THE FIRST TEXAS SYMPOSIUM ON RELATIVISTIC ASTROPHYSICS

Born at poolside on a summer afternoon, the idea for a Texas-sized conference blossomed when it was realized that the newly found quasars might be relativistically significant.

Engelbert L. Schucking

Someone—I do not remember who—discovered that this is the 25th anniversary of the first Texas Symposium on Relativistic Astrophysics.[1] The discovery is the more remarkable since the conference is held every two years and the number 25 is, I believe, odd. Undoubtedly, this fact could, should and presumably will be explained by historians of science—thus I will not bother.

An interest in history awakens when the mind feebles and memory is gone. That's why I was invited to deliver this talk, which might well bear the classic title "What Little I Remember."

The first Texas Symposium was organized because Ivor Robinson was lonely in Dallas.

The idea to hold it congealed by a swimming pool in the summer of 1963. From the diaries of Brenda Biram we can fix the date precisely. Her entry on Friday, 5 July 1963, reads: "Arrived safely in Dallas last night. Champagne and brandy waiting at Ivor's." And on Saturday, 6 July, it says: "Met Alfred Schild, very charming. Lunch at Engelbert's—then spent the afternoon in the pool and went to a party at Manfred Trümper's [the relativist, now in Rwanda, Burundi or thereabouts, brother of the x-ray astronomer Joachim Trümper] in the evening."

The decision to hold the Texas Symposium was made earlier that day while Alfred Schild tried to teach Brenda how to swim in the pool. Alfred had come over from Austin for the long weekend, and Ivor and I, celebrating our reunion with Alfred's strong martinis, thought about breaking the spell of Dallas boredom.

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Schild, Berkner, Robinson & Co

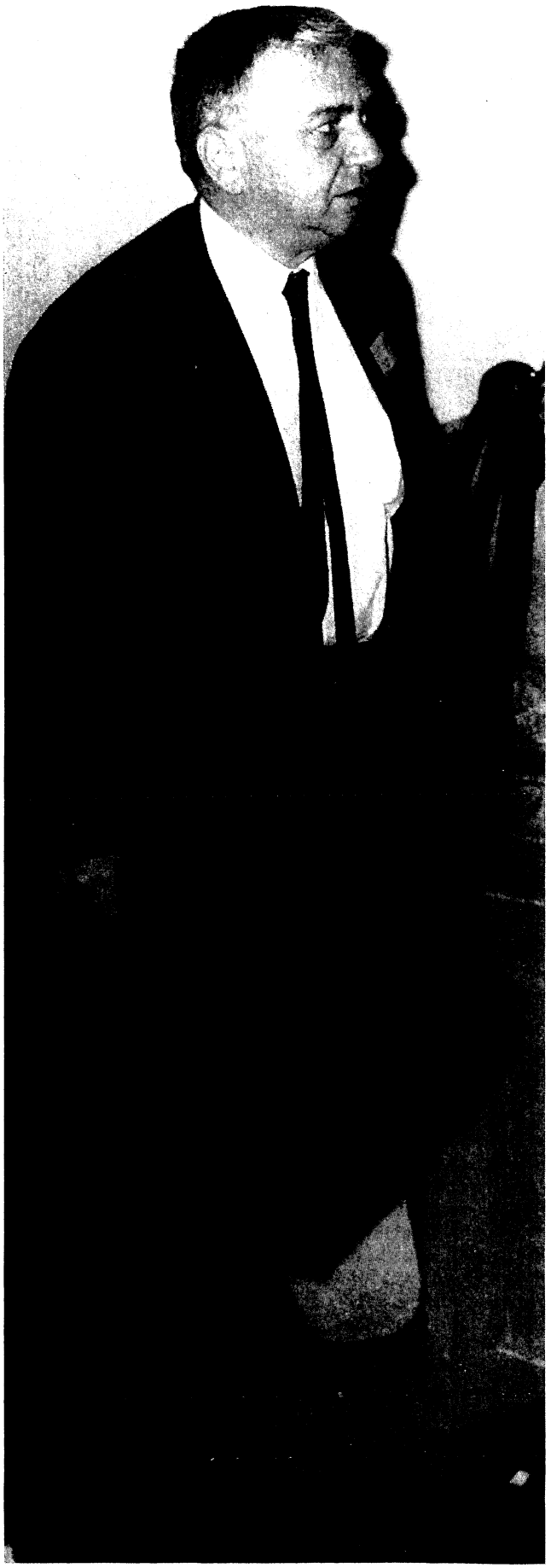
Schild, a Viennese Jew born in Turkey, had emigrated to England, was interned and shipped to Canada, and studied in Toronto. He became a physics professor in Pittsburgh, and, disgusted with American industry after a stint with Westinghouse, he settled in Austin. And so he became the founding father of Texas relativity. He also wrote the first paper on relativistic strings. They should inscribe his name in golden letters in Waxahachie at the SSC.

Alfred was an ingenious mathematician who loved relativity and women. When interviewed by the *Daily Texan*, Austin's student newspaper, on how the professor conducted his research into the nature of the universe, he explained, frank as ever, "I sit at my desk and think of girls—and sometimes I get a good idea."

When Alfred came to Austin, the university was floating high on oil revenues and had an intelligent dean in arts and sciences; furthermore, Peter Bergmann and Josh Goldberg had persuaded the Air Force Office of Scientific Research and Wright–Patterson Air Force Base that research in relativity was vital to the survival of the West and should be supported lavishly.

Alfred loved Austin and would not have admitted being anti-Dallas: He didn't hate it more than necessary. There were things he didn't like about his university, such as football and Frank Ervin, the chairman of the board of regents; he felt one should get rid of students who attended it solely for the purpose of obtaining a diploma. His solution: "Grant every American a PhD at birth."

In 1962 Alfred got me an associate professorship in the Austin mathematics department, and in the summer



Alfred Schild, "the founding father of Texas relativity." An ingenious mathematican, Schild was instrumental in bringing top scientists to the University of Texas at Austin in the early 1960s.

of 1962, while attending Andrzej Trautman's relativity conference in Warsaw, Poland (uncharitably described by Richard Feynman as being "like a lot of worms trying to get out of a bottle by crawling all over each other"), we persuaded Roger Penrose, Roy Kerr, Ray Sachs, Jürgen Ehlers, Luis Bel and others to flock to the newly created center of gravity in Austin.

Schild was a great organizer. When demanding the impossible from university administrators he would say: "I do not want to know *how* you do it. That is your job." But this division of labor did not invariably work. When I arrived in Austin Thanksgiving weekend, 1962, Alfred's drive had run into a roadblock. The block was a mathematician who would not cede the office of one of his graduate students to the foreign professors who, he claimed, were not as good as they. He threatened to use force in defending his student's office, and so Relativity moved into the Business Economics office building. Alfred and I became professors of physics.

The threat of force could not be taken lightly in a state where weapons were all right when not concealed. You may remember that when Marine Charles Whitman fired from Austin's tower, slaying among many the gifted relativist Robert Boyer, the students rushed to their dormitories and returned the fire. Alfred's reaction to the murders was, as usual, constructive and unconventional. He wrote an open letter to President Lyndon Johnson, demanding that he abolish the US Marine Corps.

Since Austin could not absorb all of Alfred's friends, he thought it would be good for Texas to have a second center for relativity, and Alfred knew just the man to head one. When Lloyd Berkner, the boss of the newly founded Southwest Center for Advanced Studies, was looking for scientists, Schild was happy to advise him: Get Robinson.

Lloyd Berkner was director of the Southwest Center for Advanced Studies in Texas from its establishment in 1961 until 1965. Given the responsibility of building "a Princeton in Texas," Berkner engaged Ivor Robinson to head the state's second center for relativity, helping to set the stage for the Texas Symposium on Relativistic Astrophysics.

Berkner had been a radio operator on Admiral Byrd's Antarctic expeditions. In his Dallas home he had a big Earth globe positioned upside-down, enabling his visitors to spot Berkner Island near 80° S and 50° W: a piece of real estate roughly the size of New York State, and definitely larger than the King Ranch. Berkner had made science his business—the big business of science administration. The Dallas establishment had engaged him for the task of building a Princeton in Texas when he got the recommendation from Alfred to hire "Zweistein." The physicist Lauriston (Larry) Marshall, head of the Office of Scientific Personnel in the center, probably agreed that a relativity group was just what the science-starved Southwest could use.

They might have liked to buy something more useful, but promising American scientists outside of geophysics and geology would rarely deign to settle there. To most the region seemed to be as magnetic as Paraguay. But Ivor was British, and Texas may have appeared to him just as absurd as the rest of America.

Ivor Robinson is a brilliant mathematician who showed us the elegant simplicity of space–time by pointing to its null structure. When urged to write up his ingenious deductions he felt, like Lev Landau, that this should be done by somebody else. Unfortunately, there was not always an Evgenii Lifshitz around, and so many facts of relativity are personal communications from Robinson. His other passion is politics. I have never met a political scientist as good.

Ivor arrived in Dallas at the beginning of 1963. Berkner's outfit was then located in a windowless cube on the Southern Methodist University campus. Although he recently had married, he was pining for company—for people who would recognize not only a null bivector when they saw one but also a quote from Iosif Dzhugashvili or Eric Blair. So he invited friends. He attracted the Ozsvaths and the Rindlers, who settled there. When I came to visit over the summer of 1963, there were the Trümpers, Cahens and Joanna Ryten, all from Europe, and even an American graduate student, who felt his unique status entitled him to order the departmental secretary to drive him to a dentist's appointment.

When Brenda Biram, a neighbor of Ivor's from his Ithaca days, arrived by bus from Chicago for the Fourth of July weekend, she too had already been urged by the Robinsons, during their visit to Chicago the month before, to settle in Dallas and be sociable. Brenda was then assistant to Roger Shugg, the director of the University of Chicago Press. She was a writer and a poet who conducted Shugg's correspondence with authors and presses in a quaint Trollopian style, lending her boss a veneer of sophistication.

'Giving a little spice to life'

While Ivor and I sat by the pool, Alfred supported Brenda in the water, offering to show her later his translation of Friedrich Dürrenmatt's play *The Physicists*, and it occurred to us it would be nice to do something together. Larry Marshall, Fred Seitz's brother-in-law, was the Southwest Center's top scientific officer. He was a physicist who later wrote (with Berkner) a seminal paper on the evolution of the Earth's atmosphere. In an interview conducted by the center's public relations officer, Al Mitchell, he later recalled:

> I was sitting around on a hot day in July [1963] with Ivor and Engelbert Schucking, and they were fanning themselves (talking about the dull summer), and I said, "Look you fellows. You've got a golden opportunity . . . a new division and new territory to branch into. . . . Why don't you organize a little conference? Let's get a couple of dozen people together . . . and have a little conference on some interesting topic.
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> "That will bring some new people into the area, and it might [bring] some people you maybe would like to have. Give a little spice to life. . . ."
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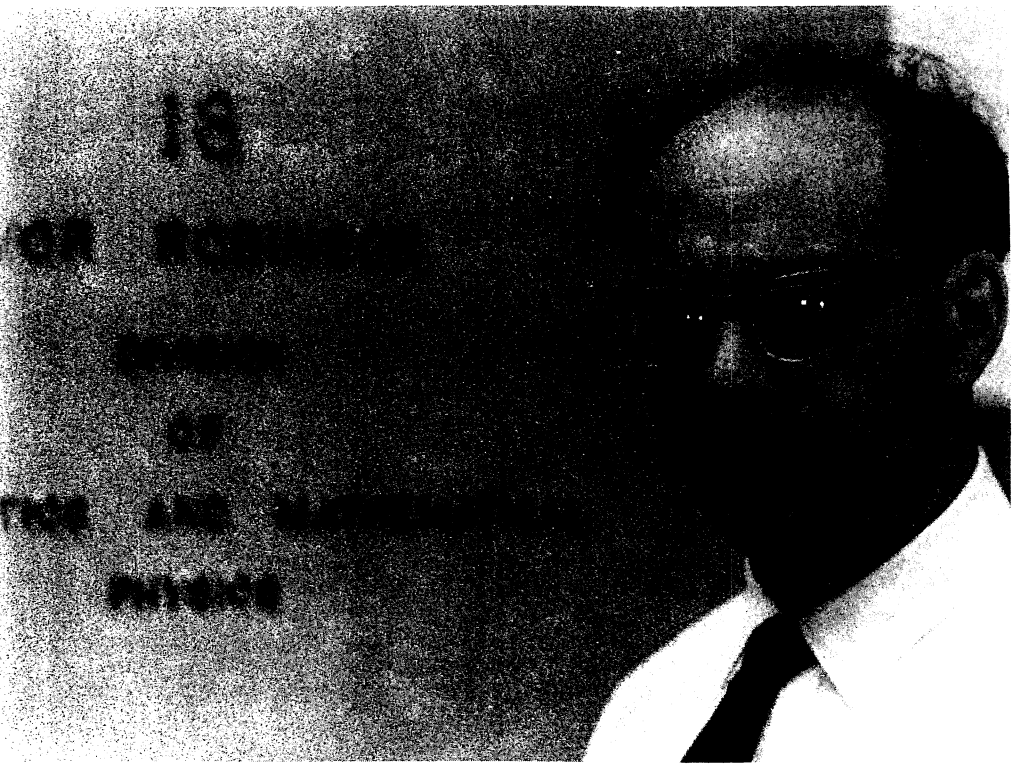
> Well, they spent the next several days mulling it over, and our original objective was a tidy group of not more than 25. We were going to have a summer conference, and pay all the expenses and that kind of thing. . . . Engelbert scratched his head one day and



Ivor Robinson, as head of the mathematics and mathematical physics division of the Southwest Center, attracted a respectable contingent of European scientists there. Also a prime organizer of the Texas Symposium, Robinson lobbied the Academy of Sciences of the USSR and the Soviet government to allow Soviet Jews, then not allowed to travel to the West, to attend the conference.

said, "You know, there are some new astronomical objects, observed by telescopes, and nobody knows quite what they are . . . ," and he said, "Why don't we hold a conference on the subject?"

Larry's suggestion of "giving a little spice to life" in Dallas blossomed at the poolside that afternoon into an extravaganza. Having become Texanized, we-all agreed: Why not do it in a big way? After all, the quasistellar objects, as astronomers then insisted on calling them, were the biggest things the world had seen. We'd invite all our friends, and the University of Chicago Press—which was to say, Brenda—could publish the proceedings.

You might have thought that the riddle of the just-identified quasars would not excite a mathematician like Robinson, being neither null nor political. But Ivor is Jewish, and he saw the quasistellar sources as "the quasistellar sources and the Jewish problem." You might have thought that would be a dry hole. Wrong!

Various people steeped in relativity and astrophysics, such as our friend Vitaly Lazarevich Ginzburg, were Soviet Jews not allowed to travel to the West. And we were going to invite them all, as Alfred said, "just to show the bastards in Moscow." And Ivor began to craft his letters to the president of the Academy of Sciences of the USSR and the Soviet government with the theme "Let my people go"—to Dallas.

At first Ivor did not succeed. It took the pressure of more campaigns of Texas meetings until Ginzburg and Iosif Samuelovich Shklovski were finally allowed to come. It was a heroic effort. (Now we are thinking about relativistic astrophysics and the Chinese problem, hoping that Fang Lizhi will be here tomorrow.)

On that long weekend in 1963 I drafted a proposal, which Alfred, Ivor and Brenda edited. When Alfred went back to Austin and Brenda to Chicago on Sunday, 7 July, we had decided to have a big bash in Dallas. Alfred had agreed to raise money from the University of Texas (that's how the "Texas" crept into the title for the conference), and Ivor from the center and government agencies. The Dallas money would be particularly valuable since it could

Brenda Biram, a poet and editor, worked for the University of Chicago Press. As Robinson and his wife urged her "to settle in Dallas and be sociable," Biram became the symposium organizers' contact in the publishing world, and she edited the conference proceedings.

Larry Marshall, the center's top scientific officer, originally proposed the symposium while sitting around on a hot day with Robinson and Engelbert Schucking: "That will bring some new people into the area. . . . Give a little spice to life. . . ."

be spent on liquor, while the Lone Star State money from Austin could be used only for more sober expenses.

Larry Marshall was enthusiastic, and Lloyd Berkner approved, giving his full support. He kept good connections with the agencies and dispatched administrator Jack Robottom to Washington to obtain the necessary funds. Peter Bergmann, then at Yeshiva University, graciously consented to lend his name, and with it respectability, to the organizing committee, dispelling the notion that it consisted of just a bunch of wild-eyed Texans.

However, there remained something odd about the symposium that even the addition of Peter couldn't rectify: This was going to be principally an astronomical conference, and as far as we could see there wasn't a single astronomer in Dallas. But we fixed that. The suspicion existed that quasars might have something to do with relativity and thus might fit into an imaginary discipline combining astronomy with relativity. One of us—Alfred, Ivor or I?—invented a catch phrase for this new field of science: relativistic astrophysics. We could use our reputations as relativists to promote ourselves. The subject is now well established. There are textbooks about it.

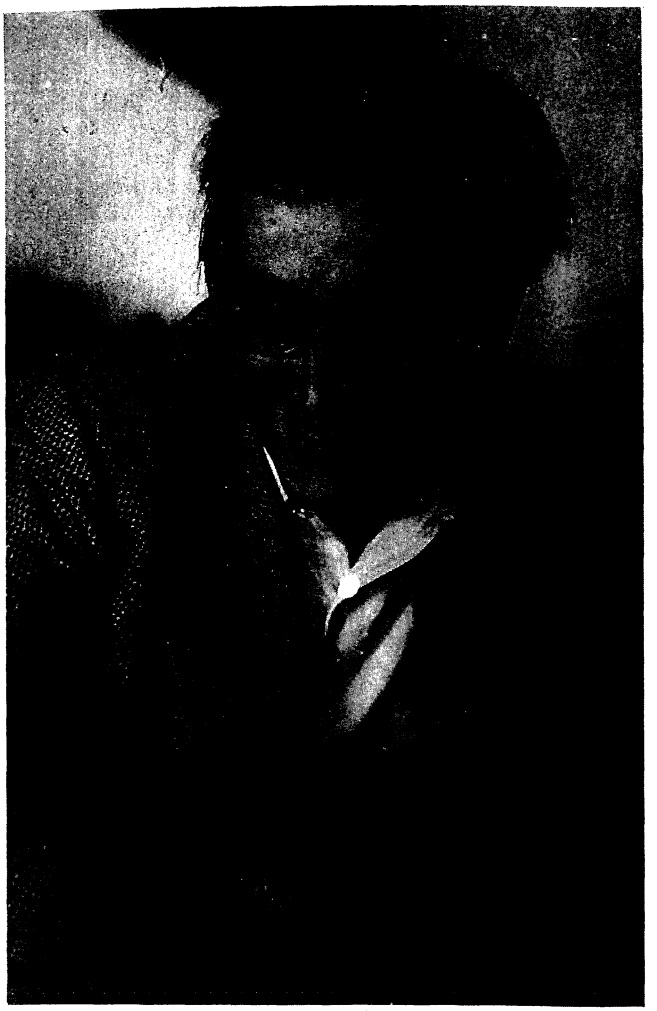
The astronomer Nancy Roman of NASA thought it was a terrible idea to have a monster conference on a special topic. But we didn't care. We invited almost everybody we could think of.

Naturally, we made mistakes. We didn't invite Chandra[sekhar]. Why? Perhaps for the same reason why, when making plans for an aquarium, one might neglect to include the blue whale. Another mistake emerged after Alfred suggested that Roy Kerr should talk about his newly discovered metric. Since I was making up the program, and Roger Penrose had mentioned that he understood the structure of the singularity better than Roy, I coaxed a very reluctant Roger into overcoming his deep misgivings about presenting this talk. Then Joan Penrose disclosed to Joyce Kerr that her husband was going to talk about Joyce's husband's stuff. Joyce told her husband, and Roy was hopping mad. And rightly so. I saw the inexcusable error of my ways, and Roy gave a brief talk that, in retrospect, turned out to have been the most important announcement of the symposium. He had found that a rotating black hole is a consequence of Einstein's theory of gravitation: the most important discovery in relativity since Alexander Friedmann found the expanding universe in 1922. Roy had also thereby pointed to one of the greatest energy sources in the universe. None of the three summarizers at the end of the conference, however, mentioned his paper.

The principal talk at the conference did not materialize. Maarten Schmidt, the discoverer of the quasars, whose brilliant insight had brought us all together, refused to talk about his discovery. I had known the shy, ingenious Dutch astronomer for a couple of years and urged him over drink after drink to speak. But Maarten remained adamant: His Caltech colleague and senior, Jesse Greenstein, who had missed the discovery, was going to give the talk. Perhaps by obscure Leiden protocol the senior professor had to be the mouthpiece.

Robert Oppenheimer chaired the first session. We had wanted him not only to show our loyalty but also for the opening discussion on the greatest of his discoveries: the black hole. He spoke of observations of "incredible grandeur." I remember how strange I felt a few minutes before opening the symposium when he asked us to synchronize our watches. It was as if we were going to have another Alamogordo. My wife wanted to get something out of the conference—she wanted to sit next to Oppie at the banquet. She was disappointed: He lectured her about the differences between 13th- and 14th-century France.

It is now conventional wisdom that quasars are probably powered by rotating black holes, but it was here at Dallas that the black hole concept emerged as a serious astronomical hypothesis. Harlan Smith, who had just moved to Austin as the new director of the MacDonald Observatory, presented intriguing observations of light fluctuations in the quasar 3C273. Rapid changes had been registered in the time span of a week during the stock



Schucking was a professor at the University of Texas at Austin when the idea for the symposium began to come together. He recognized that nobody quite knew what to make of the new "quasistellar" objects, and proposed that the conference center on that subject. The suspicion that quasars might have something to do with relativity eventually blossomed into a new field of science: relativistic astrophysics.

market crash of 1929, about 3 billion years after the event. Besides whatever astrological significance the event had, it showed that the quasar engine could vary its power output by some thousand billion suns very rapidly and could not be much larger than a light week. It could well be a black hole.

John Wheeler, who preached the eschatology of matter ("the issue of the final state"), demonstrated that "black holes" were the ultimate fate of all big things. He hadn't coined this catchy phrase yet, but the concept was in its place. Not everyone believed him: Ed Spiegel vividly remembers how Wheeler's magic produced an expression of utter disbelief on the face of a most distinguished relativist.

Many of our colleagues had urged us to cancel the conference after the Kennedy assassination: Going to Dallas appeared to humor the murderers of our President. Moreover, who might be next? Larry Marshall remembered, "People like Peter Bergmann, at Yeshiva, were afraid to come to the conference because they were afraid they might get shot at in Dallas."

Publicist Al Mitchell added, "Ivor and I had to go to the then-mayor of Dallas, Earle Cabell . . . and get him to intercede by telegram, to invite the people specifically and assure them that they were going to come to no harm."

Anyhow, we didn't feel guilty of killing the President and went ahead. And Brenda published the proceedings.

Cocktail parties, not poster sessions

Although our motives in having a symposium in Dallas were not entirely unselfish (see above), the conference did not turn out as bad as one might have expected. I believe the reasons for this were to be found among the following:

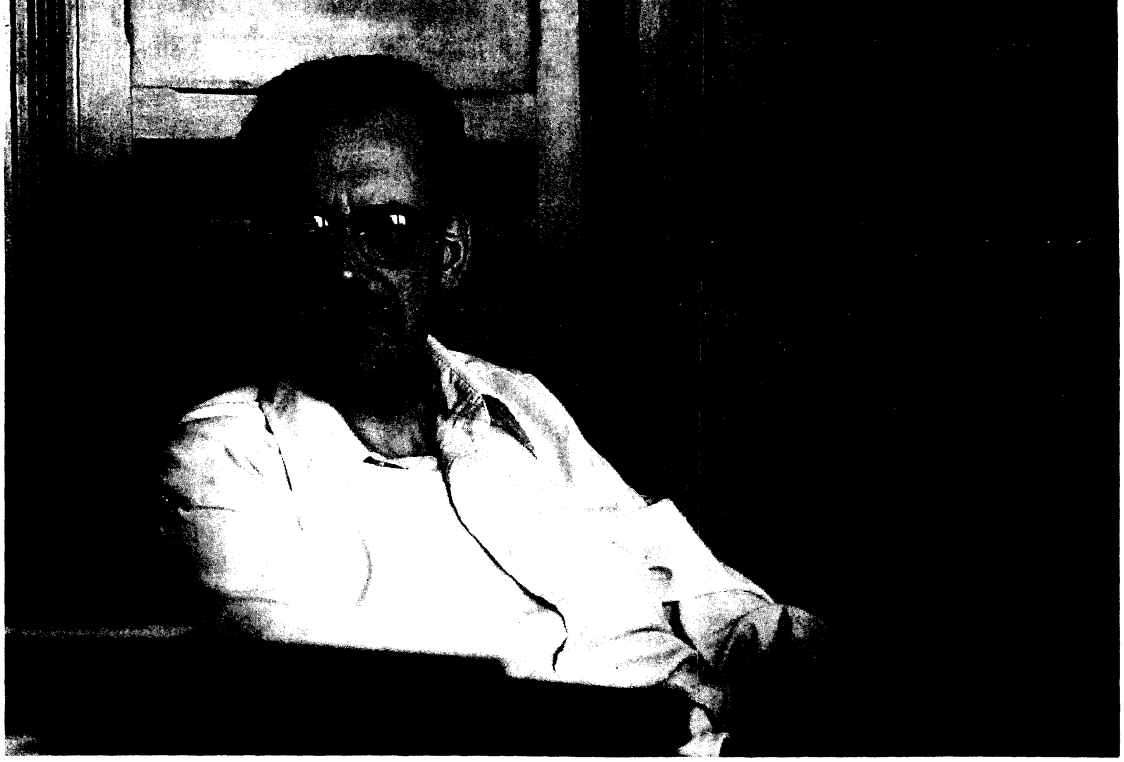
Timing. The topic was just right for reporting and sorting out observations as well as for theoretical analysis. The program was fixed less than half a year before the conference, leaving time for presentation of the most recent and most interesting results. The date of the conference was chosen such that people could get away and hotel rates could be minimized. I also remembered Wolfgang Pauli's method of communicating with his old friend Walter Baade, who often didn't open his mail. He dispatched his postcards so that they would reach Pasadena at the time of the full moon, when people who photograph faint objects might not be observing. The first Texas Symposium took place at the time of the full moon, when many optical astronomers become more sociable.

Format. We planned the conference along lines quite different from the mad ritual of APS meetings: no contributed papers with their ten-minute gibberish; no parallel sessions; long talks with ample time for discussion; a leisurely schedule, not starting too early; enough time for lunch and coffee breaks; no late and night sessions. We wanted to give people time to get together and think, not saturate them with information: cocktail parties rather than poster sessions. The conference was open—everybody could attend. There were no registration fees. All that made for a pleasant atmosphere.

Hospitality. We negotiated with all the major hotels, checked their facilities and made every effort to get low prices for rooms and luncheons. The free suites that the hotel threw in went to the elder statesmen, not the local organizers. We kept the banquet price low. People we supported were reimbursed in cash upon arrival. We used the local chamber of commerce for numerous complimentary services, and our secretaries tried to help the participants with all sorts of problems, be they diets for diabetics or finding baby-sitters. However, we did not provide for escort services. I don't remember why.

Publicity. We realized it would be useful to get good press. We invited Walter Sullivan of *The New York Times*, the dean of science writers, who came and filled columns about the Dallas stars. We also sought out popular journals and suppressed our natural arrogance toward those who want to know what they get for their tax money.

International character. We wanted to show our



Maarten Schmidt came to the symposium but refused to talk about his great discovery, the quasars. He insisted that his Caltech colleague and senior, Jesse Greenstein, present his findings.

visitors that we were civilized and didn't put ourselves and Texas into the foreground. This is the first time in 25 years that one of the three original organizers is giving a talk on the program of a Texas Symposium. In Dallas we had only Harlan Smith and Roy Kerr. The policy was: Use your own people only when absolutely necessary. If you have a choice, use somebody from abroad.

I shall close now by quoting the summary of the after-dinner speech by Thomas Gold at the first Texas Symposium (appendix iii of the proceedings[2]). The fact that Brenda had included it in the published proceedings upon the urgings of Alfred, Ivor and me led to her resignation from the University of Chicago Press. Here it is:

> It is my misfortune to have to make a speech to you and yours to have to listen. But many of you are in fact to blame—all those who the organizers in their wisdom had, in fact, asked before asking me.
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> First, let me use the occasion to thank our hosts; let us also thank the organizations that donated funds for the meeting. They all will get nothing in return other than a lot of papers and a chance to look at a bunch of confused and bewildered scientists.
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> This, of course, is a historic meeting. It will be remembered as the meeting where these great new astronomical discoveries were first discussed. It will also be remembered for the display there of strong men wrestling with even stronger facts.
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> It was, I believe, chiefly [Fred] Hoyle's genius which produced the extremely attractive idea that here we have a case that allowed one to suggest that the relativists with their sophisticated work were not only magnificent cultural ornaments but might actually be useful to science! Everyone is pleased: the relativists who feel they are being appreciated, who are suddenly experts in a field they hardly knew existed; the astrophysicists for having enlarged their domain, their empire, by the annexation of another subject—general relativity. It is all very pleasing, so let us all hope that it is right. What a shame it would be if we had to go and dismiss all the relativists again.
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> Texans will wonder what it is that they have got themselves into here. These people who come here instead of concerning themselves with constructive aspects like "the impact of relativity on contemporary American thought" or "relativity and the American way of life" or perhaps even "gravitation and the search for oil." Instead these people concern themselves with so obviously negative a topic as "Collapse: The Morbid Pathology of Matter."
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> The critics can now fortunately be silenced—I don't mean in the grand manner of the West—but they will be silenced by the discovery made by Harlan Smith that finally the elusive origin of the stock-market fluctuations has been found. Stellar photometry will never have to worry again about financial support.
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> Now I must stop so the people can go in the local tradition to their favorite club with their little brown paper bags.

Brenda died,[3] and so did Lloyd,[4] Larry[5] and Alfred.[6] Let me end by quoting one of the dicta by which Alfred Schild lived: "Institutions are not important, but people are."

References

1. H.-Y. Chiu, PHYSICS TODAY, May 1964, p. 21.
2. I. Robinson, A. Schild, E. L. Schucking, eds., *Quasistellar Sources and Gravitational Collapse*, U. of Chicago P., Chicago (1965), p. 470.
3. E. L. Schucking, Law, Medicine & Health Care **13**, 261 (1985).
4. PHYSICS TODAY, August 1967, p. 77.
5. F. Seitz, PHYSICS TODAY, March 1980, p. 100.
6. E. L. Schucking, PHYSICS TODAY, March 1978, p. 79.