

## *Turk Storvick* of University of Missouri-Columbia

THE ChE FACULTY  
*University of Missouri  
Columbia, Missouri 65201*

**I**N 1946, IT WAS customary for the citizens of Albert Lea, Minnesota, to draft their men as eighteen-year-olds for Army service, whether or not they had finished high school. Truman S. Storvick started his professional career by enlisting in the Navy because as a naval enlistee for a two-year hitch, he was allowed to finish his senior year and consequently had the opportunity to hear the commencement speaker, the young mayor of Minneapolis, Hubert H. Humphrey.

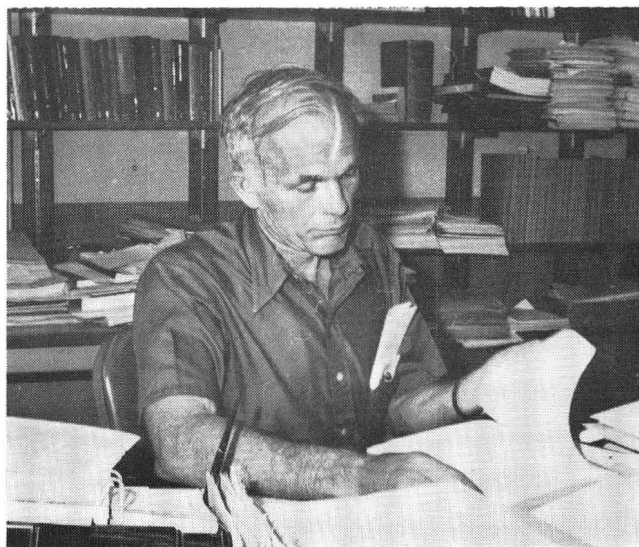
After being shaped up in boot camp in San Diego Storvick was "drafted" to play center on one of the football teams at the Naval Air Station in Jacksonville, Florida. Running under a kick-off on the specialty team, he suffered a knee injury which put him in the station hospital for eight months and ended the start of a brilliant naval service football career.

---

The thoroughness and precision of H. C. Van Ness' presentations in thermodynamics and the wide range of interests and the boundless energy of J. M. Smith provided additional marks.

---

The Navy, which does not give up very easily, assigned Seaman Storvick to the aviation division on the light cruiser U.S.S. Portsmouth, which was the flagship for Admiral Sherman, commander of naval operations, Mediterranean area. Here he learned the old and revered saltwater art of hollystoning of teakwood decks, and that the energy stored in a half-mile of  $1\frac{1}{2}$ " diameter tow cable, oscillating to the breaking point between two



Meet the Turk.

warships, is huge indeed. His travels with his naval colleagues carried him to Gibraltar, Italy, Sicily, Greece, Malta and Algeria, which were in a generally impoverished and damaged condition as a result of World War II action.

**T**HE NAVAL SERVICE was not an end in itself; so armed with a naval discharge Storvick took up an academic career in chemistry at St. Olaf College in Northfield, Minnesota. With the knee injury preventing him from picking up a football career, he became the team's trainer and manager. With energy to spare, he and another freshman, Dick Ovington, organized St. Olaf's first wrestling team, and persuaded Professor Hauberg to be the coach. Storvick's opponents in the 165-pound class learned what it meant to be wrestling with a "Turk." Spring brought the track season and more diversion from study.

Chemistry and athletics hardly filled the week, so there was time to meet Lynn Abrahamson, who later became Mrs. Storvick, who was one of his fans. Another year showed that a career in chemistry did not interest him as much as

he originally thought, so it was off to Iowa State University where chemical engineering was a full-time major.

Chemical engineering at Iowa State provided the inspirational teaching of Gerry Beyer and a very short but enriching experience with Morton Smutz. Unit operations under B. F. Ruth with those 105 heat transfer and fluid flow problems in one quarter (at slide rule speed) made a lasting impression. Academic work was put in perspective with part-time work in the Engineering Experiment Station in the oil seed solvent extraction laboratory directed by Doc Arnold and the tutelage of graduate students Dennis Griffin and Bill Juhl.

### INDUSTRIAL WORLD

WITH A B.S. DEGREE, Turk and Lynn set out into the real world. His supervisor with Westvaco Division of FMC in South Charleston, West Virginia, was George Sklar who had him unraveling difficulties in a packed distillation tower for the separation of by-products from ethylene dibromide before he was assigned an office. This led to other challenging work in the pilot plant, field construction inspection, operation manual preparation, operator training and plant startup for Westvaco's methane-sulfur to carbon bisulfide plant. Some preliminary cost analysis filled some weeks before "we scaled up Gilman's Organic Synthesis procedure for making unsymmetrical dimethylhydrazine (or how do you swirl a 1000-gallon Florence Flask)". This led to the initial development studies on the catalytic hydrogenation process for making UDMH as the space program demands increased.



"Running—the best sleeping pill I've ever found."

---

After boot camp, Storvick was "drafted to play center on one of the football teams at a Naval Air Station."

---

### RETURN TO ACADEMIA

THESE EXPERIENCES convinced Turk that there was a good deal about chemical engineering that should be learned if he was going to continue his work in engineering research; so off he went to Purdue. *The thoroughness and precision of H. C. Van Ness' presentations in thermodynamics and the wide range of interests and the boundless energy of J. M. Smith provided additional marks. Alden Emery only claims to have "signed the forms" for the peripatetic Joe Smith who served as dissertation supervisor, but his style was also an important factor in the Purdue venture.*

A semester as an instructor whetted Turk's interest in teaching and an invitation from Gerry Beyer to visit the University of Missouri followed. A trip on the Wabash Cannonball from Lafayette to St. Louis, the Wabash Railroad to Centralia, Missouri, and the final twenty miles to Columbia on the Wabash spur provided the introduction, and he joined the faculty of Old Mizzou in February, 1959.

The calorimetry work with Joe Smith revealed some deficiencies in the p-v-T data and transport properties of gases. With lots of help from the National Science Foundation (NSF), facilities were built to make p-v-T and viscosity measurements on gases at high temperatures and pressures to provide tests for available theoretical models of these properties. Later, a study of the thermal conductivity of gases led to building an apparatus to measure the thermal transpiration effect in gases and a hard look at gases at low pressure.

Turk has a reputation for being where the action is. When digital computers were introduced to assist students in the solution of their assigned class problems (and by the way, engineers working in industry were also encountering their use), he worked to support this academic function by engaging in a number of academic "administrative skirmishes." It's always essential to maintain a sense of humor in these activities and after decisively losing one such battle, he pre-

sented the graduate a bottle of bourbon ("I found out later he drank only Scotch") and a congratulatory speech. The irresistible move toward massive centralized computing systems proceeded as Turk and Sam Dwyer ("the hardest working guy it's ever been my pleasure to know")

---

With energy to spare,  
he and another freshman organized  
St. Olaf's first wrestling team.

---

spoke for the development of engineering laboratories based on small, special purpose computers for research and teaching. "The pocket-sized desk calculator and small, special purpose computers have revolutionized engineering education, research, and practice for the fourth time in twenty years. The next change will be miniaturization and reduced costs with yet another big change before 1980."

Classical chemical engineering education provided poor tools to read the chemical physics literature, so armed with a NSF science faculty fellowship, he spent a sabbatical year at the University of Maryland's Institute for Molecular Physics in 1965-66. Private readings in statistical mechanics and kinetic theory were supplemented by attending formal courses taught by J. Robert Dorfman and Elliot Montroll. Five papers were published jointly with E. A. Mason and Andrew DeRocco on the IMP staff and Tom Spurling, a postdoc from Australia, all of whom provided the excellent environment for work there. The IMP seminar series broadened the horizons as the outstanding chemical physicists living on the east coast came through and discussed their work.

The Thermodynamics and Transport Properties Research Center was set up and directed by Turk under a DOD Project Themis grant in 1967. L. B. Thomas and Bob Harris from chemistry, Paul Schmidt from physics, Dick Warder from mechanical engineering and Jack Winnick from chemical engineering provided the supervision and six post doctoral and some thirty pre-doctoral students contributed to a wide range of work that produced about forty papers over the five-year period of support. "This program provided one of the Federal Government's finest expressions of support for academic research and graduate education."

His classrooms at both the undergraduate and graduate levels are informal learning arenas. Students rate him highly as an instructor and look forward to getting into his classes. The "secret, if there is any that works, is to bring the student into an encounter with the course

material rather than with the instructor. To the degree you can do this for each person in the class, you can be successful." He is never too busy to assist a student in difficulty whether he is in the classroom, the laboratory or on the campus.

Proceeding from the view that a "sabbatical leave is one fringe benefit which makes the unsavory parts of academic life bearable," as the Robert Lee Tatum Professor of Engineering, he was awarded a senior postdoctoral fellowship from the Royal Norwegian Council for Scientific and Industrial Research at the Technical University in Trondheim, Norway. This provided time for individual detailed study of the kinetic theory of gases near solid boundaries. "We have no general theory that describes the behavior of gases in the transition flow regime. Our work on thermal transpiration requires this theory and it is essential that we work on this problem. S. K. Loyalka of the UMC Nuclear Engineering Department has made significant contributions in this field and the opportunity to work with him should be most interesting and fruitful as we learn more about the slip phenomena and perform the necessary experiments this work suggests." The hospitality of Professor Aksel Lydersen and the staff in the Institutt for Kjemiteknikk made this a once-in-a-lifetime experience for him in 1972-73.

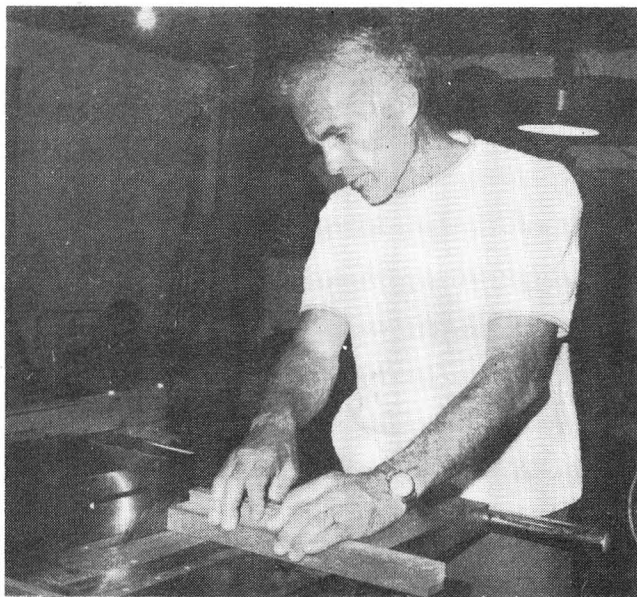
#### ACTIVE RELAXATION

OUR YEAR IN NORWAY was really family-centered." The Storvick children, Jan, Kris and Ole attended Norwegian schools (Ruth was a college freshman in the U.S.), and learned Norwegian, which they use currently. Cross country skiing is a national competitive sport, but on a winter week-end, everyone from crib to ninety headed for the ski trails that cross the forests covering the mountains. "The crystal beauty after a snowfall is just spectacular, and each turn in the trail is a picture-scene." The winter ski trails the Storvicks traversed became their summer

---

Students rate him highly as an  
instructor and look forward to getting  
into his classes . . . he is never too busy  
to assist a student in difficulty  
whether he is in the classroom,  
the laboratory or on campus.

---



Wood responds to careful work and attention.

hiking trails as the long winter nights were transformed into the perpetual light of midsummer night. A trip to the ancestral farm near Sundal-øra and a visit with the Storvicks who now live in Kristiansund provided a connection to the past. "Traditional celebrations in Norway were familiar since they survived the transplantation to Minnesota, and the passage of time, and were carried out by my parents."

Relaxation means working with the hands. Storvick's well-equipped home workshop transforms rough-sawed, seasoned walnut into custom designed furniture. "Wood responds to careful work and attention. The hidden beauty of the grain and color become a part of the design of the piece." Needlework, learned in Norway, has been added to his activities ("If Rosy Grier can do needlepoint, you can't call it lady's work in the Ms. age."). Turk has served as an elder in the Presbyterian Church, sung in church choirs and recently with the Musicum Collegium group at UMC, which performs vocal music from church and court dating from the fifteenth to the seventeenth century.

Contrary to popular belief, the departmental faculty at UMC are not recruited for their distance running abilities. Turk, a faculty member long before the F. J. Van Antwerpen Trophy for Physical Achievement was instituted, has twice been a member of the winning four-mile relay team. This past year he ran a record time of 5:24.1 for his leg of the relay and along with Dick Angus, Marc de Chazal and Dick Luecke, won the trophy for the third consecutive year. Running and handball provide outlets for frustrations and "the best sleeping pill I've ever found."

The Ph.D. program was initiated at Old Mizzou in 1944, but the number of graduates began to increase after Turk's arrival. The work load certainly was shared by those already aboard (Marc de Chazal and Gerry Beyer) and by other recruited members. Jack Winnick (Oklahoma), Dick Angus (Princeton), Dick Luecke (Oklahoma), V. J. "Tom" Lee (Michigan), Leonard Stiel (Northwestern and Syracuse), Lloyd Sutterby (Wisconsin) and chairman George Preckshot (Michigan and Minnesota) were brought successively to UMC to provide the faculty for this program.

## CRYSTAL-BALLING

WHEN ONE ASKS about the future, there is some head-shaking. The times are confusing and yet some important signals are showing "The future will be much more like the present than most people are willing to admit. Chemical engineering as a profession never looked better to me. How can we hope to attack problems in energy resources and supply (we better look at the consumption side of that equation, too), minerals and materials, food production and processing, environmental protection, etc., without bringing all of the physical and life sciences to bear on these problems. The only discipline in a University that offers most of these in a single program is chemical engineering. What a future! The major problem lies with the university itself, which now reflects society where every action and decision is politicized to the point where it cannot be recognized. Engineers are notoriously poor politicians and I fear we are in for rough times. University administrations want everything to appear democratic, so all faculty members are required to spend a major fraction of their time in their democratic responses which are swallowed up instantly by a political expedient. *Two extreme paths are open: either a small number of faculty will serve the administration as advisers and the rest of the faculty will be permitted to work with students, or we will see the management (administration)—labor (faculty) relationship of the industrial model prevail. The former is untested, but probably the best model for a university. The industrial model has been tested over many years and is often found wanting. Only a very few great men are willing to risk an unknown, even if it has a high return potential, so I expect to see the industrial model prevail in academia. Keep your productivity up and your costs down, but how are we going to convince a B.S. graduate he is only one more unit from our production system?*" □