



Big fifty for Bill.

A FOURTH FOR FIFTY

"We don't have wood, paint or glass, but we're expected to come up with just about everything else," says Bill O'Connor of the Physical Plant stock room. And he's been coming up with things for a long time now -- 50 years next Sunday.

Bill arrived at the Institute on the day school first opened here in 1916, when traces of construction were still being cleared away from the newly finished main complex. He worked briefly in the Building 3 shipping room, then moved to Walker's rifle range, but has been a storekeeper for "44, maybe 46 years." Through the years his stock has grown to number more than 5,000 items, "and that's not counting different sizes," he says. The move of the stock room to Daggett from its cramped quarters in old Building 30 has put everything within easy reach. "Before," said Bill, "we sometimes had to climb up nine or ten feet to get things."

A Cambridge native, Bill grew up near where Norbert Wiener lived as a boy and remembers the famous mathematician as a youthful boomerang maker. In his early years at MIT, Bill knew Prof. Wiener and "just about everyone who was here," and is sorry that the Institute's growth makes such wide acquaintance difficult now.

The end of the year will bring retirement for Bill, but he's not one to do nothing. He has a large home in Arlington where he lives with his sister and until recently kept a largish vegetable garden. "There's always something that needs to be done with a home like that," he says. But when things are done Bill thinks he may go traveling, no new experience for him. He's already covered most of the territory between the Canadian Rockies and Central America.

Next Wednesday (Sept. 28) Bill's many friends from all over the Institute are invited to a reception in his honor in the lobby of Kresge from 5 to 6 o'clock. Among the guests expected are three colleagues who have already passed the 50-year mark and are looking forward to welcoming Bill into their elite circle.

IN MEMORIAM

Word was received of the death of Mrs. Frederick G. Fassett, Jr., at Damariscotta, Me., last week. As the wife of the emeritus Dean of Residence and, for ten years, hostess of Moore House, Julie Fassett's charm and warmth brightened the lives of many of the Institute's people. Her rare gift of remembering the right names to go with the right faces endeared her to everyone she met, even once. When the Fassetts retired to Maine last June, it was written that their association, especially with undergraduates, "must have been for many the major sight of gentle manners the Institute allowed."

THE WONDERFUL WORLD OF MIT

The pace of the Institute quickens each fall with the start of the academic year. September brings not only students but hundreds of new employees, all mystified by room numbers and the Institute's alphabet soup. The recollection that we were all new here once has prompted Tech Talk to try to give puzzled newcomers a quick overview.

The Great Dome is an invaluable help when you're lost. All MIT buildings are numbered and their numbers are assigned by their direction from the dome. Buildings to the east carry even numbers; those to the west, odd. Recently

many campus buildings have also acquired directional letters--an additional help in orienting yourself in relation to the dome.

Altogether, we are something over 18,000 people, making the Institute a true community, "an interacting population of various kinds of individuals in a common location." The kinds of services and activities available here reflect the diverse needs and interests of so large a group. More details will follow in later Tech Talks.

The Medical Department (Ext. 4481), already familiar to you, offers as wide a variety of services to the community as do most hospitals. The recent addition of the Institute's first electric record files has speeded up the procession of more than 60,000 visitors through the Medical Department each year.

An experienced staff of over 80 specialists makes up the Graphic Arts Service (Ext. 4765). Maintaining a complete report reproduction center, Graphic Arts services include typing, ozalid and photostat copying, blue-printing, general photography, drafting and offset printing. Added to these are the portrait studio, illustration department, letter shop and bulk mail service. "Satellite" offices in Buildings 3, 52 and E19 expedite Graphic Arts central services and provide copy machines for quick reproductions.

Food for the body is served up through the Dining Service (Ext. 2731) at several locations: Walker Memorial on the east, and Ashdown House and the Stratton Building on the west side of Mass. Ave. Prices are modest in all three cafeterias. The Twenty Chimneys on the third floor of the Stratton Building provides more elegant dining. If you're really in a hurry, ubiquitous machines dispense all manner of snacks, sandwiches and coffee.

Physical fitness, rightfully in vogue these days, gets a firm boost from the Athletic Department (Ext. 2913). The purchase of an athletic card



(Above) New record in the Medical Dept:
7 1/2 seconds to any medical history.

(Below) Dining Service delicacies coming up.



(\$10/year) admits you to all athletic facilities except the Sailing Pavilion which calls for special arrangements. Coming up soon is a faculty-staff tennis tournament for which registration must be made by next Monday (Sept. 26) at 1 p.m.

The attraction of science to music makes MIT one of the most melodic campuses in the area. Altogether there are well over 50 concerts a year echoing the diverse tastes of the community. The starting line-up in Kresge this fall includes jazzman John Coltrane, Indian singer Subbulakshmi, the Hungarian Quartet and organist Peter Hurford. Prices for concerts, as well as other entertainments, are set with student pocketbooks in mind.

There is no lack of opportunity for those who appreciate music most when they help to make it. Fall auditions of the Choral Society and Symphony Orchestra welcome interested singers and instrumentalists, and numerous informal small groups spring up spontaneously.

With 20,000 book titles in stock, plus at least that many other items, the Tech Coop basks in the pleasure of being one of the finest college community stores in the country. A dollar a year buys a membership for anyone connected with MIT. Coop merchandise is competitively priced and the patronage refund offered to members makes the store an even more attractive place to shop.

The high percentage of foreign students and staff is what makes the Institute so cosmopolitan. An imaginative program run by the MIT Matrons is a friendly help to foreign wives whose English is limited. Nine-week informal courses in conversational English are held each fall and spring and are augmented by one-to-one contact outside class between each participant and a Matron. The fall session is scheduled to start October 4. Further information is available from Mrs. Herbert Uhlig at 729-4449.

Secretaries especially are in demand by two mainly-male student groups, Dramashop and Tech Show, for their productions. The long-established Community Players and the rapidly rising Gilbert and Sullivan Society welcome all comers. If you can't act or sing, there's plenty of production work for those with nimble fingers and a liking for paint. Never a month goes by without a colorful offering from one of these groups. In fact, the Gilbert and Sullivan Society will introduce itself to newcomers on Sunday (Sept. 25) with two free performances of "Trial by Jury" in the Little Theatre of Kresge, at 3 and 8 p.m., each followed by a reception.

Communities have civic responsibilities too. Each year there are two major campaigns which, though voluntary, draw deservedly wide support. Coming up next month is the United Fund, the only authorized solicitation for charities held at the Institute. Much will be said about it in the coming weeks, but it's not too early to begin thinking about it now. In late Winter the Red Cross comes to spend a week on campus in its life-saving blood drive. This happens at a time when blood reserves are usually low and donations are particularly needed. Though the Institute's blood bank has a good record, only about ten per cent of the community donates. Since everyone can draw from the blood bank free of charge, it should be a source of pride to contribute, too.

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How many do you know?

FOR SALE, ETC.

Weightlifting set, 220 lbs, \$20. X1146 or VI 6-9390 evgs.
 Castelli fl size 120 bass elec accordion, w/8w hi-fi amp, \$150. Joe, X3976.
 Fur coats: fl length bl raccoon, 3/4 blond muskrat, muskrat cape, squirrel
 cape, very reas, gd cond. MI 8-6053.
 Honda '65 Super Hawk, 305cc, 5K, like new. Ron, X6909.
 Prem tires (4) 8.25x15 replacing 7.10x15, used 4 wks. Polaroid camera, 8 yrs
 old, new inside, best offer. Alan, X6861 or 484-6532.
 Deep Bristol blue Morgan Jones twin bedspreads, used once, \$5/pr. Mrs. Peach,
 X5170.
 AKC beagle pups, m&f. X269 Bedford or 486-4630 evgs.
 Jordan-Marsh med size refrig, guarantee, needs new door gasket, \$10. Shupe,
 X2256.
 New ping-pong tbl w/net etc, orig \$40, now \$25. Joyce, X5361.
 Dbl pearl ring, 14K gold, best offer. Call 266-0261 evgs.
 Gas refrig, 11l; elec refrig, \$16; apt size gas stove, \$6; dbl & 3/4 beds, \$16 ea.
 Call 862-1943.
 Console 17" TV, gd sound, fair pic, \$19. Mark, X1557 or 862-0528.
 Ham station, Lafayette recvr & transmitter, etc; stereo system, Lafayette amp,
 tuner, Garrard trntbl, Empire cart, SK 128 spkrs. David McCabe, X1254.
 Williamsburg 4-pc pewter coffee set, new, value \$250. Call 354-1369.
 K tbl w/4 ch, best offer. Call 266-0261 evgs.
 Yamaha '64, 125cc, 7K beaut cond, elec start, turn sig, trouble-free, asking
 \$250. Call 547-0858 evgs.
 Wh silk-like Fiberglas drapes, cover 12' wall, \$35. Call 926-1463.
 King's Cruiser 28' sailing sloop, '66 eng, sacrifice. Call 969-8757.
 Approx 100 78rpm's from '30-'40's; blank tapes; 2-tr stereo pre-amp recorder.
 Call 479-8144 evgs.
 Man's 3-spd bike, \$18. Songster, X3720.
 Gibson elec guitar, perf cond, new \$165, now \$110. Tim Casady, X5989.
 Nikon F photomic camera w/1.4 lens & 43-86 Nikon Zoom; also Nikorex camera
 body, extras, all for \$450. Hale, X360 Linc.
 Electrovoice spkr cab w/ EV LS-12 & horn tweeter, perf cond, \$50. X5349 Linc.
 Woman's Eng 3-spd bicycle, exc cond, best offer. Call 547-9223.
 Garage sale: furn, books, toys, equip, rugs, etc. Call 861-1278 for inform.
 Dinner service for 12, perf cond, org \$80, now \$50. Call 696-6295.
 Matt, box spr, frame, exc cond, \$45; lg bureau, \$15; platform rockers, \$18 ea;
 lounge, \$20; other assorted household items. X6722 or 491-4714 evgs.
 Eng racing bike, 6-spd, \$25. Bob Platine, X3960 or 876-9594 evgs.
 Dyna FM tuner, 12w; Heath EA-2 amp; Rek-o-kut trntbl; Grado arm, mag cart;
 all w/cab; spkrs & spkr cab. X3770.
 Kemmore gas range, 2 yrs old, best offer. Ext 2851.
 Sealpt Siamese kittens, 8 wks old, \$25 ea; Gibson 12-str guitar, \$200 or best
 offer. Matson, X5737.
 Free: friendly grey male cat, 9 mos old. Call 868-5657 evgs.
 Free: upr piano, fair cond, come & get it. X2423 or RE 4-3136.
 Mahog fin dropleaf tbl, \$30, ch, \$15; divan, \$25. Miss King, X4872.
 Remington nylon 66 semi-auto 22 w/6X scopes, cleaning kit. Also wanted: reas
 priced ski equip. Jerry, X6542.
 Fl lamp, 3-way switch, \$7. X3539.
 Emerson 17" tbl mod TV; Eico FM tuner; RCA 4-spd phono converted to stereo,
 attrac cab; AM-SW radio, \$75 or best offer. X7441 Linc or 354-5166.
 Free kittens: all white and grey & white. Call 643-1813.
 Underwood solid ofc typwr, blank keys, exc cond, gd for beginners. Call
 868-4085.
 Dk green foam couches, 1 nearly new, \$50; one old, \$25. X2643 mornings.
 Phonograph, \$15. X6746.
 Nicron F cam, 1.4 lens, coupled mtr, soft leather case, used for 4 rolls, \$229.
 X5325 Linc.
 Lambretta '65, 125cc, 300 mi, perf cond, great buy, best offer. Lynne, X6153.
 Antique maple hutch, well top, 3 shlvs, bottom shlvs & drws, exc cond, \$175
 firm. A. Leiss, X6640 or VO 2-0035 evgs.
 Walnut bar, 50" long, 40" hi w/3 shlvs, like new, \$25. Call 522-6942.
 Twin walnut beds w/match bureaus, formica tops, \$80/set; twin bkcase hdboard,
 \$5; sm Fr prov cab, \$8. Call 861-0247.
 Two nice violins, \$100 ea. Mrs. Anker, X7622 Linc or 862-1760.
 Folding kyack to paddle or sail, 18' spars, sails, paddles, comp, gd cond,
 \$150. X6952 or 868-3205.
 Ronson 200 elec razor, used 1 mo, new \$20, will haggle. Kasra, X5661 evgs.
 DR single bed, birch head folds, custom matt, \$85; DR 3-panel drapes, fl
 length, \$45. Call 876-3765 evgs.
 Lambretta '63, mod 175, 5K, \$270. Bob, X3584.
 Honda '64 Super Hawk, sl rusty, less than 2K, \$500 or best offer. Call
 868-8524 evgs.
 Elec guitar, dual pick-ups, hollow body, \$30. Call 245-1772.
 Ted Williams tent trailer, 1965, like new, 9x13 screened in, spare wh & tire,
 home made K box, many extras, asking \$600. Call 729-7367.
 Kitchenaide dishwasher, exc, \$130; fan, end tbls. Dave Frech, X4211.
 Bunk beds, 1 yr old, very gd cond. Call 277-7863 evgs.
 Vox Pacemaker 70w guitar amp w/vibrator, 4 mos old, exc cond, list \$130,
 asking \$80. Paul, X5019.
 Electric broom (vacuum) best offer. X5791.
 Baby carriage converts to car bed, stroller, \$30 or best offer; feeding tbl, \$4;
 car seat, \$4; lg shopping cart, \$4. Call 876-5752.
 DR set, Danish wal tbl, 2 leaves, 6 curved-back ch, \$175; Sheraton mahog
 buffet, \$50. Call 734-3962.
 Venetian blinds (4), \$10. Fran, X4257.
 Be thinking about all those you'll help by pledging generously to the United Fund.
 Admiral refrig w/freezer, 2 yrs old, \$75. Fiorello, X3485.
 Stroller w/storm shield, canopy, 3-position back rest, 1 yr old, \$15. Call
 923-1462.
 '54 Rockbody 3/4 ton Jeep truck, 4 wh dr, gd cond, \$450. Fisher, X5571.
 '55 Chevy, 8 cyl sedan, gd eng & tires, clean, \$50. X1333.

'57 Chevy 6 cyl, R&H, exc eng, body fair, \$135. Sandi, X122 Linc.
 '57 VW, R&H, exc tires, exc mech cond. X4929.
 '58 German Ford Taunus, gd tires & batt, very econ, reliable, \$120. Call
 354-3323.
 '58 Fairlane 2-dr sedan, 8 cyl, auto, R&H, gd tires & snow tires, dependable,
 avail 10/5, \$120 or best offer. Also Hermes port typwr. Dan Cohen, X2509.
 '58 Chevy, gd cond, new batt, \$200 or best offer. Call 491-6340 evgs.
 '59 Karmann Ghia, exc cond, \$550. Clifton, X5326 Linc or 776-1291.
 '60 Chevy 2-dr sedan, std, 6 cyl, gd run cond, tires, \$125 or best offer. A.
 Bertolini, X695 Linc or 648-4984.
 '60 Ford ranch wgn, R&H, 6 cyl, \$200. Call VI 3-7465.
 '60 MG A, needs body work, gd eng, many extras, \$250 or best offer. Julie Cole,
 X340 Linc or WA 6-2534.
 '60 VW, R&H, ww's, gd cond, best offer. KI 7-0739.
 '60 Ply, 4-dr, 39K, R&H, \$200. X4436 or 354-3595.
 '61 Studebaker, gd run cond, std, 31K, belts, snow tires, \$400. Frank, X6088.
 '61 Olds F85, snow tires, lug rack, \$750. Dr. Carpenter, 491-4262 evgs.
 '61 Fiat 1100 4-dr sedan, 36K, exc cond, orig owner, gd tires & snow tires, \$300
 or best offer. X7153 or 484-8419 evgs.
 '61 Falcon 4-dr wgn, gd cond, 1 yr snow tires, new batr. 25 mpg. B. Green, X1264.
 '61 Merc wgn, best offer. Bill Heintz, X3979.
 '62 Ford Fairlane 500, exc cond, auto, R&H, snow tires, p st, belts, \$700.
 Call 868-6447 evgs.
 '62 Renault Dauphine, very gd cond, \$300. X6746 Tjhio, or 868-8695.
 '63 VW, blue, gd cond, best offer. X7376 Linc.
 '64 VW sedan, R&H, 16K, \$995. John, X2534 or 227-9161.
 '64 VW sunfr, red, R&H, gd cond, \$950. Call 868-7949.
 '64 VW sedan. Paul, DE 2-4367.
 '64 VW, R&H, \$950. Vitto, X5737 Linc.
 '64 VW, R&H, exc cond, \$1050 or best offer. '61 VW, R&H, \$450 or best offer.
 Janet, 899-8531.
 '65 MG 1100 sedan, R, exc cond, leaving USA, \$1200 or best offer. X6683.
 '65 MGB, 4200 mi, wire wh, tonneau, convert top never used, best offer.
 BE 2-9736.
 '65 Karmann Ghia, exc cond. Sully, X1218 except Tues & Wed.
 '65 Mustang hrd top, 8K, exc cond, std, new snow tires, living country, must
 sell, \$1750. Ping, 876-6428 evgs.
 '65 VW, 10K, air cond, addl gas htr, red. RE 4-8540 evgs.
 '65 Buick skylark hrdtp, auto, exc cond. X3610.
 '66 Olds wgn, under 5200 mi, auto, fl pwr, air cond, \$3150. Also '63 Fairlane
 wgn, \$950. Alan Klumpff, X1379 or 358-7659 Wayland.
 '66 Buick Spec wgn, less than 5K, \$2200. X2921 or 862-3043.
 Arl, unfurn 5-rm apt, avail 10/1, 10 min walk to Mass Ave bus, \$115/mo. Call
 MI 8-3031 evgs.
 Arl Hts, 3 BR house, sunrm, fin bsmt w/2 fp, dishwasher & disp, excep value.
 Owner, MI 3-6610 evgs.
 Bcn HI 4-rm furn apt, incl util, no lease, \$190/mo. Jim Woods or Martin Don-
 ovan, X3227.
 Burl, 6-rm Cape, 1 1/2B, 17,000-sq ft, \$18,900. X6151 or X3751.
 Camb apt, 5-rms, unfurn, htd, \$100/mo. Call 933-0354 evgs.
 Camb sublet new 2 BR apt, B, LR, elec K, balc, air cond, \$210/mo. Call 491-8625.
 Littleton, lease w/opt to buy 3 BR ranch, lg LR w/fp & pic window, DR, pine-
 pan K, oil ht, 2/3 acre, sch bus service. Call 263-4437.
 Lynnfield sun home, 4-rm, mod B, 11,000 sq ft, waterfront. Call 593-1882
 before 3 p.m.
 Nahant room, 2 blocks from beach, K'ette, B, llnens, car pool to MIT. X5737.
 Wh Mtn farmhouse, sum, winter rental, all util. John, X3986.
 LOST: pink make-up bag incl gold wrist watch on 8/19, reward. X6240 or
 491-8473 evgs.
 Trade: Comp part B '64 Phys Rev for part A '65 Phys Rev. X5582.
 Wanted: male rmmate to share lg unfurn apt in downtown Boston, fp's, \$65/mo.
 John, 423-5954.
 Wanted: ride from Washington/Bright area Belmont to MIT, daily 9-5. Dot,
 X6146.
 Offering translations, Eng to Span, Span tutoring, Span typing. X5693.
 Wanted: miter box. Call 491-1319 evgs.
 Wanted: 16 or 20 gauge shotgun, reas. X3485.
 Wanted: ride at 5 p.m. from MIT to Belmont St Star Mkt. Ramirez, X4585.
 Wanted: fem rmmate to share Harv St., Camb, apt, pref grad student, own
 BR, \$75/mo. X6752 or 868-2611.
 Wanted: 8 or more spd bicycle. Jim, 868-8456 evgs.
 Wanted: male rmmate for mod furn 2 BR Back Bay apt, TV/hi-fi, \$60/mo incl
 util. X1278 or 1505.
 Wanted: ride from Park St, Brookline to Mass Ave, MIT, 9-5, gd compensation.
 Flora, X6477 or 6479.
 Think twice... you give only once for an entire year...UF.
 Wanted: fem rmmate for furn 2 BR apt, Comm Ave area, \$70/mo. Call 734-5623.
 Child care for 1 or 2 in my home nr Wat-Bel line. Also old but operating Maytag
 wringer washer, \$10. Call 924-3298.
 Wanted: gd used office mod typwr. Mrs. Abramson, X4407.
 Wanted: ride from Wayland to MIT, 9-5. Roz, X6636.
 Wanted: typing to do at home. Muriel Brandon, 599-5149.
 Wanted: ride, Hyde Pk to & from MIT, 9-5 daily. X5501.
 Interested in sharing a ride from Winch Estates to Lincoln? R. Cummings,
 X435 Linc.
 Wanted: ride from E. Bos to MIT daily, 9-5. Phyllis, X5204.
 Wanted: typing. Ann, X4508 or X4831.
 Wanted: 1 or 2 girls for furn apt, no lease, own BR, \$60/mo. Kathy, X1453.
 Wanted: sitter for 3 days/wk, Mon, Wed, Fri, 9-3:30. Call 876-4983.
 Wanted: ride from Winch to MIT daily, 9-5. Jane Hess, X6796.
 Swap West Gar sticker for lot 4648 or vic. Sprinsky, X3812.
 Wanted: spinet type piano suitable for apt, rent or buy. X2210.

WEAK BATTERIES?

A report recently released by the Atomic Energy Commission states that a hydrogen explosion at one of its facilities caused property damage amounting to nearly \$22,000. The hydrogen was evolved from five iron-nickel-alkaline power batteries inadvertently left charging in an unventilated equipment airlock. The explosive mixture is believed to have been ignited by one of a number of relays and microswitches that were activated when one of the airlock doors was opened. The violent explosion blew an airlock door weighing one ton from its hinges and caused considerable other damage. Calculations on the shear strength of the bolts holding the door show a pressure of from 45 to 75 psi. It is estimated that about a 10% hydrogen gas concentration was present. No people were injured.

As a result of this accident, the AEC recommends the following: avoid charging batteries in confined or unventilated areas; maintain adequate mechanical ventilation for batteries in service or being recharged; eliminate all sources of ignition and post "No Smoking" signs; meet standard National Fire Prevention Association code requirements for large banks of stationary storage batteries.

CONSTRUCTION BOOM

The construction and road-building industries often reach the peak of activity as fall approaches. Occasionally blasting caps used by these groups find their way into the hands of children unaware of the hazard involved. Since 1926 the Institute of Makers of Explosives has coordinated an educational safety campaign to warn children of the dangers of playing with these explosives. If you want to start an educational program in your community through the schools, youth groups, police or other organizations, material and display posters are available from the Institute of Makers of Explosives, 250 East 43rd Street, New York, New York, 10017.

SILVER SOLDER HAZARDS

Recent articles about health hazards associated with silver soldering have resulted in real interest in this problem by the MIT community.

Silver soldering is essentially a low temperature brazing process using various alloys, most of which contain 15 to 25 per cent cadmium. The health hazards mentioned in these articles refer to the much studied cadmium inhalation problem which can arise.

Obviously, the degree of hazard is directly related to the amount of cadmium vapors produced and the quantity that is inhaled by the person doing the soldering. These are in turn dependent on the cadmium content of the solder, the soldering temperature, the length of ex-



posure and the presence or absence of adequate ventilation. Studies done on these variables allow us to draw some tentative guidelines that can be used in assessing the hazards:

No silver soldering operations should be performed in small, confined, poorly ventilated areas. In large, open areas a gas-air torch seldom results in enough cadmium in the air to make a health hazard, but the use of oxyacetylene torches can result in sufficient cadmium vapors to be hazardous. Intermittent use (15-20 minutes a day) of the gas-air torch for silver soldering does not require special ventilation though the same usage of an oxyacetylene torch may require special ventilation.

The Occupational Medical Service can give advice on cadmium hazards and ventilation for areas where hazards may exist. Inquiries should be made directly to OMS, Ext. 2596.



FIRE AWAY!

Remove accumulations of rubbish. Replace worn or frayed electrical wiring. Don't overfuse electrical circuits. Have your furnace and burner checked by a qualified serviceman before the heating season begins. Don't discard cigarettes carelessly. Keep matches away from children. Store inflammable liquids such as gasoline in metal safety cans and don't use them as spot removers. These and other safety reminders will be repeated often during the next few weeks by various fire prevention organizations as Fire Prevention Week (October 9-15) approaches.

Daily fires as reported by New England newspapers are inconvenient, expensive and frequently tragic. Hundreds of them could be prevented by following the sensible advice above. Use fall house-cleaning as a time to rid your home of fire hazards.

FLAMING VAPORS

Flammable vapors of a heated benzene-acetone mixture ignited when they came in contact with the hot plates used to heat them during a degreasing operation on a laboratory bench. The flames flashed back to the glass cylinder, bursting it with explosive force. No one was injured by the flying shards of glass and burning mixture, but soot from the burned hydrocarbons covered a section of the laboratory walls, floors and apparatus.

When benzene degreasing was done in a chemical fume hood, the heavier-than-air benzene vapors were also ignited by the hot plate. The experimenter's hands were burned, and much of his equipment was destroyed by the ensuing fire.

These cases both illustrate lack of appreciation for a common property of volatile organic solvents: the driving off of flammable vapors by heating or evaporation. These unseen vapors, often heavier than air, can travel great distances to find a gas burner, hot plate, electric motor or other source of ignition, then flash back to the open container. All work with flammable solvents should be done in a chemical fume hood in which there is no source of ignition. If liquid must be heated, a steam chest or electric heating mantle should be used. In degreasing operations, a non-flammable solvent or emulsifying agent should be substituted for a flammable solvent whenever possible.

All organic solvents, even non-flammable, are toxic, and work with them should be carried out with adequate ventilation, preferably in a chemical fume hood.