. Before that, contact between the sexes is restricted to on-the-job or in-the-classroom activity. When a couple begin to date, they are engaged to be married. We asked our



Sitting in front of his shop on one of Peking's main shopping streets, this cob-

bler resoles a sandal. His tool is a knife, which he heats to apply new rubber.

student friend in Shanghai what his dorm mates did to entertain themselves. He replied that they mostly play cards.

Other forms of entertainment consist of going to the opera to see one of the modern Peking-style revolutionary operas. Typical of this genre of “proletarian culture” is *The White-Haired Girl*, a straightforward story about a girl whose father is killed by a landlord and who runs away to the hills to escape him. Her boyfriend joins the Red Army, eventually comes back, kills the landlord, and discovers his girlfriend (her hair turned white from her experiences surviving in the mountains) wandering about the village. The accompanying music is hardly what one would call great, but is simple, sturdy revolutionary support for the story line.

It is not necessary to go to an opera house to experience these operas since films of them are enjoying very long runs in the neighborhood cinema theatres. Of course, one can go to the song-and-dance routines of the People's Liberation Army (PLA) or to the acrobatic shows for some variety. Radios were present in many places, but I have no real idea of what the fare is. I saw only one television set; it was in a lounge of our hotel in Peking. The evening we turned it on it was featuring

the PLA dance show we knew to be playing in town.

Because we were so obviously *wei guo ren* (foreigners) and could not speak Chinese, approaching even the not insignificant number of Chinese (especially younger ones) who spoke some English was rather difficult. Of course, some rather formal contact could be established through our excellent interpreters, but it was most unsatisfying. Two clever members of our delegation had thought to bring along a dozen Frisbees between them, and playing Frisbee in the squares and parks of cities and on the people's communes proved to be a remarkable ice-breaking device.

Our first game of Frisbee was played in Tien An Men Square (the “Red Square” of China) in Peking on a warm summer evening. Within five minutes a crowd of, at minimum, 500 had gathered to watch these weird *wei guo ren* fling about a UFO. After ten minutes, at least a thousand people had gathered so tightly that what is normally a one-dimensional game with at least a line of sight to other players had become a zero-dimensional game. Tossing a Frisbee in the general direction of a spot radiating English can be fun but is not conducive to accurate throwing. By this time, how-

ever, one is really “mingling with the broad masses” and, exercising our fluent Mandarin, we would smile and say to the closest people: “*Ni how! Women shr mei guo ren!*” (Hello! We are Americans!) Often, as repetitions of the words “*mei guo ren*” would go floating through the crowds, someone would yell “Hello,” or perhaps “Good-bye,” and contact of a friendly (albeit not deep) sort would have been established. At this point we would begin handing the Frisbee to various members of the crowd and coaxing them to toss it to us. The roar of laughter and delight that followed a lousy Chinese toss was understandable in any language.

I think the height of Frisbee diplomacy occurred on our last morning in Shanghai. Four or five of us asked to go to a local park to “mingle with the masses” and, of course, to play Frisbee. Our hosts wishing, as usual, to show us the most beautiful park, not the most crowded, drove us off to the outskirts of the city where we were given free run of a magnificent, rather empty, park. We announced that this slightly missed our mark and after soothing ruffled feathers, were driven back into town to the People’s Park. On the way a passing train stopped our cars and left the other side of the road completely free—for Frisbee-playing, naturally. Out we

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popped and for 15 minutes tossed the Frisbee both among ourselves and to people standing in trucks also waiting for the train. The real coup was a truckload of 30 or 40 People’s Liberation Army men, who, as a rule, did not mingle much with *wei guo ren*. In fact, our first Frisbee game in Peking had been broken up by a nervous PLA man who was guarding the gate in front of which the game was proceeding. But on this occasion, they were completely captive. One Frisbee tossed into the truck and all formal decorum vanished as they vied for an opportunity to throw it back. After the train passed, we returned to our cars to the cheering of truckloads full of new Frisbee lovers, PLA men included.

At the People’s Park our success was magnified. After the game took its usual zero-dimensional turn, I called several times, “Hey, Joe!” to Joe Goldberger, who had disappeared in a sea of Chinese. At that juncture an oldish man came up and insisted I let him

throw the Frisbee; he was the only Chinese person who was so bold. I suppose he thought yelling, “Hey, Joe!” was part of the symbolic ritual in which we were engaged, for no sooner did he have the Frisbee in hand, than he yelled, “Hey, Joe!” and tossed it perfectly to Joe’s outstretched hands. At the end of the game we presented him the Frisbee, as was our custom when we found a good player. He insisted we return the next day so he could give us a gift, but alas, we were leaving that afternoon. When Shanghai-built Frisbees flood Western markets, you will now know where it all began.

Beyond these amusing interactions our primary social intercourse was at the banquet table. We were entertained at a magnificent banquet by the Revolutionary Committee of every city and village we visited. This would be an occasion of gourmet delight as well as a tedium of toasts and counter-toasts of welcome and declarations of “mutual friendship between the peoples of America and China.” At the rate of a banquet every other day, the ritual rapidly became very wearing. Several of our party developed “small-banquet fever” which disabled them just before a not-so-important banquet; recovery from these illnesses was generally quite rapid.

Our most serious task in China was establishing contact with our scientific colleagues. We visited a variety of scientific and educational institutions in Peking, Shanghai, Canton, and Dalian. These included the Peking Physics Institute of the Chinese Academy of Sciences, the Academy’s Chemical Physics Institute in Dalian, Fu Dan University in Shanghai, and others. On each visit we would, after the traditional “brief account” of the institution given during the consumption of enormous amounts of tea, tour laboratories and workshops. A free exchange of questions and answers characterized the discussion at each institute. The Chinese were clearly as anxious to communicate to us what they could do, had done, were doing, and planned to do as we were to find out. Our suggestions and criticisms were requested in each laboratory, and occasionally our advice on future programs was solicited.

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Peasants on a commune in Hunan Province are thrashing rice using a homemade

wooden thrashing machine. The stalks will be dried and used to feed pigs.

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What is most clear is that fundamental science research in China appears to have been more or less at a standstill from the beginning of the Cultural Revolution in May 1966 until about a year ago. My impression of the physics laboratories we visited is one of vigor, enthusiasm, and high-quality personnel, but rather unsophisticated equipment and very little in the way of concrete results. For example, we saw two cyclotrons: one at the Institute of Atomic Energy outside Peking (built by the Soviets and producing 24 MeV alpha particles), and the other at the Institute of the Nucleus near Shanghai (completed by the Chinese in 1964 and modeled closely on the Soviet-built machine). The first of these seemed not to be in use; the experimental areas were, in a word, empty. The Shanghai machine has been employed for a variety of experiments since 1964, but since publication of journals was suspended from 1966 to 1972, none of the research has been published—although we were

told about (but not shown) internal documents which circulate among the researchers to keep their Chinese colleagues informed.

The major scientific work in Chinese physics (aside from, one must suppose, weapons research) seems to have been applied research and development of useful things. We saw an impressive variety of particle detectors designed and built at the Peking Institute for Atomic Energy. We visited several workshops where oscilloscopes were being constructed or integrated circuitry was being put together or crystals being grown and doped for use in transistors. The emphasis is on "integrating theory with practice" and "serving the people," if I may use the apt slogans of the Chinese themselves.

It was my impression that many of the Chinese scientists we encountered felt that soon they would be encouraged to take up less product- or mission-oriented research and that fundamental science would blossom again in China. Usually this expression of possible future developments would come in response to our queries about how China would be able to maintain any excellence in science without the stimulation of basic research.

Our Chinese colleagues in high energy physics seemed very bright and extremely well informed. They receive in Peking, Canton, and Shanghai all the important and respectable journals from the U.S. and Western Europe. Also they seem to read them quite avidly. In questions asked during and after our several lectures it became clear that many members of the audience had thorough and deep knowledge of the subjects covered in our lectures. They, of course, do not have access to the "private communication" level of research that (at least in physics) plays a healthy role in the stimulation of ongoing work. But, that understood, the Chinese physicists seemed every bit as well trained and as able as our colleagues in the West. Clearly, one may expect China to develop into a major source of productive and valuable ideas in all fields of science once the decision is reached and carried out to spend their still-limited resources in this manner.

I am personally very enthusiastic about the possibility of developing extensive scientific collaboration and exchange with our Chinese counterparts during the next decade. We may, very temporarily, find ourselves in the role of educator as Chinese science regains its strength, but I expect that this will be a brief interlude to complete intermingling of the scientific communities.

I feel that the model of how Chinese-American scientific contact may develop is that of the U.S.-Western European experience, *not* the U.S.-Soviet example. It is very inaccurate to extrapolate from the fact that Marx and Lenin are ideological heroes in both the U.S.S.R. and in China to any possible similarities in their cultural and scientific attitudes. The disparities are enormous, and I sense a real, viable future in American-Chinese scientific relations—one that will be achieved at a much more reluctant pace in U.S.-Soviet agreements. As Professor Tsien San-Tsang, the director of the Peking Institute for Atomic Energy, expressed it to us: "I feel that your visit is like the first neutron in a chain reaction."

I am confident that he is correct, and that he had *controlled* fission in mind. □



Members of the Revolutionary Committee in Shaoshan entertain at a "light" lunch.

On the right is Nobel Prizewinner Owen Chamberlain from UC Berkeley.