Boys! Make your Own Parade

Actually cast and make your own lead soldiers, sailors, Indians and a menagerie of other lead toys, quickly and easily.

The Big Electric-Automatic No. 5½ is a real die-casting machine, simplified for general use and every boy can have his own toy factory right in his own home, and make as many toys as he wants, right in order.

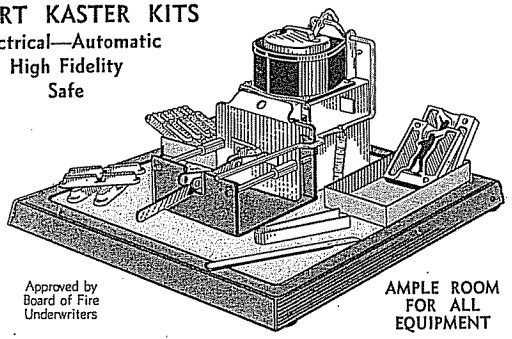
With the smaller sets, too, both electric and non-electric you can cast from any of the moulds illustrated and have hours and hours of fun. Be sure to see these dandy outfits at your favorite toy store.

PRICES

No. 5½ Kaster Kit (electric)	$4.95
All Kaster Kit Moulds, each	.50
00 Pigs of Metal	.50
No. 1 Kaster Kit Paints	1.00
A—Sports Series Moulds	2.00
B—Band Series Moulds	2.00
C—Military Series Moulds	2.00
No. 3 Kaster Kit Jr. (electric)	2.95
No. 1 Metal Casting Set	1.00
No. 2 Mould Holder	.30

GILBERT KASTER KITS

Electrical—Automatic
High Fidelity
Safe



Approved by Board of Fire Underwriters

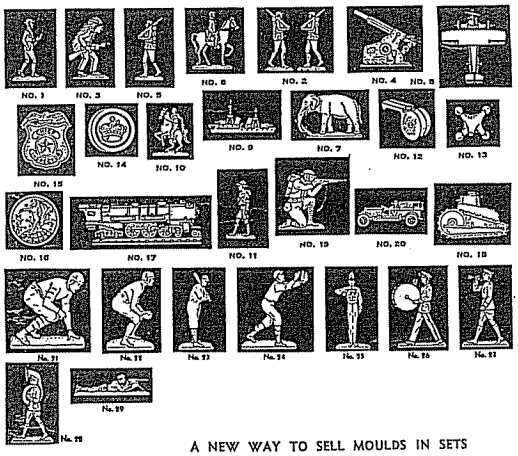
AMPLE ROOM FOR ALL EQUIPMENT

Upper right—
No. 5½ GILBERT KASTER KIT

Electric. Automatic. Complete outfit for casting soldiers, animals, Indians and other toys quickly and easily. In one hours time any boy can produce an entire army of soldiers just as perfect, and finished as well as professionally cast models. Boys can make money casting and selling lead toys and novelties. Simple to operate. Heat is supplied by built-in heating unit, "standardized" for use with regular cord and plug cap as used in irons and toasters, etc. Just plug into any electric outlet. Simplified for children. Complete with 1 mould, 24 pigs of metal, instruction Manual. Mounted on large safety base with room for all equipment. Extra moulds and metal can be purchased separately. This set is particularly recommended as being safer than any casting outfit on the market.

At right — KASTER KIT MOULDS

Boys want this complete assortment of moulds. They will have hours of fun casting these different models and in no time at all a complete battle scene of Cavalry, Infantry, Army Officers, Howitzers and Planes can be made. They can also have Air and Sea Flotillas with Battleships and Planes, or a real circus parade of Indians, Cowboys and Elephants. Boy Scouts on a hike or Scouts and Infantry on parade can also be shown.



ORDER OF LISTING BY NUMBER AND NAME

1. Army Officer
2. Infantry (2)
3. Indian
4. Howitzer
5. Infantry (1)
6. Cavalry
7. Elephant
8. Airplane
9. Battleship
10. Cowboy
11. Boy Scout
12. Whistle
13. Jack Stones
14. Checkers
15. Police Badge
16. Magic Coin
17. Locomotive
18. Tank
19. Kneeling Soldier
20. Fire Engine
21. Football Linesman
22. Football Backfield man
23. Baseball Batter
24. Baseball Fielder
25. Drum Major
26. Drummer
27. Bugler
28. Bass Horn Player
29. Machine Gunner

No. 00—PIGS OF METAL

Prepared for use with Gilbert Kaster Kit and recommended as best. Wrapped 48 pigs to package, 2 lbs.

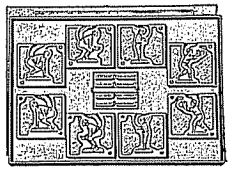
No. 2 MOULD HOLDER

Spring grip receptacle with handles and locking pins. Can be used with moulds of any make.

No. 1 KASTER KIT PAINTS

An assortment of especially prepared paints for coloring Kaster Kit castings, 6 colors in all. Each in separate metal can with stirring stick and paint brush.

A NEW WAY TO SELL MOULDS IN SETS



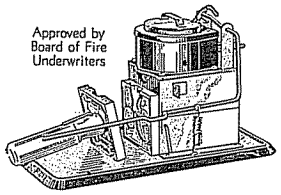
A SPORTS SERIES

B BAND SERIES

C MILITARY SERIES

Each contains four moulds and twelve pigs of metal. Packed in cardboard box.

Approved by Board of Fire Underwriters

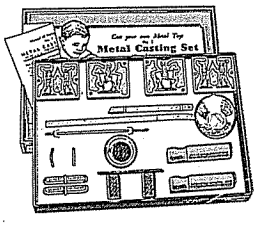


Above — No. 3 KASTER KIT JR.
ELECTRIC, AUTOMATIC

Complete outfit for casting soldiers, animals, etc. Heat is supplied by built-in heating unit. Plugs into electric socket. Plug and cord not furnished. Mould cleaning and handling tools. 12 pigs of metal, 1 mould. Mounted on base. Instruction manual.

Below — No. 1 METAL CASTING SET (Non-Electric)

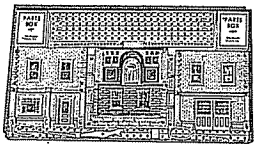
Equipment for casting lead toys in combination with two cans of paint for coloring of models. Mould fits securely into spring grip receptacle and is pin locked. Wooden handles for lifting. Complete with mould cleaning and handling tools, six pigs of metal, pouring ladle and two moulds.* Additional moulds can be purchased separately. Simple to operate. Instruction sheet tells how. Packed in cardboard box.

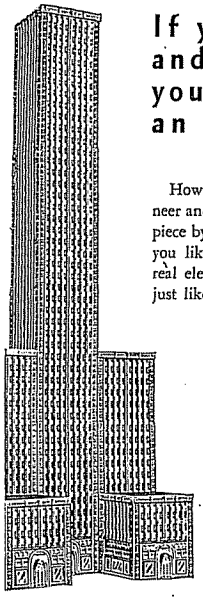


*Three figures.

At right—No. S SKYSCRAPER SET

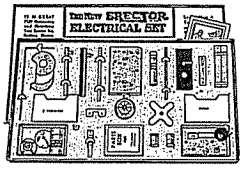
Accessory set to Erector, also a complete outfit in itself. Contains Erector building sections with angle girders, cross-bracing strips and snap rivets for holding building sections to girders. Builds skyscrapers, department stores, office buildings, public libraries, etc. Building sections printed both sides in cement or brick structural designs permitting reversing and assembling numerous types of housing structures. How-to-Make-'Em Book.





MODEL BUILT FROM S SKY-SCRAPER SET

GILBERT ELECTRICAL SETS



left No. 3 ELECTRICITY and MAGNETISM

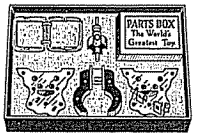
The toy that electrifies and illuminates. Contains parts and instructions for building electric motor, electro magnets, bell, buzzer. Teaches and demonstrates fundamentals of frictional electricity.

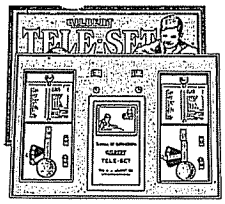
Above—No. 10 ADVANCED ELECTRICAL SET

The set with the Sensitive Microphone, Electric Eye, Magnetism, Telegraph Key. Builds two Motors, Telephone Receiver. Large assortment of parts for many fascinating experiments. Packed in steel cabinet

At right—No. 1 MOTOR KIT

Provides hours of fun for the home experimenter. Builds an electric motor—teaches the fundamental principles of motor construction and operation, also used and recommended by schools. Motor operates on 6 volts of battery current. Labeled box



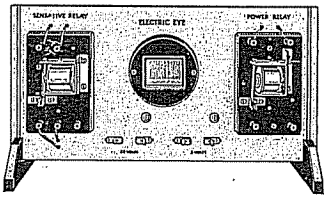


At left—No. 3502 TELE SET

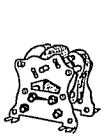
Learn telegraphy. Two complete sending and receiving instruments for learning code. C. W. buzzer type for telegraph communication. Also flash for night signalling or silent code. Teaches International-Morse code. 50 feet of wire included for distant communication. Complete with high pitch buzzer, bulb, reflector, quick action key, code charts. Book of instructions. Operated from two standard flashlight cells purchased separately.

At right—No. 6 ELECTRIC EYE

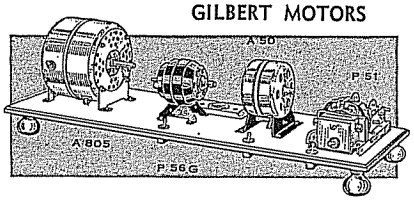
Mysteries of electrical action through Selemium Cell and Sensitive Relay. Equipment mounted on panel and wired for operation. All experiments illustrated and explained in manual. Basis of action through light rays penetrating Selemium Cell which is extremely sensitive to change of light, either to greater or less conductivity. Lights electric light with match. Electric Light turns itself off. Rising sun operates alarm—smoke alarm—auto lights sound garage alarm and other mystifying electrical stunts. Operated from 22½ volt B Battery and 2-1½ volt dry cells purchased separately.



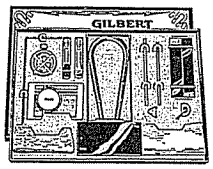
GILBERT MOTORS



P 58



ALL HAVE PULLEYS	VOLTS CURRENT CYCLES	SWITCH	SIZE	CORD & PLUG CAP	COLOR	NO. TO CAR-TON	CARTON WT.
A-50	110v. A.C. 60 cycles only	None	4" x 3½" x 3 1-16"	Yes	Nickel and Black		
P-51 Geared and Reverses	110v. A.C. D.C. 60 cycles or less	Toggle	5" x 3" x 2½"	Yes	Nickel and Red		
P-56G Powerful Speedy	110v. A.C. D.C. 60 cycles or less	None	3½" x 3" x 4½"	Yes	Black		
P-58 Erector Battery Type	6-14v.	None	3" x 2¾" x 2⅞"	No	Nickel		
A-805 for Lathes and Machine Tools	110v. A.C. 60 cycles only	Toggle	5¼" x 5¼" x 6"	Yes Rubber	Nickel and Black		



Above—No. 2 MAGNETIC FUN AND FACTS

Contains Horseshoe Magnet, Bar Magnets, Compass and all necessary parts to do many fascinating experiments in Magnetism and Static Electricity.

If yo
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For the boy who loves
trical marvels of the age,
and awe inspiring mysteri
interesting experiments an
You'll find all these wo

No. 1½ Erecto
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No. 3½ Erecto
No. 4½ Erecto
No. 5½ Erecto
No. 7½ Erecto
No. 8½ Erecto
No. 9½ Erecto
No. 10½ Erecto
S Skyscraper
No. 3 Electricity
No. 1 Motor Ki
No. 10 Advance
No. 3502 Tele S
No. 6 Electric E
No. 2 Magnetic
A50 110v. Induct
P51 Electric Eng
P56G 110v. Uni
P58 Battery Mot
A805 110v. Indu

u like Thrills
dventures—
like being
ECTOR
ENGINEER

ld you like to be an automobile engi-
ild a big motor truck? Put it together—
ce—with your own hands. How would
construct a Portable Derrick, with a
engine in it—and then make it work
one's you see on the highways? How
would you like to make a draw
bridge that actually opens and closes
—a towering ship crane as used in
Uncle Sam's Navy Yards—a mighty
hoisting engine—an airplane—and
dozens of other thrilling engineering
marvels?

Does that sound like fun? I'll tell you boys, being an engineer is the most exciting thing in the world. And that's just what you are when you have one of these New Erectors.

And listen boys—new, outstanding features have been added to Erector, making it better than ever before.

Just think of a completely assembled electric engine—not just a motor—but a real engine complete with built in gears.

Then there are big solid steel base plates in colors, and giant girders, making possible larger and stronger models.

tinker and experiment with the elec-
re are hundreds of sensational thrills
revealed in the performance of most
tunts.
er outfits at your favorite toy shop.

PRICES

. . . . .	$ 1.00
. . . . .	2.25
. . . . .	3.00
. . . . .	5.00
. . . . .	6.95
. . . . .	10.00
. . . . .	12.50
. . . . .	16.95
. . . . .	25.00
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. . . . .	1.00
Electrical Set . .	10.00
. . . . .	2.50
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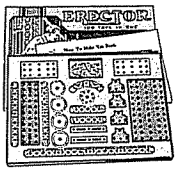
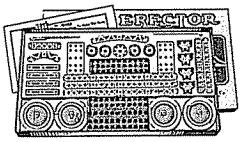
un and Facts . .	1.00
n Motor	2.00
e	3.95
rsal Motor . . .	2.95
. . . . .	1.00
tion Power Motor	6.25

The Great New ERECTOR REG. U.S. PAT. OFF. REDESIGNED—MODERNIZED

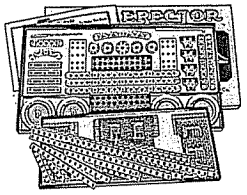
The only Construction Toy that builds the square girder.



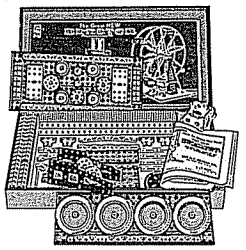
Above — No. 1½ ERECTOR
Dandy Beginner's Set. Builds many different models such as jib crane, battleship, wagons, trucks, etc. Large assortment of parts and How-to-Make-'Em Book. Packed in cardboard box with 5 color label



Above — No. 2½ ERECTOR
Apprentice Set with big red wheels, curved and long girders, etc. Builds Ferris Wheel, Draw Bridge, Elevator, Cranes, etc. Packed in cardboard box with 5 color label and How-to-Make-'Em Book.

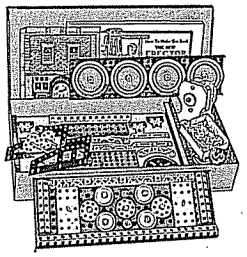


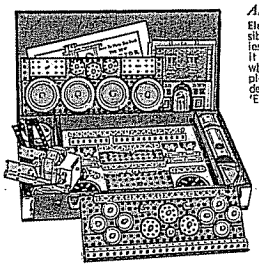
Above — No. 3½ ERECTOR
Intermediate Set with new big base plates, angle girders, big wheels, etc. Builds Derricks, Walking Beam Engine, Lift Bridge, Snow Remover, Trucks, etc. Packed in cardboard box with 5 color label. How-to-Make-'Em Book.



At left — FAMOUS No. 4½ ERECTOR
The set with powerful P58 Battery Motor, Gear Box, Gears, Pinions, Pulleys, etc. Builds Horizontal Engine, Bridges, Cranes and other motor driven models. Gear Box reverses, transmits and increases power and speed. How-to-Make-'Em Book included. Packed in hinged cover cardboard box.

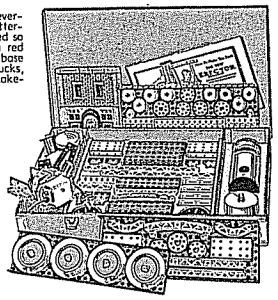
At right — SUPER No. 5½ ERECTOR
Has 110 volt A.C. Induction motor. No batteries or transformers to buy. New big base plates, large wheels, pulleys, gears, pinions, all necessary parts for building Merry-go-round, Dock Hoist, Elevators and numerous other models operating under their own power. Gear box reverses, transmits and increases power and speed. How-to-Make-'Em Book. Packed in metal cabinet

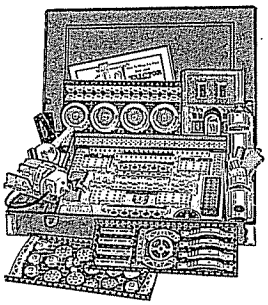




At left — No. 7½ ERECTOR
Electric Engine Set with Universal Electric Reversible Engine. Operates on house current. No batteries or transformers to buy. Engine can be geared so it increases power or speed and reverses. Big red wheels, boiler, girders, gears, pinions, big base plates, etc. Builds all types of steam engines, trucks, derricks and other action models. How-to-Make-'Em Book. Packed in steel cabinet.

At right — No. 8½ ERECTOR
The Engineers' Set with 110 volt Reversing Electric Engine. Operates on house current. No batteries or transformers to buy. Engine can be geared to increase power or speed and reverse. Electric Lifting Magnet, large disc wheels, boiler, girders, gears, pinions, additional base plates, etc. Builds Ferris Wheel, Bridges, Oil Drilling Rigs, Magnetic Cranes, Derricks, etc. How-to-Make-'Em Book. Packed in steel cabinet





At left — No. 9½ ERECTOR
The Automotive Set. Electric Engine with reverse switch. Operates on house current. No batteries or transformers to buy. Increases power or speed or reverses. Contains automotive parts, electric lifting magnet, large disc wheels, boilers, big girders, gears, pinions, angle girders, giant fly wheel, etc. Builds automobiles, trucks, giant power plant, automatic elevator, mammoth walking beam engine, etc. How-to-Make-'Em Book. Packed in steel cabinet

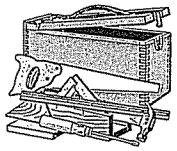
At right—WORLD'S CHAMPION No. 10½ ERECTOR
Includes reversible electric engine operating on house current, also battery motor. Builds the giant four-foot Locomotive and Tender, Railroad cars and a host of other fine models including those built with other Erector Sets. Contains assembled chassis, and special parts for locomotive type models such as Tank Car, Wrecking Derrick, Trolley Repair Car, Portable Steam Plant, Horizontal Engine, Electric Revolving Crane, etc., as well as parts for all model building. Two How-to-Make-'Em Books. Packed in metal cabinet

D1168

THE A. C. GILBERT CO., New Haven, Conn., U.S.A.

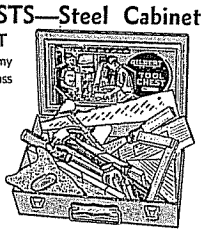
Printed in U.S.A.

GILBERT TOOL CHESTS—Steel Cabinets and Chests



At left—No. 05 TOOL CHEST

Dandy Boy's Kit. 8 tools in solid oak army chest, painted red, leather handle. Brass hardware.

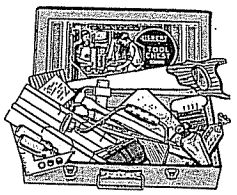


At left
No. 1 CABINET

The Jim Dandy. Contains 11 pieces for the young carpenter. Packed in red metal carrying case, with brass handle and suit case catches.

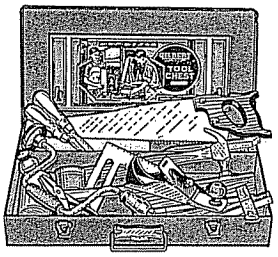
At left No. 2 CABINET

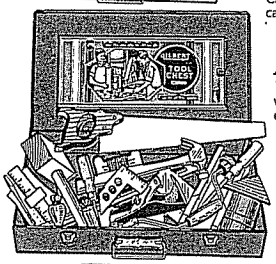
Packed in red metal carrying case with brass handle. Attractive 4-color label on inside and outside cover. Contains 18 useful tools



At right—No. 5 CABINET

16 pieces of better-grade tools for the young carpenter. 16" crosscut saw, 7¼" Plane, 2-Jaw Screw Chuck.* Assembled in metal carrying case with brass handle.

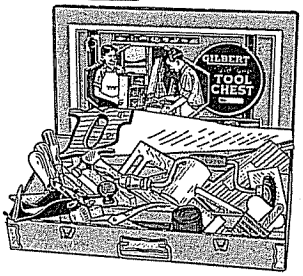




At left—No. 3 CABINET

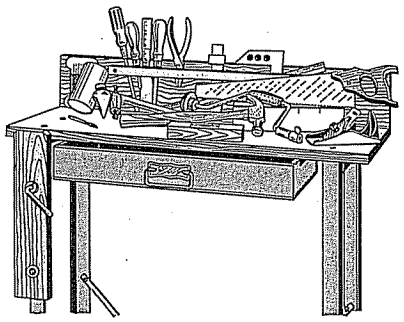
14 pieces in green metal carrying case with brass handle and suit case catches. Attractive label on cover.

BENCH TYPE MODELS



Above—No. 6 CABINET

Handy Set. 21 pieces of real practical tools—16" Saw, large brace, 2-Jaw Screw Chuck, Hammer, 9" Plane, Level, etc. Red metal carrying case, brass handle, reinforced corners, suit case catches. Attractive label on cover.

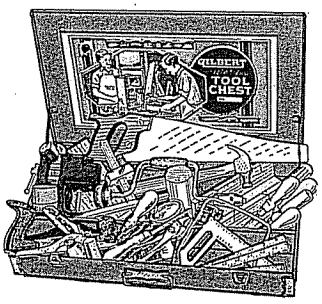


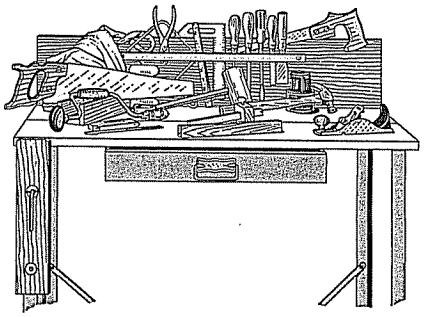
Above—No. 8 BENCH TYPE TOOL CHEST

New, Modern, Improved bench with hardwood top, rack and steel legs. Drawer, 19 useful tools. Wood vise grip. Assembled stands 31" high, 30" long and 11¾" wide. Disassembled for shipping. Finish natural hardwood with red legs.

Below—No. 10 CABINET

Household Treasure Chest. Packed in blue metal carrying case, brass handle, reinforced corners and suit case catches. Contains 29 pieces including 16" crosscut saw, Scroll Saw, Chisels, Drills, 9" Plane, Metal Vise Soldering Iron, 2-Jaw Screw Chuck Brace, etc.





Above—No. 12 BENCH TYPE TOOL CHEST

New, Modern, Improved bench with hardwood top, rack and steel legs. Drawer, wood vise grip, 16" cross cut saw, chisels, hammer, plane, scroll saw, brace and bit, etc. 24 useful tools in all. Finish natural hardwood, red legs. Assembled stands 35½" high, 36" long, 18" wide. Disassembled for shipping.

Be a Real Carpenter

BUILD REAL THINGS!

How would you like to build—a treasure chest—a ladder—tree platform—chute-the-chute slide—dog house—racing coaster wagon—a new table or chair for your room—racing bobs—bookcase or even a small house for your club? You can build them all and hundreds of other things when you have a Gilbert Big Boy Tool Chest.

Gilbert Big Boy Tool Chests are packed full of tools—real building tools like those that expert craftsmen use.

Great steel saws that bite through wood like a knife through butter. Hammers that drive big nails home in a hurry. Carpenter's planes that scoop up mighty shavings and smooth off any wood surface. Braces and bits that bore holes right through boards. Screwdrivers, levels and dozens of other useful tools that build everything you want.

Then there's the big Gilbert Bench Type Tool Chests that any craftsman would be proud to own. All popular Gilbert sets are shown on this page. Examine them closely—pick out the one you want and tell Dad about it.

PRICES

No. 1 Cabinet . .	$ 1.00
No. 2 Cabinet . .	2.50
No. 3 Cabinet . .	3.50
No. 5 Cabinet . .	5.00
No. 6 Cabinet . .	6.95
No. 10 Cabinet . .	10.00
No. 8 Bench . . .	8.25
No. 12 Bench . . .	12.50
No. 25 Bench . . .	25.00

Hours of Fascinating Fun with Hammer, Saw, Chisel and Plane

"Build-'Em-Yourself" Idea, as Practiced by Many Boys, Offers Unlimited Opportunities to the Young Craftsman

Bill Slocum lives down in Georgia, Sam Whittlesey belongs out in Michigan and Frank White lays claim to being a full-fledged Yankee from the state of Maine, yet these three boys in widely separated parts of the country are all expert wood craftsmen and each is converting the fun they get from making wooden novelties into bonafide American dollars. We mention these three simply as examples but there are many more boys throughout the country who have caught the swing of the "Build-'Em-Yourself" idea and are cashing in on this fascinating hobby. You too can enjoy this fun simply by owning the necessary tools and devoting a little time to becoming clever in using them.

Now it's perfectly natural for every boy to want to build things and, when he gets hold of a saw or a hammer, he starts something.

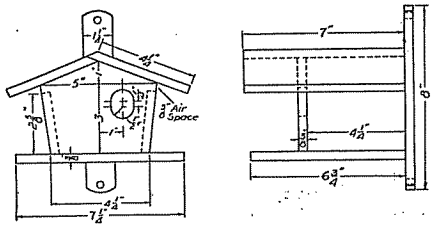
These two pieces, however, while extremely important are only a small part of the craftsman's equipment for there are planes, chisels, bits, braces, awls, mallets, screw drivers, marking gauges, jig-saws, tri-squares, compasses, mitre boxes, etc., and Gilbert Tools for the young carpenter, as illustrated elsewhere on the colored pages, present outfits both in steel cabinets and bench type models, that are the finest available.

Just think of the fun you'll have building with tools like these and imagine the hundreds of things you can make such as sunbonnet girls, windmills, mad cats, Dutch girls, ducks, lighthouses, birdbaths, Indians and various other unique designs for lawn decorations.

Then there are plenty of things you can build for the home or your den and you can easily mend broken things around the house and make them as good as new.

Boys, there is no limit to what you can do with a good set of tools and many of your creations can be beautified with special designs either by carving with gouges or burning in with heated etching tools. This latter method is called Phrography and it's very easy to make your own etching tools by obtaining a piece of copper rod about one-quarter inch in diameter and about four inches long. File down one end to a point and insert the other end into a handle. You simply heat the point of the etching tool until it is red hot and then without much pressure burn in the design that has been drawn with pencil on the wood.

How to Build a Wren Bungalow



Material that will warp the least should be selected for bird houses, because they are exposed to the elements of the weather.

Cypress is very good, but packing boxes, no doubt, will be most convenient, as the lumber in them is usually about three-eighths thick, and is just the thing for bird houses.

One thing to keep in mind when making a bird house is to provide some means for removing the bottom or top so it can be cleaned each season. This can be accomplished by fastening the part to be removed in place with screws, as they can be taken out without breaking the parts.

The front and back are the same size and shape. They can be most conveniently made by tacking two pieces together and planing to shape at the same time. The hole should be bored before the front is cut from the long piece of board; this will keep the wood from splitting.

Make the side pieces and assemble them with the front and back, using one-inch No. 18 brads. Now make the roof boards but do not plane the bevel until after they are bradded in place. Of course the piece is tacked in place and planed first and then the other tacked over it.

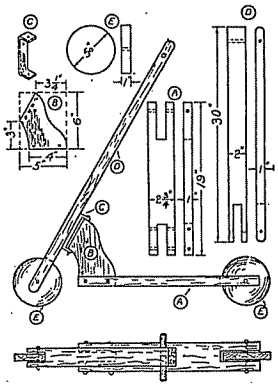
The floor may be fastened with screws to allow for cleaning. Also note the air space under the roof.

Paint the house white, tan, green or brown; this will preserve the wood and add to its attractiveness. It may be covered with bark or twigs held in place by tacks or brads, so as to add a rustic appearance.

Wren houses should be hung from six to twenty feet from the ground and protected from cats, squirrels, etc. A funnel-shaped piece of tin or row of spikes, placed about the post, will ward off the wren's enemies.

What Sport Building and Riding This Footmobile

Very simple to make and is propelled by one foot while other is standing on bottom board.



Use any material that is strong enough to hold your weight. Make the bottom board (A) as on detailed drawing. Cut-outs for wheel and part (B) made with saw for cutting with the grain, and a chisel or small bit for cutting across the grain. Bore for ⅜" bolts in front end and half inch for wheel in back. Brace (B) is ¾" thick. Holes are required to fasten bolt to brace (C) and bottom board (A).

Next make handle and peg for a good hand hold.

Part (C) should be made of metal. It is merely an angle iron with holes bored for screws. Any blacksmith will make it for little money.

Wheels can be cut with a saw from a piece of inch wood, making them as round as possible.

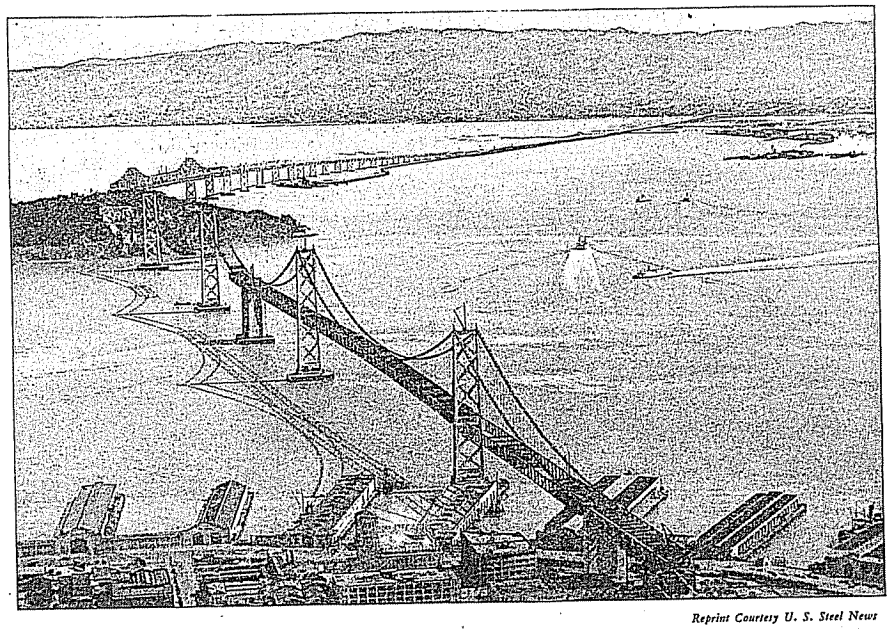
Paint parts with colors and then assemble. Part (C) is fastened to handle with flat-headed screws, other parts are assembled with bolts. Tack sheet metal on wheels for tires and use short iron pipe fitted to hole to act as a bushing.

GILBERT THRILLS

The World's Greatest Steel Highway

San Francisco-Oakland Bay Bridge, 8¼ Miles in Total Length, an Engineering Monument of the Ages

Expected to Hold Record for Length for One Thousand Years



Reprint Courtesy U. S. Steel News

Eight and a quarter miles of steel and cement, of which four and one-half miles are over water, this monumental structure creates a new avenue of travel between the Cities of San Francisco, Oakland, Alameda and Berkeley

Across the waters of San Francisco Bay stretches a mighty steel pathway, the construction of which is the greatest of all bridge building feats yet attempted.

The immensity of the project is almost beyond comprehension and barriers and obstacles to be overcome were the most severe of tests in engineering science and skill, yet today this super-structure is a reality—a great dream come true in steel and cement. Yes, San Francisco Bay has a "man-made" contribution to add to the beauty of its 400 square miles of sheltered waters that nature endowed and a great steel highway 8¼ miles long—the largest in all the world—connects the cities of San Francisco and Oakland.

Until recently it was considered impossible to connect San Francisco with the other cities of the bay by a bridge, owing to the great depth of water, but engineering science has surmounted every difficulty.

The entire scheme is unique for the many records that have been established, chief among these being the great depth of the piers, one which penetrates 235 feet below the water line and the bold and original manner in which these foundations have been secured. Of the 51 piers in this great bridge, seven are on dry land and 44 in the water. The foundations of three of these 44 underwater piers rest on great beds of concrete that were formed by dumping dry concrete from specially-designed buckets into steel cofferdams resting on the floor of the Bay. The foundations of 34 of the other piers are built on fir piles, 80 ft. long, driven into the soft bottom of the Bay and the number of these piles required for each pier varied from 300 to 625. Three other piers consist of cellular concrete bases formed within great caissons, and the remaining four are entirely original in design, and for that reason have attracted the attention of engineers all over the world.

An account of the erection of the great central anchorage will give an idea of the novel and daring methods by which foundations for some of these colossal piers were obtained. This anchorage is regarded as the greatest engineering wonder of the bridge. It is halfway between San Francisco and Yerba Buena Island, and will be called upon to take the strain of the immense cables supporting the two spans of the double suspension bridge across this part of the Bay.

The first step was the construction of a great steel and timber caisson that measured 197 ft. by 92 ft., and was the largest ever built. Internally it resembled a gigantic egg crate, the compartments being 55 circular cylinders, or cells, each 15 ft. in diameter, built of steel piping. These cells were arranged in five rows. Their openings were covered with semi-circular steel caps, and compressed air was pumped into them in order to give buoyancy to the structure when it was afloat. The spaces around the cells and between the walls were filled with concrete, reinforced with a network of reinforcing rods; and to the bottom of the caisson was attached a steel cutting edge 17 ft. in depth.

When ready this unwieldly contrivance was towed out to the site, and elaborate arrangements were made for sinking it gradually. As it sank its timber walls were heightened, as were also the steel cells; and in the meantime more concrete was poured between the cells and the outer walls through large flexible pipes resembling elephants' trunks. Just before the cutting edge reached bottom the mass weighed no less than 80,000 tons, and was kept afloat by the terrific pressure of the compressed air in the cells.

Huge anchor chains held the great caisson in place until the time came for the most tricky and delicate part of the whole operation—that of bringing it to rest at the exact spot desired. Divers were sent down to loosen the anchor chains, and the engineers took up their positions, anxiously sighting their instruments on distant points. The moment the caisson was in the right position the chief engineer gave a signal. Instantly the pressure of the air inside all the cells was reduced, and the cutting edge sank deeply into the mud, bringing the great caisson to rest. Dredging buckets were lowered into the cells and the mud was removed from them, this work being continued until the cutting edge had penetrated to bedrock.

When all the mud had been taken out, concrete was poured down through the cells until it formed a bed 10 ft. in depth on the rock on which the bottom of the caisson rests. The lower portions of the cells were then plugged with concrete to a depth of 34 ft. Above this height they contained water that had been allowed to flow in, except in the cases of three cells at each corner of the structure, or 12 cells in all, which were filled with concrete to a height of 25 ft. above the water line. Thus the structure is solid to a height of 44 ft.

The whole pier towers 508 ft. above bedrock, and 281 ft. of its height is above the waterline. The underwater portion is thus 227 ft. in depth, and constitutes the honeycombed portion with its 43 circular cells. Scientific tests have shown that piers designed with a honeycombed form of base are able to withstand earth tremors and the buffeting of currents and waves better than if they were built up entirely solid.

The walls of the pier above the water are more than 14 ft. thick, and into them are anchored great steel frames carrying the eye-bars to which the cables that support the roadway are attached. There are two cables, each 28¾ in. in diameter and containing 17,464 wires; and the anchorage will have to withstand a pull of 18,000 tons from each cable.

All told, about 18,500 tons of cable were used in the erection of this single crossing. It represents a length of 70,815 miles, or nearly three times the circumference of the earth, and the total length of the 2¼ in. suspender ropes will be 43 miles. About 152,000 tons of structural steel were used in the erection of the superstructure and more than 30,000 tons for reinforcing purposes. In the great bases of the piers alone there are more than 1,000,000 cu. yds. of concrete.

Everything in connection with the undertaking was on a colossal scale, and stresses and strains were scientifically worked out to ensure perfect safety. Engineers spent many days on top of the towers peering down on large ruled squares of paper that enabled them to observe the movements due to wind and sun, and they declare that a tower may bend over as much as 3 ft. when fully loaded. The deck of the bridge is liable to sway several feet under the influence of wind pressure, and therefore has been attached to the piers by rocker arms in order to allow movement of this kind. As traffic rolls across the bridge the pull on the cables will cause a wave to roll forward, raising the deck ahead and depressing it underneath the vehicle to create a slight "S" formation; but the deck could be lowered as much as 8 ft. without danger to the structure and without being even noticed by passengers.

This colossus of bridges will carry two decks, the upper one, 58 ft. wide, providing six lanes for motor traffic, and the lower one being reserved for trains and trucks.

Many features, individual in themselves, stand as engineering triumphs and the immense double deck tunnel through which traffic will cross Yerba Buena Island is an outstanding achievement. This tunnel, 65 feet wide, 52 feet high and 540 feet in length, is lined with steel and concrete and is the largest bore vehicular tunnel in existence.

The cable spinning operations as carried out was another feature of greatest importance.

The theory of the suspension bridge is that of the clothesline anchored at either end, sufficient to hold the weight hung thereon, and supported at intervals by props or towers.

Over the west bay, between San Francisco and Yerba Buena Island, are twin complete suspension bridges, each 4,630 feet long, joined end to end and having at their junction a common anchorage consisting of a great concrete monolith which rises 282 feet above water and rests on bedrock 220 feet below low tide.

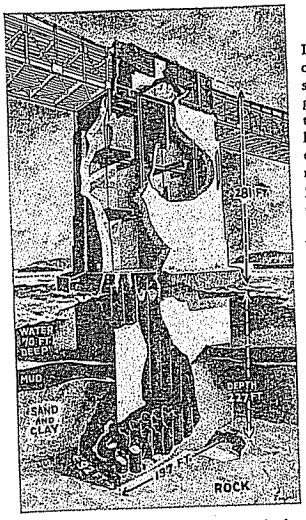


Diagram of the great central anchorage, considered the greatest engineering wonder of the San Francisco-Oakland Bridge. Giant cables extend from this mammoth anchorage pier to huge eyebars embedded in 68,000 cubic yds. of reinforced concrete at the San Francisco end and in two 160 ft. tunnels filled with concrete on the island end. Each cable exerts a pull of 40,000,000 lbs. average live and dead load on the tunnel and San Francisco anchorages.

Reprint Courtesy California Toll Bridge Authority

A total of 17,464 wires, each 0.195 inches in diameter, have been spun in each of the two cables supporting the bridge. These cable wires were joined by being threaded and drawn together by a turn buckle sleeve. Each cable will exert a pull of 40,000,000 pounds dead and live load on its anchorage.

A shuttle wheel took a loop of wires from one anchorage and carried it over the towers to the other anchorage and hooked it on to anchored eyebars, then picked up another loop of wire and shuttled it back to hook this loop on an eyebar at the other end.

The shuttle wheel was drawn across by means of an endless cable which follows the deflection of the permanent cables.

These 17,464 wires, laid parallel, formed a cable 28¾ inches in diameter when compacted. At the anchorages the cables are separated into 37 strands of 472 wires each, each strand being fastened to an eyebar anchored in concrete.

California's great bridge is a community project, the supreme head of which is the California Toll Bridge Authority of which Governor Frank F. Merriam is Chairman.

The bridge is built by private contract under the supervision of the San Francisco-Oakland Bay Bridge Division of the State Department of Public Works, and revenues will be from toll charges with gradual reductions over a period of 20 years, after which it will become free. Its cost will be approximately $77,600,000.

The bridge is financed entirely without taxation, its cost defrayed by sale of 4¾ per cent bonds issued against the prospective revenues of the bridge. These bonds have been purchased at a discount increasing the yield to 5 per cent by the Federal Reconstruction Finance Corporation and may eventually be sold to the public.

In addition to the bonds purchased by the Reconstruction Finance Corporation, the State Gas Tax Fund loaned $6,600,000 for the building of the approaches which sum must be repaid the Gas Tax Fund out of tolls before the bridge can be made free to the public. Like a State highway, the completed bridge will be maintained out of the State Highway Maintenance Fund.

Eleventh Olympiad
World's Greatest Athletic Classic

Six Thousand Contestants From Fifty-three Nations Thrill Huge Crowds With Startling Performances

New Champions Shatter World Records in Most Brilliant Sports Spectacle of All Time

The results and achievements of the World's greatest amateur athletes in the Eleventh Olympiad held at Berlin, are now a matter of record. I wish that I might be able to convey to you a picture of this most wonderful event, but no words can properly portray the brilliancy of such a spectacle.

Visualize, if you can, a sports area covering some 400 acres, divided into many competitive sectors, with a huge main arena seating 100,000 spectators, and all the color, action and enthusiasm of cheering thousands as they witnessed record-breaking performances by the world's greatest athletes, and you will have some sort of a picture of this wonderful setting.

Yes, Berlin, at a cost of $25,000,000, put on the show of shows, but back of this was the finest of spirit, the full support of a government and an entire nation, plus the Americans will to win, and win she did, for in final tabulation Germany amassed a point total that gave her first place with plenty to spare, and her cherished dream for athletic supremacy became a reality.

Acknowledging Germany's supremacy in collective winnings, however, does not tell the entire story, and with no attempt to minimize the honor and laurels her athletes brought her, the United States actually produced in Jesse Owens the greatest Olympic artist of all time, for it was this man of lightning speed, who was acclaimed by coaches from every part of the world as perfection in form and smoothness, who repeatedly brought madly cheering thousands to their feet in frenzied excitement, and in admiration of his individual brilliancy.

It was Owens, the triple winner, who completely dominated the entire Olympic cast, and while others have won three Olympic firsts, none have ever accomplished this result over such a record shattering path.

Blazing speed and effortless smoothness left competition far behind in the 100 and 200 meter dashes, he outshone the field in the broad jump, and climaxed his marvelous running as a member of the United States 400 meter relay team.

While Owens is a champion, there are other champions, too, and such brilliant athletes as Morris and Meadows of the United States, Lovelock of New Zealand, and Son of Japan, each take places in their respective classes as outstanding performers, and to every champion, irrespective of sex, in the twenty-two branches of competitive sport, the world owes and willingly gives a salute of admiration, for these men and women have won through their individual ability their claim to acknowledged greatness.

Out of such an array of talent and with competition so keen, it is somewhat difficult to single out any one particular event as outstanding, yet the 1500 meter race, won by Jack Lovelock of New Zealand in the record time of three minutes forty-seven and eight-tenths seconds, proved to be the greatest thriller of the games.

This, boys, and much more could be written about the world's greatest athletic classic, but in conclusion, I want to stress what I consider to be of equal importance with the actual competitive success, and that is, the exemplification of every tradition of sportsmanship from these athletes from every section of the world. Undisturbed in defeat, modest in victory—their conduct always typified fair play, courtesy and courage.

Japan will be host to the world in the "great classic" of 1940 at Tokio, and perhaps in the near future some of you boys will be actual competitors with the opportunity of being crowned a World's Champion.

Acme

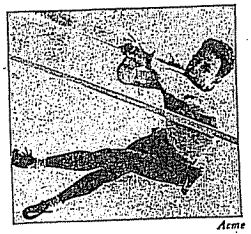
JESSE OWENS, U. S. A. Triple winner and outstanding athlete of games, 2 World's Records, 4 Gold Medals. 100 Meter Dash—0:10.3; 200 Meter Dash—0:20.7, World's Record. Broad Jump — 26' 5-21/24", World's Record. Member of 400 Meter Relay.

Acme

KENNETH CARPENTER, U. S. A. New Discus Champion with World's Record of 169' 7-29/64".

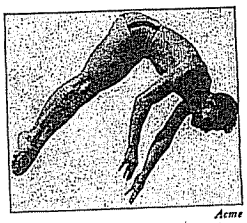
Acme

JACK MEDICA, U. S. A. Winner of 400 Meter Free Style Swimming Event.



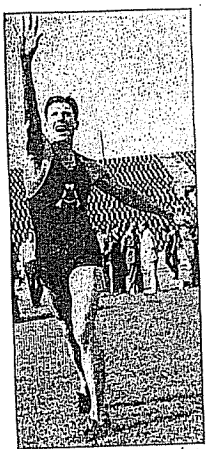
Acme

EARLE MEADOWS, U. S. A. Up and over for new World's Record of 14' 2-15/16". An unusual achievement accomplished in rain and darkness. One of the Games' finest performances.



Acme

MARSHALL WAYNE, U. S. A. Winner of Platform Diving Championship.



Acme

GLENN MORRIS, U. S. A. Captured the Decathlon and established a World's Record of 7900 points for the 10 competitive events.