

flooring materials and usually are the most expensive. However, they have a long life.

They may be installed using a special "thin-set" cement, or in the traditional $\frac{3}{8}$ " bed of mortar. They require a "grout" (cement fill) between the tiles.

Glazed ceramic tile and terra cotta are relatively non-porous and as a result resist staining. These glazed tiles are, however, susceptible to scratching and crazing (formation of minute cracks) with age. Ceramic tiles range in size from what is called "mosaic" tile of $\frac{3}{8}$ " X $\frac{3}{8}$ " to a large 16" X 18" size.

Mosaic tiles commonly are sold on a backing sheet, making possible the installation of larger areas at one time. It is necessary to grout the joints between each tile after they are set in place.

Unglazed ceramic tile, slate, and flagstone are porous unless treated with special stain-resistant sealants.

Clay or quarry tile, usually unglazed, is produced from clays that result in a strong, long-wearing surface. It is relatively easy to maintain and withstands impact well.

The color range is reds, buffs, blacks, browns, greys, and gold. A semiglazed type is produced in greys, browns, and greens. The product is available with a variety of surface patterns.

The tiles come in several thicknesses from $\frac{3}{8}$ ", $\frac{1}{2}$ ", and up to 1 $\frac{1}{2}$ " depending on their width and length. They may be square, rectangular, or some geometric shape.

Terrazzo is made of marble chips in combination with portland cement mortar and is ground and polished to a smooth finish. It is very resistant to moisture and therefore relatively easy to maintain. It is very noisy and is a tiring walking and work surface.

Most non-resilient flooring is installed using a masonry mortar. This demands a higher degree of skill than other types of flooring and adds to the installed cost.

Cost of each type of flooring will vary depending on its quality and the manufacturer. As an example, asphalt tile may cost as little as 20¢ a square foot

while high quality vinyl may reach \$4 per square foot. If you consider that an oak floor may cost only 75¢ per square foot, it is obvious that a wide variety of options is available.

Your Own Pool to Get in the Swim

THERE ARE NOW over a million in-ground residential swimming pools in the United States and the figure is growing at a rate of some 85,000 per year. In addition, another three million American families own above-ground pools large enough to swim in.

Both above and in-ground pools are now within the range of the average family's budget, although pool prices vary throughout the country. Generally, in-ground pools are least expensive in the Northeast and most expensive in the Rocky Mountain area.

The average 1974 cost of a middle size, in-ground pool is around \$6,500. Most in-ground backyard pools are 15' x 30' to 20' x 40' and have three or four feet of surrounding decking. Bank financing is usually available at reasonable rates and terms for homeowners.

Check the effect of the pool on property taxes with the local taxing authority. Usually an in-ground pool is a home improvement taxed on the basis of half its cost. Premiums for liability are already included in the homeowner's policy, but check with your agent to insure maximum coverage which costs just a few dollars more than a basic policy.

Estimates on installation—of which there should be several from reputable dealers—should include labor, construction materials, and basic equipment such as the filter, pump, vacuum cleaner, surface skimmer and ladder. Be sure all bids are for comparable construction and equipment.

Installation costs of an in-ground pool will be the major expense and will vary



Water sports participants and a backyard pool.



according to type of pool selected (concrete, fiberglass, vinyl-liner), but operating costs should also be computed beforehand. These will include costs of water, electricity, chemicals and, if a heater is to be installed, the utility service (natural gas, oil or electricity) to operate it.

In above-ground pools, a pool large enough for family splashing can be purchased in 1974 for \$150 to \$400, depending upon size and shape. For a pool large enough for swimming laps and equipped with a pump and filter, prices start around \$600 but can go as high as \$5,000 or more for luxury models which include a large deck, railing and other accessories.

Installation of above-ground pools ranges from inexpensive up to \$600 to \$700, depending upon size, shape and site preparation requirements. Most homeowners can install the less expensive models themselves. A building permit is rarely required.

Popular and widely available sizes range from 12 to 28 feet in diameter.

Usual shapes are round, oval, rectangular, hexagonal or octagonal. A good quality above-ground pool will remain serviceable for at least seven to ten years if properly cared for.

Reasons for the popularity of above-ground pools are that they are relatively low cost, usually don't add to the real estate tax property assessment, are portable, and have the built-in safety feature of being about four feet higher than ground level.

Choice of a pool should depend upon budget, site, and family use plans. For example, sub-surface rock may make an above-ground pool more practical and much less expensive. A pool built primarily for exercisc rather than entertainment should be rectangular to facilitate the swimming of laps.

Families with children will want the pool where it can be watched from the house at all times while in use. The advice of a landscape architect can help save your trees while positioning the pool to receive maximum sun during periods of greatest use.

Given America's current energy shortage, the choice of a swimming pool for family recreation is a wise investment. Once installed, the backyard pool requires little energy to operate and no gasoline to get there.

In addition to equipment such as ladders and diving boards, the swimming

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pool has "work equipment": the skimmer, the filtration system and, as an option, an automatic cleaning system.

Allow two or three hours a week minimum if intending to clean the pool yourself. A built-in fully automatic cleaning system will save you time, but will add 10 to 15 percent to total construction cost of the pool. However, portable cleaning systems are also available and may be installed on already constructed pools.

Both automatic and portable (operated by a garden hose) cleaning systems work on the principle that the agitation of water keeps dirt and algae from adhering to the walls and bottom of the pool, thus making it easier for the filter to process them out.

The following types of filters are most generally used: sand, diatomaceous earth (DE), and cartridge.

The sand filter is a simple vat through which the water passes, leaving behind dirt particles.

The DE filter uses inexpensive minute diatoms (microscopic sea creatures) spread over a membrane inside the filter tank. As the water passes through, these "creatures" trap the equally microscopic dirt particles.

The cartridge filter contains fibrous material which traps the dirt particles as water passes through it.

Algaecides and chemicals, usually chlorine or bromine, are used in swimming pools to kill algae, retard the growth of bacteria, and oxidize tiny dirt particles not processed out by the filter.

Heavy traffic in the pool requires careful attention to the pool's pH or acid/alkalinity count. The ideal pH range for a pool is 7.2 to 7.6.

Muriatic acid or soda may be used to restore the desired balance if the pool becomes too acidic or alkaline. Follow directions carefully in both use and storage of chemicals.

Pool water increases in acidity due to acids used in chlorine to help it maintain stability. There is also natural chemical decomposition. To maintain the correct balance, chemicals should usually be added daily. Inexpensive and simple test kits are available to deter-

mine how much chemical to add each time.

The chore of daily chemical additions may be avoided by purchase of an automatic chemical dispenser. Safe and easy to use, it may be timed to dispense chemicals when the pool is not in use.

An in-ground swimming pool built with quality materials costs the average American pool owner between \$100 and \$200 per year for regular maintenance, far less than the upkeep expenses on a house or car.

A simple check list to follow when cleaning your pool is:

- Skim the pool's surface with a standard leaf skimmer
- Brush down pool walls and tile with a stiff-bristled brush
- Clean the skimmer's basket and hair-lint strainer
- Vacuum the pool bottom
- Clean the filter (when sufficient dirt has accumulated and the recirculation flow has decreased)
- Hose clean the pool deck

A heavy duty vinyl pool cover (at an average cost of \$350 for a medium size residential pool) cuts down on maintenance time and expenses.

The pool owner will also want—or be required by law to provide—adequate fencing around the pool to prevent accidents. Proper attention to pool safety rules and checks on equipment will prevent poolside accidents; however, it is a good idea to keep a first aid kit on hand.

Both family members and guests should adhere to a posted set of "pool rules." Simple reminders of "no running" and "no swimming alone" are needed by everyone.

Two precautions—the fence to keep out toddlers and pets, and a clean pool deck, free of slippery substances—will prevent many accidents. If yours is an above-ground pool, keep the ladder up when the pool is not in use.

A pool cover is recommended whenever the pool is not in use for long periods of time.

Pool alarms, triggered by introduction of objects into the water, are available as an extra precaution. A spotlight

which turns on automatically at night may also be advisable, particularly if your pool is any distance from the house.

Diving boards and water slides are potentially dangerous, and are not places for horseplay. Don't try out for Olympic diving competition in a small backyard pool. For water slides, a feet-first seated position is recommended, or, if head-first, then face down with arms well extended. Never slide or dive onto other swimmers.

If planning to install a diving board on an already installed pool, check with the National Swimming Pool Institute or a reputable builder to be sure you aren't inviting disaster by buying a board too big for your pool.

Underwater lights and other pool area wiring should be checked at least annually. Equipment should conform to local regulations or to the National Electric Code. Keep all radios and appliances well away from the pool area.

A home swimming pool, carefully selected to suit your needs and pocket-book, with the proper equipment and maintenance, can give you many hours of family fun and healthful exercise at reasonable cost.

Electrical Wiring: Homeowner Tips

MANY ELECTRICAL maintenance and repair jobs around a home do not justify calling an electrician, but can be done by the homeowner if care is taken to understand what is involved.

Probably the most baffling part of the wiring system to many people is the fusebox, and it is likely that the fusebox will need attention sooner or later in most homes.

Electric current enters the home through the main fuses (or circuit breakers), then goes through the individual circuit fuses or breakers to the circuits. The purpose of fuses or breakers is to limit the current flow, in case

of a fault, to prevent overheating of the wiring.

To save time when you have trouble, it is a good idea to label all the circuits in a fusebox as to what they serve. This can be determined by disconnecting circuits one at a time (by removing the fuse or switching the circuit breaker off), and checking to see what doesn't work by operating the switches and plugging in a portable lamp around the house.

If there isn't room to label directly on the box, you can place a number by each fuse and fasten a listing on a sheet of paper inside the door of the fusebox. Then, when power is off in part of the wiring system, you can quickly find which fuse or circuit breaker is involved.

The circuit protection you find in the fusebox may be cartridge fuses, screw-in fuses, or circuit breakers. Fuses must be replaced when they blow, but when a circuit breaker trips you need only push it all the way to the off position, then back "on" to restore service.

It is wise to disconnect all appliances from the circuit before doing this, or it will probably trip the breaker or blow the fuse again. If all equipment is disconnected, and it happens again, the trouble is likely in the wiring, and you probably should call an electrician.

There are several kinds of screw-in fuses. Besides the ordinary screw-in fuse with brass threads, there is the "non-tamperable" fuse (usually labeled "fustat") which has porcelain threads, and must be replaced with one of the same ampere rating (the wrong size will not fit). Besides the amperage stamped on the top of the fustat, different sizes are color-coded so that if you replace with the same color fustat, it should work.

When the fustat is missing, you can look into the bottom of the hole, and read the amperage needed. If you read "SA20" this means it uses a 20-amp fustat.

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