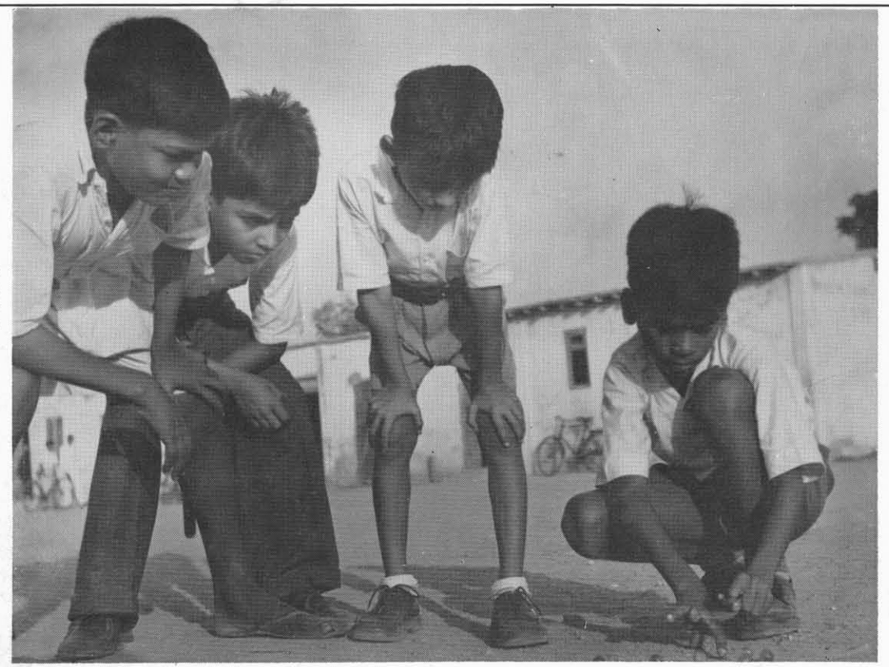

While his friends study his shooting form, a Pakistani boy gets added power by using his finger as a catapult.

GRAND OLD GAME OF MARBLES

cross. A marble is placed in the center and three are lined up three inches apart along each of the four arms. In turn each player toes the pitch line or knuckles down to it and tosses or shoots his shooter to the lag line across the ring. The player who comes nearest the lag line has the first shot.

The object of Ringer, of course, is to shoot the marbles out of the ring. A player knuckles down just outside the ring holding his shooter between thumb and forefinger with one knuckle touching the ground. Then he lets fly. If he can knock out one or more marbles and at the same time keep his shooter in the ring, he gets another shot and plays as long as a marble is knocked out and his shooter stays in. The player shooting the largest number of marbles out of the ring wins the game.

Hit and Span, also known as *Curbs,* is for two players and is a favorite on city streets, for it can be enjoyed on concrete. The first player throws a marble and the second player tries to hit it or come within a hand span — and keeps the marble, if he does. In *Nine Holes* small holes are dug in the ground, and players try to toss or shoot marbles into the hole. The player who first gets a marble in each hole in succession wins. *Pots* has only one hole or a ring of marbles, and if a player loses, his shooter stays in the ring for others to shoot at. *Knucks* is a penalty game —the winner shoots at the loser's doubled-up hand, to sting the knuckles. Other games have square instead of round playing fields and different numbers of marbles.

In other parts of the world children have their own games, which are passed from generation to generation. But they're all based on the same ability: knuckling down and hitting an opponent's marbles. Japan, largest marbles producer next to the United States, has long been a stronghold of the game. Russian children play marbles games very similar to games played all across Europe and South America, and, of course, many of the games played in North America came originally from Europe. No one knows exactly why marbles has appealed to so many in so many places, but there is no doubt that the simplicity of the game has a great deal to do with its universal appeal. All it takes is a little ground space, a handful of marbles and a couple of youngsters.

Interest in the game has been on the rise in the United States during the past years, due primarily to the development of the National Marbles Tournament, in which as many as 3 million children take part each year. Even the emergence of more sophisticated recreations doesn't seem to dim the enthusiasm of youngsters who, each year on the first warm day, find new pleasures in one of the world's oldest games. ■

ARAMCO WORLD

MAY 1961

A Chance To Clean Up!

Aramco World

MAY 1961 VOLUME 12 NO. 5

FRONT COVER: The young man about to let fly is knuckling down to a very important shot, as indicated by his expression of concentration and determination. His gallery of onlookers is no less appreciative of his skill than they are apprehensive about the large number of marbles the young man is in a position to remove from the ring.

PICTURE CREDITS: Front Cover: Black Star. Page 3 (top)—The Bettmann Archive. Page 3 (bottom), 5—Aramco photos by B. H. Moody. Page 4—Mrs. Esther B. Knapp, Pine Paddocks. Pages 6, 7—Eastern Air Lines. Page 8—United States Air Force. Page 10—Charles Pfizer & Co., Inc. Page 11—Culver Pictures, Inc. Page 12 (top)—Gemeinte Amsterdam, Bureau Voorlichting. Page 12 (bottom)—Fritz Gerritsen, Amsterdam. Page 13—Aramco photo by Jan Van Os. Pages 14 (top), 15, 17 (right)—Aramco photos by Khalil Abou El-Nasr. Page 14 (bottom)—Scalamandre Museum of Textiles. Page 16—Wesley Associates. Page 17 (left)—New York Public Library. Page 18 (bottom)—Frederic Lewis. Page 19—United Press International. Page 20—International Recreation Association.

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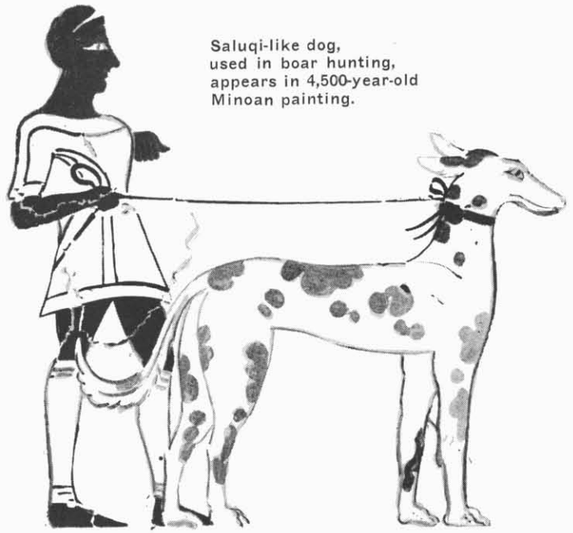
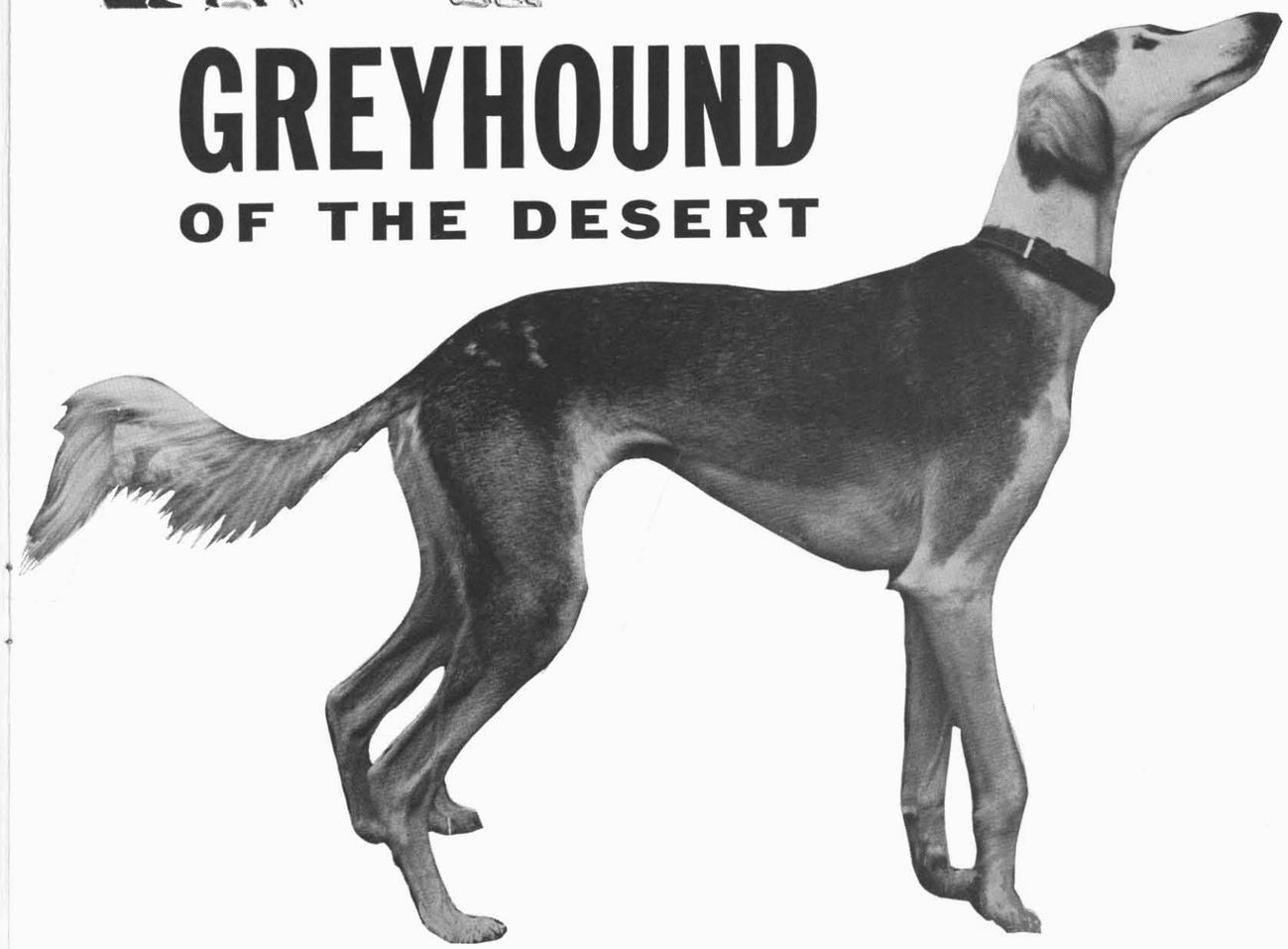


Saluqi-like dog, used in boar hunting, appears in 4,500-year-old Minoan painting.

THE saluqi may be the oldest pure-bred dog known to man. Egyptian tomb drawings from 4,000 B.C. show this lean, wind-swift hunter streaking after desert gazelles. And even earlier (6,000 B.C.) carvings show saluqis hunting gazelles; pre-Islamic poems extolled "the fine-trained, lop-eared hounds with slender sides which lightly outran the sharp-horned white antelope." Two thousand years later the Egyptians mummified him, and Babylonian artists made carvings of him. The saluqi was referred to in Egyptian literature as "El Hor," The Noble One, Royal Dog of Egypt. His gaunt beauty was memorialized by Mogul miniaturists, Veronese frequently included him in canvases and frescoes; and Cellini saluted him in a bronze *bas relief*. The speed and hunting prowess of the saluqi are often recited in Arabic odes. In the oral tradition of the vast Saudi Arabian desert his pedigree was passed on by word of mouth at the Bedouin gift-distributions of new litters. And today he courses after hare in the English countryside from Wiltshire to the Scottish border.

Little is known about the origin of the breed. Archaeol-

GREYHOUND OF THE DESERT



Swift scion of an esteemed and ancient line, the saluqi still speeds across the arid landscapes of Saudi Arabia

Although saluqis are at home on the desert, as shown here in Saudi Arabia with Carl Rodarty, they easily adapt to other climates. Carl, formerly with Aramco, brought (l. to r.) Snowface, Wahid and Leila to the U.S.

GREYHOUND OF THE DESERT

ogy has provided pictorial evidence of its desert beginnings and long durability. But the name, as it now survives, suggests an ancient Arabic background. *Saluqi* is the masculine singular in classic Arabic. *Silaqah* is the feminine form; *sulqan* and *salaq* are both used as the plural form. Transliteration, at best a tenuous art, has played hob with the *saluqi*. He is commonly referred to as *saluki* in English. A close phonetic approximation of the word (as heard in colloquial speech) poses a tough problem: *suh - loo - gee* isn't far off the mark if you do two things — dwell briefly on the *oo* sound and use the hard *g* of *grand* in *gee*.

In Bedouin life the male and female saluqi are valued equally. The women and children feed and look after the dogs, but the saluqi is never made into a pet in the Western sense. When they are quite young, the Bedouin children pet their dogs and scratch their ears, but the severities of life in the desert leave little time for the young and older men to practice such amenities. The Bedouins are proud of the breed lines of good saluqis (the Anglicized plural). The women of the tent prepare a "nest" for the female about to whelp. A hole is dug in the sand to provide coolness and shade. A good litter will attract callers who hope for the gift of a puppy. When he was traveling through the steppes and sandy reaches of the Saudi Arabian deserts, H. St. J. (Abdulla) Philby, the late British explorer who wrote voluminously and with profound and sympathetic insight about Saudi life, observed that the Murra and Manasir tribesmen were the best breeders of the saluqi.

The family feeling about the saluqi was effectively described by Philby in an incident during his pioneer exploration of Rub' al-Khali (the 230,000-square-mile "Empty Quarter" — the world's largest sand desert). Philby's party was about to leave a grazing place where a Bedouin family was quartered. It was nearly dawn and the baggage camels had started much earlier. Philby didn't know it, but the baggage train had left with an added member — a purloined white saluqi that belonged to the Bedouin family. The women came out weeping and begged Philby to return the dog. They explained that their children were stricken by the loss. Philby first offered to pay for the dog, but the women would not accept the money. ("The Arabs do not traffic in dogs, whose price is unlawful money.") Finally, he sent for the train of baggage camels and had them brought back. The dog was returned, and the children were delighted to see their saluqi again.

Although they never treat any dog — even a saluqi — as a pet in the American sense, Saudi Arab boys who have gone to the United States to college have not found it hard to enter into the American way of treating the family pooch. American friends in the Arabian American Oil Company generally brief them on this and other everyday customs of the American home. But the saluqi, dreaming of a juicy hare, could never conjure up the menu of a U.S. dog. Like the Arab horse (another splendid animal), the saluqi eats dates, stones and all. He shares meat with his master if the chase is good. And he may get a cup of camel milk from time to time. Philby has told of the saluqi named Al Aqfa who traversed Rub' al-Khali with his party (in bardic times she would have entered into the rhymed lore of the Bedu) and of her cast-iron stomach. During one side hunt, one of the guides was able to snag a baby hare alive for Philby's collection of desert life. That night Al Aqfa ate it. A short time later Philby covered the skin and the skull of another hare with arsenic soap as a first step in preserving it. Al Aqfa again raided in the night. The next day she was ill. But by sundown she had started to throw off the effects of the arsenic. Her good, tough, desert stomach saved her.

One searches for the childhood equivalent of *bow-wow* and *doggie* in household Arabic. An Arab guide from the south remembers children who had not yet learned to speak pointing to the family saluqi and saying, approximately, *duh . . . duh*. And another recalls young children saying *ow, ow*. But the adult Bedouin would find incredible the adult conversations with dogs that entertain many grownups in America.

The Saudi Arab in training a saluqi will never whip it. (A Bedouin guide started to tell a story about the time when he was a boy and his father caught him kicking at their sleeping saluqi. The father was enraged and . . . the guide stopped, a look of remembered pain clenched on his face.) The training of a saluqi starts at three months on desert rats. It then (if it is owned by a hunting shaikh) starts to work with a falcon. At six months it advances to hunting hares. At eighteen months it is ready to hunt game. Today there is less and less hunting of gazelle because of the nearing extinction of that superb beast. The Bedouin believes that the saluqi hunts entirely by sight, despite the fact that its sense of scent is acute. A born hunter, the saluqi in the desert night will raise its head to the moon and issue a long wail of imitation in answer to calling wolves.

The saluqi is a beautiful animal, gentle, affectionate and loyal in personality, and on the Arabian peninsula it is seen in two major breeds. To an American the smooth-haired saluqi looks like a greyhound. (Eighteenth and nineteenth-century British travellers called saluqis Persian, or Turkish, greyhounds.) They have long, narrow snouts, deep chests, fine waists, and hocks that are well down. The width between the thigh bones at the top should be about the width of a hand, including the thumb.

Saluqis are found throughout the Middle East and have evolved in a wide range of terrain and climatic differences. A range of height from 23 to 28 inches (ground to shoulder) is permitted, and any color is acceptable. The most common color in Saudi Arabia is grey to white with a range of dark-to-light grey markings. A larger saluqi, reddish in color, with longer hair and feathered ears and tail is bred in the shaikhdom of Kuwait, to the north of Saudi Arabia on the Persian Gulf. Americans have said that it reminds them of an Irish setter when it races all-out in the bright sun. The saluqi lopes with rare grace, and the female is often the faster of the breed.

The speed of the saluqi has been measured variously and without any real accuracy. At 40 miles an hour a pure-bred does not appear to have reached its ultimate speed. That's about a mile in a minute and a half. One desert observer has said that a good saluqi will not "lose" a gazelle. There is little doubt that this desert greyhound is the fastest of all dogs.

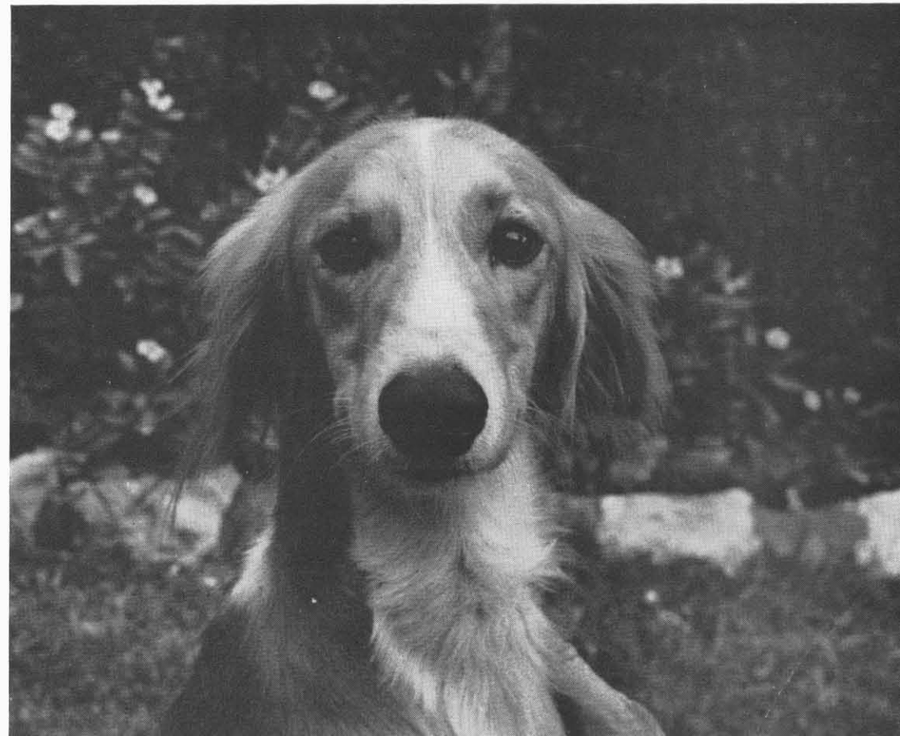
The saluqi may have been introduced to Europe by returning Crusaders. The dog in the bronze *bas relief* which Benvenuto Cellini executed for Cosimo de Medici in 1544 has been remarked by Hope Waters as "strikingly similar to . . . the handsomest in England today." This comment by an expert observer confirms the long purity of the saluqi breedline. In 1922 the saluqi was recognized as a distinct breed by the Kennel Club of England. Today breeders are active in both England and the United States.

The American saluqi was imported largely from England and represented in main the same quality as the British-bred stock. New blood came to be badly needed as continued inbreeding weakened the stock. The new blood came unexpectedly in 1949 with an exceptional pair, Ch Abdul Farouk and Ch Lady Sarona Ramullah, from the kennels of King Ibn Saud of Saudi Arabia.

British Field Marshal Sir Henry Maitland Wilson was the guest of King Ibn Saud at a royal gazelle hunt. All through the hunt one young, black male was noted to be "outstandingly clever." Afterwards, the King took his guests to see all of his saluqis and related their pedigrees in Arabic as each was led out. Some were smooths, some feathered and several had cropped ears. Everyone agreed that of all the saluqis seen that day, the young male of the hunt was the most impressive. Thereupon, the King insisted on presenting the male and a suitable saluqi mate to Field Marshal Wilson. When the Field Marshal was assigned to Washington, he brought the dogs along. The male, Ch Abdul Farouk, (now owned by Mrs. Esther B. Knapp, breeder of saluqis in Valley City, Ohio) was particularly interesting to American show judges because his ears were cropped. He completed his championship, unbeaten, and is the only cropped saluqi with this title.

And Ch Abdul Farouk is no doubt the only saluqi champion bred by a king! ■

The saluqi is a graceful dog, its speed inherent in the deep chest and slim waist. Owners claim that few dogs can match saluqis for friendliness and loyalty.



Global war logistics
put freight aloft and cleared the airways for

A SKY FULL OF CARGO

THE Vizier of Baalbek, Syria, in 990 A.D., proved himself a canny diplomat as well as a master of improvisation. He knew that his powerful neighbor, the Caliph of Cairo, had a sweet tooth for tree-ripened cherries. The Caliph had sampled them on his travels and spoke often of their delicate flavor. But the orchard nearest Cairo was 400 miles distant, much too far off to permit shipping perishables. Yet the Vizier was determined to win the Caliph's favor. Success would be his if he could solve the problem of getting fresh cherries to Cairo. And he did.

The shrewd old statesman shipped by air. Six hundred carrier pigeons were trained to home into Cairo, then taken to the orchard. Plump, juicy cherries were plucked and fastened to the birds' legs. The pigeons were then released to wing their way toward Cairo and the Caliph's table, and scribes took note of the first cargo airlift in history.

The Vizier's feat was spectacular enough for his day, but if he were alive now, he would think nothing of sending *tons* of cherries — or almost anything else — over vast distances in a matter of hours. A huge, efficient air cargo industry would be at his disposal. Today if a man from Minneapolis has a sweet tooth for fresh strawberries, he can please his palate with fruit that wings by jet from Florida in practically no time flat. Papayas are flown out of Hawaii regularly.

Not very long ago shipping goods by air was considered a luxury that few could afford. The choice of a winged carrier was often dictated by an emergency — as when a scarce serum was quickly needed to save a life. But times have changed. Today, in the United States alone there are more than 2,000 civilian aircraft that serve as commercial carriers, both scheduled and irregular. They all carry some cargo; some carry all cargo.

In 1960, certified U.S. carriers flew a total of 700,000,000 cargo ton-miles (a ton-mile is the equivalent of one ton flown a distance of one mile). The figure that year for the entire world, exclusive of the U.S.S.R. and Red China, was a whopping 1,495,000,000. Indications are that the figures will be higher for 1961.

What sort of cargo goes by air today? Few commodities can be named that haven't traveled by air at one time or another. Usually, though, speed is the determining factor, either for its own sake or because it introduces economies through swift deliveries. Sometimes air freight is actually cheaper than surface transport because packing and handling are minimized and insurance costs are often less.

All manner of animals take to the skies — including aardvarks and zebras for zoos — and crated birds are no exception. A hatchery in Ames, Iowa hires a light-plane owner to haul baby chicks, a few hundred at a time, to customers many miles away. Another flight of birds — 15,000 of them — was a recent shipment of Japanese canaries to America aboard a single cargo plane. They arrived, airline publicists announced, "in fine voice."

Fish fly just as handily today, too, and without ever leaving the water at that. One shipment, for example, was a half ton of Rhode Island striped bass, tranquilized and packed in water-filled plastic bags. The fish flew to Portugal for the benefit of that country's fishermen.

Monkeys fly so frequently nowadays that air cargo personnel usually don't bat an eye when they have a shipment of simians to handle. Once, however, a planeload of 300 broke out of their cages over the Atlantic. When the plane taxied to its New York cargo terminal, airline employees were startled to see each window occupied by a grinning monkey. And six cans of orange and black dotted ladybugs (135,000 to the gallon can), good fliers in their own right, were hied off from Arizona in 1954 and flown to Saudi Arabia. The reason: so that they could be released on farmlands to kill aphids and other crop pests.

The speed of flight is essential for some commodities or their value is suddenly gone — daily newspapers, for example. In Finland the Helsinki papers reach people all over the country, including Lapland, almost as soon as the man on the street in Helsinki gets his. Those delivered at Ivalo, 155 miles north of the Arctic Circle, are unloaded while reindeer-drawn sleighs fetch the plane's passengers.

The fashion industry has turned to air cargo to erase the "fashion lag" that used to exist between Europe and America and even between New York and other parts of the country. Formerly, a fickle public might change its mind during the interval between the introduction of models and delivery of stocks of those that met consumer approval. Now shelves are filled while buying fever runs high. Garments produced in Europe aren't necessarily reserved for high society either. Last year one French dressmaker shipped by jet to this country 50,000 gowns that retailed at about $20 each. For air travel, garments are enclosed in plastic bags and hung on racks, eliminating the need for unpacking and pressing at their destination.

Thriving as it is in mid-century, it seems strange that air cargo has developed as an industry only since World War II. Multi-engine planes that could carry more than a ton of bombs were built as far back as World War I, but freight was not hauled by air on a scheduled basis until aviation's capability was pressed to meet the needs of global conflict. Our fledgling airlines were spreading across the continent by the late 1920's, to be sure, but they carried only passengers, mail and a few small express parcels. Of today's three air cargo categories — mail, express and freight — the third was handled only by charter carriers — especially, in the 1930's, by the legendary bush pilots.

Those intrepid airmen flew where there was no other air transport and usually no other surface transportation. Their fame stems from uncanny ability to navigate over trackless wasteland and to land on impossible terrain, hauling mining equipment, explorers' gear, supplies and the like. But their air cargo pioneering was soon to be dwarfed

by the feats of flight demanded by war.

The United States was the only major participant in World War II that was thoroughly remote from all the fighting fronts. A system of world-wide strategic logistics immediately became imperative. The result was that the airlines, the Army's Air Transport Command and the Naval Air Transport Service built a network of routes to all parts of the world, complete with airfields and communications. In handling millions of tons of vital arms and supplies, they developed techniques for moving cargo efficiently. During its peak month (July, 1945), the Air Transport Command alone flew 174,000,000 ton-miles! At some battle fronts, air cargo literally saved the day.

In July, 1942, Rommel's armored forces were poised outside Cairo preparing to launch a devastating attack. Just at that time the defending British troops ran out of antitank shell fuses. A hasty call for help went to the Pan American Airways station at Accra in western Africa, which in turn diverted planes to Lagos, Nigeria, where a ship was unloading the desperately needed fuses. Seven aircraft flew the 3,100 miles to Cairo and delivered 15 tons of fuses just in time for a German attack to be repulsed.

By the time the war ended, civilian aviation had learned its lesson: freight *could* be moved efficiently by air. What's more, there were plenty of surplus aircraft and plenty of experienced men available. For the first time in history, all-cargo airlines were established, among them the Flying Tiger line whose pilots had earned a niche in history fighting against Japan. A new industry, air cargo hauling, mushroomed into existence.

Today the airlines carry as much as five tons of cargo in the bellies of passenger jets and up to 18 in all-cargo Constellations and DC-7F's. Along with ordinary packaged items, they carry bulky cargo such as dismantled helicopters and electronic computers. Qantas Airways once flew a complete television station from England to Australia. A 14,200-pound ship's rudder frame flew in style from New York to Italy.

The Arabian American Oil Company had need for a big helping hand from the air cargo industry. In 1954, Aramco wanted to speed a pair of portable pumping units, purchased in the United States, to Qatif, Saudi Arabia, for installation on a pipeline. By air shipping all the various parts, including two 400-horsepower diesel engines, on two KLM cargo planes (total weight of shipment: 83,000 pounds), the pumps were operating in a matter of days. Although air freight charges approximated the purchase price of the pumps and drivers, the delivery was economically justified since the pumps helped meet record pipeline delivery requirements.

German children watch arrival of C-54's during Berlin Blockade in 1948. Food, coal and other provisions (2½ million tons) were airlifted to West German sector.

Firms that take minerals from the ground — such as oil companies — almost inevitably end up with operations in remote areas where there is no commercial aviation. Then the company-owned plane is essential, and its pilot becomes today's counterpart of yesteryear's bush pilot. Aramco field operations extend into the vast desert area of Saudi Arabia called Rub' al-Khali. In some cases the company's four rugged, single-engined Beavers are the sole means for supplying men on the ground with the necessities of life, including water, as well as tools, equipment and spare parts. Aramco's permanent stations are served by DC-3's that haul everything from heavy machinery to Christmas trees. And for hops around the Middle East and to Europe, Aramco operates two Convair twin-engine transports.

The air cargo industry might have grown even faster had it had airplanes designed from the ground up strictly for cargo use, but only the government has been able to afford that. The result is that the Military Air Transport Service (MATS), successor to the Air Transport Command of World War II, holds the heavyweight crown for load lifting. Its huge C-124 "Globemasters" once airlifted an entire squadron of F-104 jet fighters — planes, spares, men and all — to Formosa. In support of "Operation Deepfreeze," an annual scientific expedition conducted below the Antarctic Circle, Globemasters have delivered thousands of tons of equipment and supplies. The loads, ranging from seven-ton tractors to crates of fresh eggs, are dropped by parachute onto the icy wasteland. MATS' newest cargo ship, the turbo-prop C-133, can swallow any of our huge missiles, including the 52-ton Atlas, and it has set a record of lifting 117,900 pounds to 10,000 feet.

MATS is known best for its mercy missions to many of the world's people. As its first, it carried out the famed Berlin Airlift of 1948-49, shuttling almost two and one-half million tons of food, coal and other necessities into the city's blockaded western sector during a 15-month period. "Operation Magic Carpet" of August, 1952 found the organization helping people again. Among the thousands of Muslims heading for Mecca for the annual Id al-Adha pilgrimage were many traveling by air. Despite the airlines' best efforts, nearly 4,000 were stranded in Beirut, Lebanon. Answering an appeal from the airlines and the Lebanese government, MATS, which has a base at Dhahran, Saudi Arabia, dispatched 14 C-54's and flew all stranded pilgrims to Jiddah (which has the airport nearest Mecca).

It won't be long, according to some experts, before air cargo surpasses passenger traffic as a source of airline revenue. Already some companies have ordered cargo-type aircraft that will lower operating costs and attract more business. A jet manufacturer is considering producing a cargo version of his passenger transport. Pre-packaging, either in large containers or on pallets, is underway to speed transshipment and to reduce handling — and thus costs. Designers are at work on transport aircraft that will fly at Mach 2, or twice the speed of sound. The new equipment and methods, plus a beefed-up sales effort, can only mean growth.

The Vizier of Baalbek really started something. ■

DISCOVERY

Perceptive scientists keep a sharp lookout for Dame Chance's helping hand

BY FLUKE?

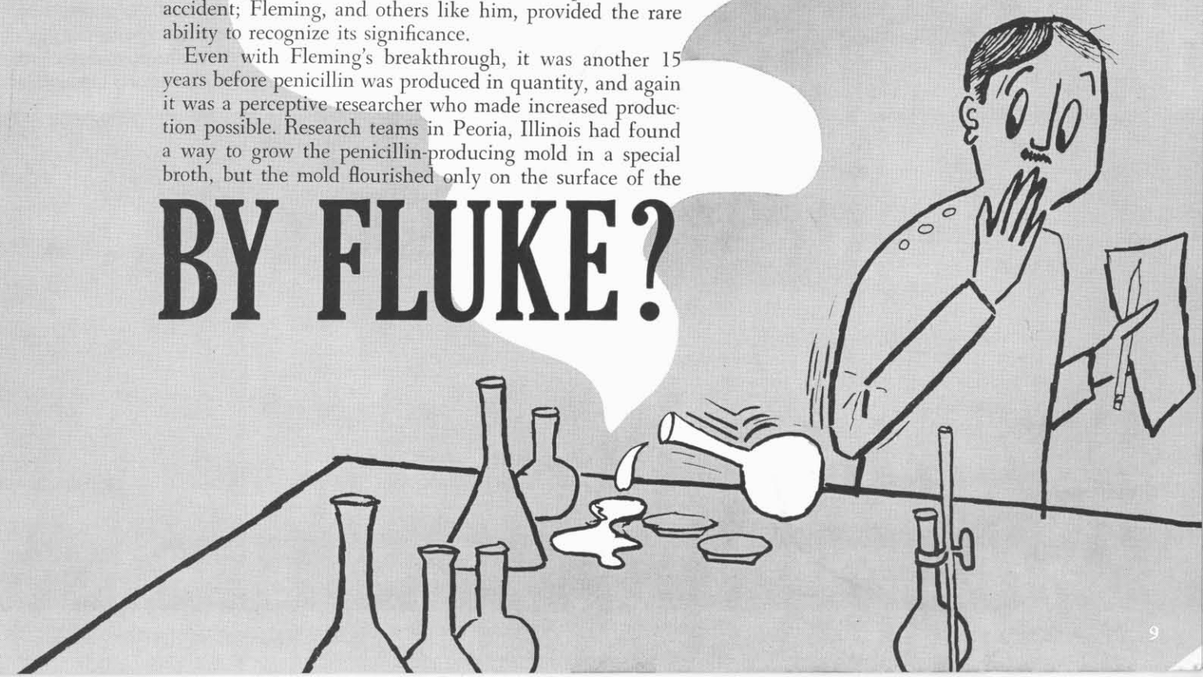
MORE than 30 years ago in a London laboratory a scientist made a mistake and millions are alive today because of it. One day in the summer of 1928 Alexander Fleming left a Petri dish uncovered. Growing on the shallow, glass dish were several cultures of infection-causing *staphylococcus* bacteria. The cultures, which Fleming used in his bacteriological experiments, were usually kept covered to avoid contamination by other microbes. As he prepared to study the culture under a microscope, Fleming noticed a peculiar bluish-green mold in it. The mold shouldn't have been there. It meant that, for Fleming's experiment, the culture was ruined.

Another researcher might have discarded the spoiled culture and prepared a new one. But Fleming's curiosity and perceptiveness prompted him to look at the dish more closely. He saw that the unwanted mold had broken up the staphylococcal colonies and deduced that the mold had produced a natural antibiotic that destroyed the bacteria.

"I had not the slightest suspicion," Fleming later reported, "that I was at the beginning of something extraordinary." But extraordinary it was — the discovery of penicillin and the genesis of a new age in medicine.

Fleming's discovery was not the first time, by far, that mankind has taken several steps forward by accident. Just as fickle Dame Chance has undermined governments, thwarted horseplayers and tripped up tax evaders, so has she smiled benevolently on many. But when she takes a hand in scientific achievement, her smile seems reserved for the *receptive* few. When, for example, Fleming said, perhaps out of modesty, that he had not the "slightest suspicion" of what he was onto, it can only be supposed that an unusually imaginative and perceptive mind was already grappling with Dame Chance's handout. She provided the accident; Fleming, and others like him, provided the rare ability to recognize its significance.

Even with Fleming's breakthrough, it was another 15 years before penicillin was produced in quantity, and again it was a perceptive researcher who made increased production possible. Research teams in Peoria, Illinois had found a way to grow the penicillin-producing mold in a special broth, but the mold flourished only on the surface of the



DISCOVERY BY FLUKE?

broth. What was needed was a new penicillin-producing mold that would grow on *and beneath* the liquid's surface.

Molds from all over the world were brought to Peoria and tested, but every experiment failed. Then one day Kenneth Raper, one of the research directors, happened to see a moldy cantaloupe on a Peoria market stall. It was a one-in-a-million chance, but Dr. Raper took the cantaloupe back to the laboratory and tested the mold. The chance paid off! It was a penicillin-producing mold, and it grew both on and beneath the surface of the nutrient broth. Soon afterward penicillin was saving the lives of thousands of Allied soldiers. And in 1945 the wonder medicine was released for general use.

The microbes that penicillin conquered were themselves discovered accidentally, and by a most unlikely person – a Dutch dry goods merchant. In the early seventeenth century, scientists were still experimenting with so-called powdered unicorn horn. No one had heard of bacteria, and the microscope was still a crude instrument, hardly more powerful than a simple magnifying glass. Antony van Leeuwenhoek, a Delft merchant who was curious about such things as the details of flies' legs and lice's eyes, couldn't buy a satisfying magnifying lens, so he set out to make his own. He knew that the smaller the lens and the greater its curve, the more powerful was its magnification. But small lenses were difficult to grind, and even a tiny imperfection

One-in-a-million long-shot paid off when W. W. II researcher tested a moldy cantaloupe for use in penicillin production.

in the glass showed up as a serious flaw. Nevertheless, after years of patient grinding and polishing and reworking, Leeuwenhoek built the finest microscopes of his time.

Leeuwenhoek was a simple man whose sole literature was the Dutch Bible, yet he had at least two of the qualities that make a great scientist: curiosity and perseverance. His curiosity extended to everything that he could put under his microscopes – insects, seeds, animal hairs, wood chips, plant cuttings, even blood. In 1675 he put a drop of rain water under his lens and stumbled onto a new world of "very small creatures . . . ten thousand times less than those . . . called water fleas." From this chance beginning sprang the science of bacteriology. Leeuwenhoek's groundwork was followed up by Spallanzani, Koch, Pasteur, Metchnikoff, Reed, Ehrlich and Fleming.

It never occurred to Leeuwenhoek that some of his "very small creatures" were killers. That discovery was Robert Koch's 200 years later. And in his work with bacteria, Koch benefited from an accidental discovery made in Scotland by William Henry Perkin.

The chain of events began with malaria. In 1856 only quinine could cure this disease, and scientists were trying to supplement the natural supply of quinine by synthesizing it chemically. One of the researchers was 18-year-old William Perkin.

Young Perkin set up a small laboratory in his father's house and began experimenting with a coal-tar derivative—aniline—because both quinine and aniline contain carbon and have related molecular structures. One day, after his usual run of unsuccessful tests, Perkin was washing out his blackened test tubes with alcohol when the substance in one tube turned a delicate purple. It was an unexpected reaction, but instead of emptying the test tube the alert young man immediately investigated the curious solution. It turned out to be aniline purple, history's first synthetic dye.

Perkin's discovery marked the beginning of the modern dye industry. Until then, colors had been extracted from certain plants, trees and dried insects, most of which had to be imported. Some colors were very rare, and all were in limited supply. Aniline purple, which was plentiful and cheap to manufacture, was a sensation – so much so, in fact, that the period is known as the Mauve Decade. Soon, further experiments with coal-tar derivatives produced synthetic dyes of magenta, blue, black and yellow.

Perkin amassed a fortune in England and was knighted. His accidental discovery also had profound scientific repercussions elsewhere. In Germany, Koch isolated the tiny tuberculosis bacillus under the microscope by staining his sample tissues with synthetic dyes. It was man's first success in his long battle against this dread disease. The young Scot's dye also opened up a new branch of science, organic chemistry – essentially the chemistry of carbon compounds (which comprise all living matter). And 88 years after Perkin's experiments, organic chemists synthesized quinine.

The heavens, too, have yielded some of their secrets by accident. In 1610 Galileo, studying the sky with his newest, most powerful telescope, noticed three strange stars near the planet Jupiter. They were lined up on either side of the planet, two on one side and one on the other. The next night Galileo focused by chance on the same bit of sky – and noticed that the three stars were now all on the same side of Jupiter. He had, of course, accidentally discovered three of Jupiter's 11 satellites. "I waited for the next night with intense longing," wrote Galileo. Further study revealed four bodies "circling about Jupiter, like the moon about the earth, while the whole system travels over a mighty orbit about the sun." In his own mind, the incident confirmed Copernicus' still controversial heliocentric theory of the universe, which held that the earth rotates daily on its axis and that planets orbit around the sun.

The telescope that Galileo used was also the product of a chance discovery made only a few years earlier. The basic components of this instrument had long been known. Curved lenses date back at least to ancient Carthage, and Arab astronomers isolated small areas of the sky for observation with a long (but lensless) tube. However, it wasn't until a Dutch spectacle maker stumbled onto the telescope principle that anyone combined lenses and tube.

Spectacles, although fairly common by the seventeenth century, were still crude, and Hans Lippershey's lenses were no exception. The careful Dutchman, however, always inspected them thoroughly for defects. One afternoon in 1608 Lippershey happened to examine a concave and a convex lens at the same time. As he held them against the window light, one in each hand, the lenses accidentally overlapped. To his surprise, the neighboring church steeple, seen through the two lenses, seemed much nearer. With great excitement he fitted the two lenses into a cardboard tube and looked at other distant objects. They all seemed closer. He had constructed the first telescope. When Galileo heard about Lippershey's marvelous invention, he built his own instruments and focused them on the heavens.

Some discoveries are made in the most unlikely places. While walking through a Paris side street Dr. Rene Laennec happened on some children at play. He noticed one waif with his ear cupped on an old wooden plank while another child at the other end of the plank tapped a message to him on the wood, Laennec, who that very morning had despaired of ever hearing the heart beat of one of his fat patients, immediately recognized in the game the principle of the stethoscope. He rushed home and built the first crude stethoscope from a slender, hollow wooden tube and hurried back to the hospital to try it on his patient. It worked, and he was able to diagnose her ailment correctly.

The heart beat of a patient figured little in diagnosis until Rene Laennec chanced upon the principle of the stethoscope.

Saccharine, which diabetics use in place of sugar, was discovered at the dinner table. A Johns Hopkins researcher, after a busy day at the laboratory, settled down to a relaxed supper. He noticed that his bread tasted peculiarly sweet and that the sweetness came from his hands. What had he worked with, he wondered, that was sweet? He returned to the laboratory and tasted every chemical he had handled during the day until he found the sweet one.

Only an alert, perceptive person would have found so much in a casual happening. This is true in all discoveries, no matter how accidental they may seem. The effect of the *penicillium* mold on bacteria had been described by an English physicist as early as 1875: "Here was the slime of dormant or dead bacteria," John Tyndall reported to the Royal Society, "the cause of their quiescence being the blanket of *penicillium*." Yet it took the genius of Fleming to visualize the mold's potential.

As Dr. Hans Selye, whose own discoveries about the body's reactions to stress have been ranked beside those of Pasteur, says: "Chance is a lady who smiles only upon those few who know how to make her smile." ■

Galileo shows poet John Milton the telescope with which he discovered Jupiter's moons in 1610. Principle of the telescope was revealed 2 years earlier by oculist Hans Lippershey.

Everyone dances, pets included, when an Amsterdam street organ plays favorite tunes.

Dutch neighborhoods take on a festive air when the tuneful, gay-hued draaiorgels do their stuff

Music in the Streets

IT'S a fine spring morning in Amsterdam – the kind of morning when everyone wears a smile because the weather is just right and the fragrance of tulips and jonquils drifts over the entire city. The mailman is whistling, and many a person finds himself merrily humming on the way to work.

In a large office building on Amsterdam's Kalverstraat, the windows are open. About mid-morning, when it's time to stretch and catch an extra draught of the invigorating air, a young secretary goes to a window, leans far out and throws something to an up-raised hand below. After the paper is uncrinkled and its list of tunes noted, the man who caught it pockets a handful of coins. For the next quarter hour the fine spring morning becomes even finer as the air is filled with the rich, resonant music of the street organ. More smiling faces appear at the office windows. Even the boss smiles and takes a break, for he, too, has an investment in a favorite tune. One of the coins the secretary threw down was his.

In other streets in Amsterdam, as well as in other Dutch cities, similar scenes are being enacted, for the Dutch are extremely fond – and proud – of their "draaiorgels" (barrel organs), and while they have disappeared or become museum pieces in most other countries, they have come to stay in The Netherlands. In Amsterdam about fifteen organs make regular rounds, filling the street with music; another sixty operate in other Dutch cities.

Today's organs are huge, complicated instruments that require experts to operate and maintain, but they were not always so big. The first barrel organs that came to Amsterdam about 1850 were small enough to be carried around by one man, strapped to his back. They contained a cylinder dotted with pins and points that created music by striking built-in flutes, much like a music box. Most of these early street organs came from a firm in Paris and another in Germany's Black Forest. Later these organ builders constructed large cylinder organs designed for dance halls and fairs, but no one thought of building out-sized organs for use in city streets.

No one, that is, until Leon Warnies, a blind Belgian, settled down in Amsterdam. It was his idea, in 1875, to lease cylinder organs to street musicians, and his Rent-an-Organ business soon proved that everyone – kids and adults – could dig up a spare coin to hear a bit of an opera, a thundering military march or a hit tune of the day. Those coins enabled Warnies to order larger organs, so large and heavy, in fact, that three-wheeled chassis had to be placed under them. The single operator gave way to a three-man crew that maneuvered the weighty organ through narrow streets. It's still done the same way today. The boss of the crew, the one who holds the street musician's license, hires the organ and settles accounts with the owner. The second man, the organ grinder proper, is usually a strong fellow, for he must apply muscle to the big wheel that turns out the music. The third man helps the boss collect the money, and all three lend a hand when it's time to push the organ to another street or square.

Although the Amsterdam street organs haven't changed much with the years, improvements have been made. In Paris in 1892, Anselmo Gavioli invented a new way to produce organ music. He replaced the cylinder with perforated "zig-zag" cartons (called "books" by organ men). While the old cylinder could play only a "built-in" repertoire of eight tunes, the books enabled the organs to play full-length overtures or parts of operas.

Leon Warnies recognized the advantages of the new "book organ" and ordered several from Paris. Even though he died before the instruments were delivered, the new organs were trundled through Amsterdam streets under the management of his two sons. They extended the organ renting business to other cities, and another member of the family opened up shop in Rotterdam. Today two of the best known renting firms in The Netherlands are run by grandsons of the pioneer, Leon Warnies, and most of the other men, owners and renters were "born in the profession." They know the big organs inside out and employ a staff of skilled workmen to repair and recondition the valuable instruments. In other countries the organs were popular but were neglected and finally fell apart, never to be replaced because of their high cost. But even though most of Amsterdam's organs have served for many years, both their appearance and music are as bright as ever, thanks to the care their owners lavish on them.

Each of Amsterdam's organs has a name that is familiar to every man, woman and child. Often the decorative motif on the front side determines an organ's name; for example, *De Bloemenmeid* (The Flower Maid), *De Arabier* (The Arab) and *De Duif* (The Dove). Several are named for their dominant color – *Grote Witte* (Big White One), *Grote Blauwe* (Big Blue One) and *Het Blauwtje* (The Little Blue One). If they produce special sounds, they may have names such as *De Cello* (The Cello) or *De Zingende Zaag* (The Musical Saw) or *De Klok* (The Bell). At least one Amsterdam organ, *Het Waterduikertje,* takes its name from its own mishap. Many years ago it was playing merrily alongside a canal when it plunged into the water. Retrieved from the depths, it was rechristened with its present name, which, in translation, means The Water Diver.

During the course of a year, the colorful organs are tugged a good many miles through Amsterdam streets. Some of them, however, travel even farther than the city's outskirts. *De Klok,* for example, has been in South Africa and perhaps the best known of all, *De Arabier,* has played before admiring crowds in London, Hamburg and Stuttgart. The Utrecht-based *De Drie Pruiken* (The Three Wigs) has visited England many times during the Dutch Festival at Scarborough.

Their popularity abroad is but an extension of the way the Dutch themselves feel about their familiar, old street organs. Even if they've seen them a thousand times, Amsterdam citizens always find a minute or two to stop and listen to the street organ. And it's a safe bet that whenever kids gather on a corner or in a square to dance or sing, somewhere in the middle a gay-hued, tuneful street organ lends its festive touch. ■

On a cobbled Amsterdam street, the colorful "De Bloemenmeid" (The Flower Maid) is inspected by Jack and Barbara Vredenburgh and their children Kathy and Peter. Jack is treasurer and assistant secretary of Aramco Overseas Co., The Hague.

ELEGANCE by the yard

For generations Eastern weavers have loomed luxurious brocade, the fabric that is truly a work of art

HISTORY closed in on the Midwestern visitor to Damascus on a spring afternoon some years ago. She was on the Street Called Straight in the oldest continuously inhabited city in the world. In rather typical feminine fashion, however, she headed for a shop famed for its brocades. What better place to buy brocade than Damascus? The courteous shopkeeper brought out tall bolts of shimmering fabrics – what to choose with limited time and funds? An ivory satin woven with golden lovebirds caught her eye. The owner explained that it was a special design, a gift of the Syrian Government to Queen Elizabeth II on the occasion of her wedding in November 1947. There were only a few meters of the material left. The extra length of the 39-inch meter over the 36-inch yard appeals to *any* woman. So two meters of truly royal cloth went into the tourist's suitcase for a later appearance as an elegant evening jacket.

Behind this purchase lies a long legacy of luxury. Brocades started out as royalty's special property for splendid robes, draperies, banquet covers and furniture. Its opulent appearance, its price (it is still expensive – the Midwestern buyer paid twenty-five dollars for her brocade even in Damascus) and the skill required in its weaving contrive to keep it a luxury.

It is almost certain that the first brocades were woven in China. In 238 A.D. a Chinese emperor presented the Empress of Japan with five rolls of crimson silk, patterned with gold dragons. Brocades began to figure in historical records of Eastern courts. Perhaps the most famous of these descriptions were those of Lady Murasaki, the eleventh century Japanese poet, who noted patterns and colors of brocades in her diary with the zeal and pleasure of a modern fashion editor.

The Chinese exported these ornate fabrics via the caravan routes that introduced the exotic wares of the East to the West. Across these classic paths the lavish bolts found their way to Persia, to the Arab lands, to Byzantium (the early name for the Turkish city known as Constantinople and now as Istanbul) and finally to Europe.

In the Middle East brocades found their most illustrious niche on the looms of Damascus. The weavers there dipped into the designs and legends of Persia and came up with lengths of such splendor and such variety that "damask" became a term for any richly woven, silken material, no matter where it was produced. In the shops of contemporary Damascus, small human figures and animals portraying a story line and the birds, flowers and trees of Persian rugs and miniatures still find their way to textile immortality.

During the eleventh and twelfth centuries brocades were being woven throughout the Middle East. The peoples of this part of the world appear to possess an affinity for diligent arts. In the love-labored miniatures of medieval Persia, the figures appear clothed in brocades that repeat the profusion of flowers in the gardens in which they are painted. These sun-strewn gardens in turn provide the artist the opportunity to furnish the designer of other brocades with new fancies, new colors, new arrangements.

The Arab peoples carried the skill of this special weaving to the coasts of North Africa and to Spain. This in part explains the origin of our English word. Brocade is derived from the Spanish *brocado,* which is a corruption of the vulgate Latin for "embroidered." The first brocades worn in England, however, were probably of Italian origin. The 1480 funeral inventory of Edward IV listed a robe of "Satyn broached in gold," and this is descriptive of fabrics woven in Florence and Genoa at the time.

The Italian city-states had a great investment in the glittering fabrics. Venice was the importer and, to rival her, Florence, Lucca and Genoa became manufacturers, just as in its turn, in the seventeenth century, Lyons became the French center for brocade weaving.

The Medici, a family of statesmen and merchants,

Kay Robinson of Aramco's New York office gets the effect of elegance as brocade is draped about her at the Persian Shop.

ELEGANCE BY THE YARD

swathed themselves in brocade to advertise the craft of Florence as much as their own importance. And their artists were commissioned to clothe the figures in paintings in brocades. The celebrated Van Eyck brothers, devoted to depicting detail, have left us a glimpse of the detailed brocades that were the dress of the wealthy in North Europe, and indeed all artists of the Renaissance, from Bellini to Titian, gloried in depicting the rich material in paint. In general, the patterns are heavy and opulent. As their use extends from dress to furniture, design becomes less complex in the seventeenth century. Eighteenth-century designs are loose and almost careless; it had become poor manners to make a display without appearing frivolous or casual. Yet neither the gentleman of taste nor his lady swerved far in their devotion to brocade. They had walls hung with it, used it for draperies, sat on it, ate from it and wore it. Sometimes domestic, sometimes imported brocades were the common symbol for a wealth of elegance and the elegance of wealth.

Modern brocades, limited by their expense mostly to dress stuffs, are still woven in the cities famous for the skill. Lyons provided the copies for the newly refurbished *petits apartements* of Marie Antoinette at Versailles, just as two centuries ago it provided the original floral brocades. Florentine and Milanese looms are still active, and, following a much older tradition, Damascus weavers continue to produce their wares.

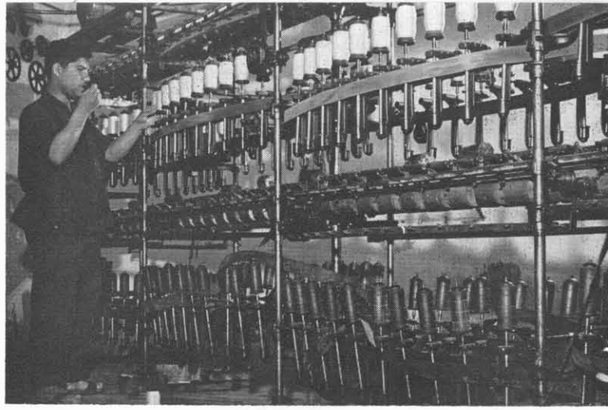
The whole craft is bound to the past. The looms do not differ much from the type illustrated in the first manual on weaving that was published in China in 1210. Today, the craft faces the competition of machines which level the difference in quality by means of an increase in quantity, and it may be that new generations will have to create a new luxury to replace one of the oldest.

Nonetheless, the weavers continue to sit before looms following the intricacies of the cardboard master-pattern or, with a show of bravura, working from memory. They can be seen in Damascus weaving a variety of patterns, some of which have been in use for centuries. Each shop tries to maintain its own designs, but they are modified and copied from studio to studio. The merchant will guide visitors through the workshops and explain how the fabrics are woven. Then, at a counter, as though casually illustrating some point in his description, he will display two or three bolts and the visitor's will-power is weakened by the dazzle.

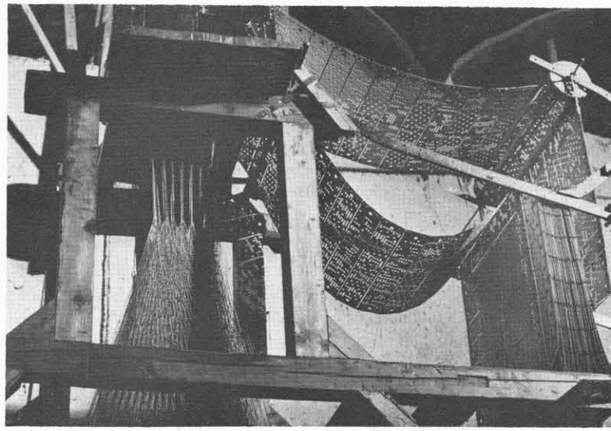
The choice is impossible; the display increases, and glints of silver and gold, and brocades of pure silk only add to the confusion. There are menageries of animals, Byzantine arches, Saracen boats and interlocked floral medallions culled from Persian miniatures. He who had resolved not to buy – "There's no harm in looking"–is soon convincing himself to buy a little, and then, since these brocades sell themselves enthusiastically, he finds himself buying more.

If his memory is good, he can still his conscience by recalling that Shakespeare said, "Beauty itself doth of itself persuade," and if his memory is not too good, he will forget, when paying for his purchase, that Shakespeare also said, "Beauty too rich for use, for earth too rare." ■

For centuries brocade has added elegance to ladies' fashions. A model (left) wears satin brocade, while a handmaiden (below) in a detail from Botticelli's "The Birth of Venus" unfurls a brocade robe to cover Venus.



Twisting the thread lengths together strengthens the fiber. The thread is dyed, rolled on spindles and ready for weaving.



Pattern is determined on the Jacquard by hole-punched cards, (plotted by specialists) which control the flow of the thread.

Operators toss the woof shuttle (carrying design color) back and forth through the warp. The material (produced an inch an hour) is kept tightly drawn by the pressure board in front.

GRAND OLD GAME of MARBLES

"HIS 'alley tors' and his 'commoneys' are alike neglected; he forgets the long familiar cry of 'knuckle down.'"

To the few unfortunates who never played marbles these words may sound mysterious, yet they are from a familiar setting. Mr. Serjeant Buzfuz, attorney for the plaintiff at the trial of Mr. Pickwick, utters them in Charles Dickens' celebrated *Pickwick Papers,* written 125 years ago. To kids playing marbles today, every word in the sentence is clear. "Alley tors" means marbles in general and harks back to the days when marbles were made of alabaster — certainly a hard word for any young boy to handle, so "alabaster" became "alley tors" or "taws" and sometimes just "alleys." Mr. Dickens' "commoneys" meant marbles baked of common clay, just as today's "commeys" refers to marbles of little value. And "long familiar," indeed, is the cry of "Knuckle (or knucks) down!" when a player unlawfully lifts his shooting hand from the ground.

The fact that much of the marbles jargon in use 125 years ago is still in use today is proof that the game enjoys a unique, enduring popularity. Other games may come and go, but marbles stays on. The game is so old that no one knows when it started, although it probably wasn't too long after man first discovered that a round pebble would roll. Small stones deliberately chipped round have been found in ruins dating back to the Stone Age in Europe, Asia and Africa. In America the Mound Builders left marbles of flint and beautifully marked clay.

Marbles that kids in Egypt and Rome once played with now occupy sedate niches in the British Museum, and it is probable that Moses played marbles when he was a child in the Pharaoh's palace. In China the game has had a following for at least 5,000 years, while across the Pacific the Aztecs made marbles a common pastime. When settlers came to American shores in the seventeenth century, they found that the Indians amused themselves with a marbles game very similar to a game the settlers had played in England. Marbles, it would seem, has been a universal game, both in time and place.

But they haven't always been a game meant just for children. At least once marbles were involved in a real estate transaction. A bag of agates was used in London as partial payment for a piece of land; they're still being sent each year as further installments on the original cost. Adults were encouraged by English clergymen to play marbles during lent as a quiet pastime, and Good Friday became known as Marbles Day. An American minister early in the nineteenth century described a religious gathering at which 400 people played marbles, no surprise in a country whose first President was a marbles devotee. Thomas Jefferson and John Adams also enjoyed the game. Vice President Andrew Johnson was playing a game of marbles with his son when he was told that President Lincoln had been assassinated.

Fiction has had its share of marbles-mentioners, besides Charles Dickens. Unscrupulous suitors played marbles for the hand of Penelope when they thought that her long-absent husband, Homer's Ulysses, was dead. Sir Thomas Urquhart made a translation of Rabelais in 1658 and found marbles mentioned, while Alfred de Vigny, in 1835, wrote a short mystery story entitled "The Military Necessity," in which a murder weapon was loaded with a large agate marble. And, of course, Tom Sawyer was rolling in wealth when Mark Twain described him as possessing twelve marbles and two tadpoles.

Sometimes marble-playing got out of hand, as it did long ago at both Oxford and Cambridge Universities, when students were once strictly forbidden to play the game on the library steps. Likewise, students at Westminster School were ordered not to play marbles in the hall of the ancient palace of Westminster, perhaps because the grownups were using the hall for public festivals and trials at which many notables were condemned to death. The popularity of the game in English schools is pointed up by an English poem that describes a student graduating from Eton as:

A dunce at syntax
But a dab at taws.

The Romans also took notice of adults who had the marbles habit, and the expression *relinquere nuces* (in the sense of "putting away childish things") came into the language, since the Romans sometimes used *nuces* — or nuts — for marbles. But in one small Mississippi town the old folks have never seen fit to *relinquere nuces.* Several years ago a group of them was watching some youngsters play the game and soon fell to boasting about how good they were in the old days. To prove that age doesn't diminish marbles skill, they built a man-sized ring, 30 feet in diameter, and knuckled down. They've been knuckling down ever since then — three times each week on a regular marbles schedule.

After the first chipped-stone marbles, early man found that clay could be molded into better marbles. When kilns were developed, baked marbles became common, and along with pottery they soon took on glaze and color. Then came glass marbles and agates, which were like glass, but without air bubbles. *Curiosities of Glass Making,* published early in the nineteenth century, describes five kinds of marbles: a whirling center of color; a center with tiny animals; birds, fish or even people; solid opaque centers of color; solid color, with fleck of gold or silver; cheap marbles, called slugs, in brown or white. Collectors prize air bubbled specimens, "cracked glass" marbles and marbles made of precious and semi-precious stones — jade, turquoise, topaz, aquamarine, chalcedony or amethyst. They're good for collections but not too practical for shooting in the game.

Collecting rare marbles is more likely to be done by graduates of the game than beginners. Berry Pink, who calls himself the Marble King, has one of the country's finest collections, and Berry, in his 60's, has maintained a life-long interest in marbles. After several unsuccessful business ventures, Berry met a rich man who asked him what he was interested in. "Marbles," Berry said firmly. "All right," the rich man said, "if you say so, go ahead." Beginning with discarded material and an old glass factory in West Virginia, Berry invented machines, expanded and promoted marbles, until he has reached the point where he can give away millions of marbles to children and spend considerable sums in sponsoring tournaments. Berry says that he has talked to thousands of men all over the country and every one admitted — nay, boasted — that he had once played marbles. Although he's a business man now, Berry keeps in fine marbles trim. He can still shoot a marble into a milk bottle ten feet away.

At one of New York's largest toy stores, marbles are sold year round, though sales skyrocket in the spring. The store sells marbles of glass and agate, the only kinds made in the United States, where about 650 million marbles are manufactured each year. About 15 percent of the total find uses in industry, from fish bowl decorations to highway sign reflectors.

Marbles come in four sizes, all permitted in championship games. Playing marbles must be of glass, and not more than ⅝″ in diameter. In tournament games, all marbles must be uniform. Shooters may be of any substance except metal and should be not less than ½″ and not more than ¾″ in diameter. The game went by many names, until the balls were made of chips of marbles. Now, no matter what they're made of, the name "marble" is well-established.

Like many games, marbles has a language all its own. One rule of "marble talk" is to add "ees" to many words for quick speaking. *Babying up* means shooting or tossing for better position. *Clearance* means clearing away anything that interferes with the game. *Dakes* means playing for keeps. *Everees* is the magic word. When the shooter calls it, he can do practically anything. When *Fen-everees* is called, the shooter must knuckle down. *For fair* means not playing for keeps. *Hardees* means to shoot hard, while *histing* is raising the hand above ground when shooting. *Knuckling down* is resting at least one knuckle on the ground. *Lag* means tossing from pitch line to lag line. *Larees* is called for the right to shoot last. *Shooter* is a marble used to knock other marbles out of ring. Dozens of words make up the marbles vocabulary, like *angle* or *billiard shot, backspin, English, burst shot, court, draw shot, fins, dropsees, roodles and ducks.*

About ten million boys and girls in America played marbles this spring. Seventy-five per cent played Ringer, the only game recognized in tournament play and a variation of the oldest marbles game. Under tournament conditions, it is played in a ring 10 feet in diameter, laid on smooth, level, hard ground. With the center as the point of intersection, two lines, 18″ long, are drawn to form a

Hardly a man, young or old, has forgotten that moment

of pleasure when it was his turn to poise on a knuckle, aim and let fly