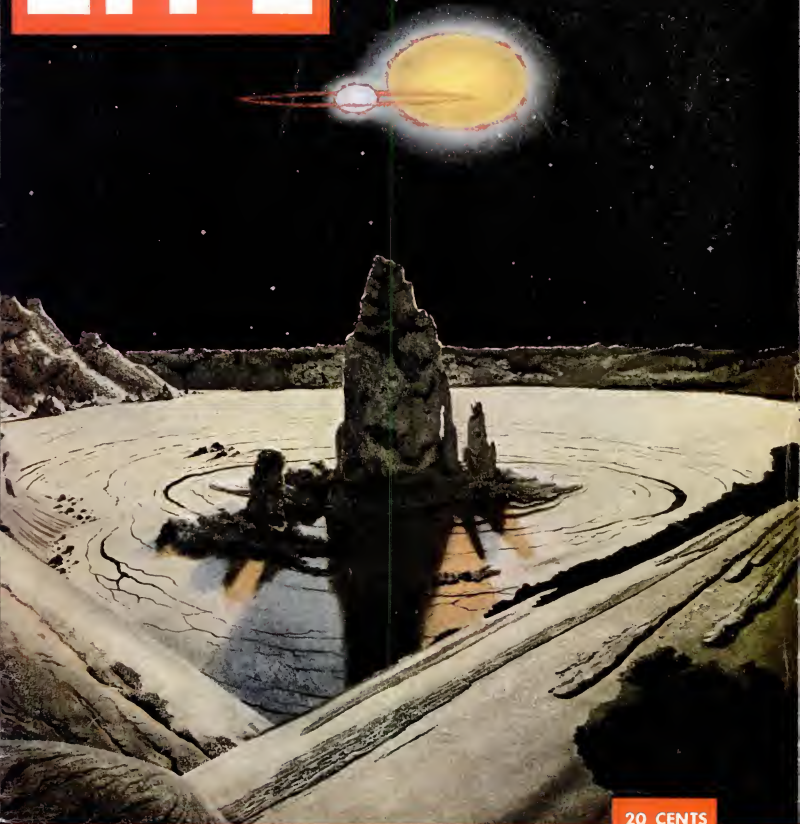


LIFE

THE WORLD WE LIVE IN: PART XIII
THE STAR-STUDDED REACHES
OF MEASURELESS SPACE



20 CENTS

DECEMBER 20, 1954

REG. U. S. PAT. OFF.



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CHANEL



Unretouched photograph of Plymouth Belvedere Sport Coupe

EVER SEE A BETTER-LOOKING CAR...AT ANY PRICE ?

SMARTEST...MOST BEAUTIFUL...OF THE LOW-PRICE 3

- *The biggest car in the lowest-price field*
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- *PowerFlite... finest no-clutch transmission made, with Flite-Central Drive Selector on the instrument panel*
- *Full-time Power Steering* • *Wide-pedal Power Brakes*
- *Easy-Glide Power Seats and Easy-Lift Power Windows*

Love at first sight... that is the almost universal condition of those who have seen the all-new 1955 Plymouth. (Indeed, if you can resist the spell of this enchanting motor car, it may well be asked if you really are young in heart.)

The 1955 Plymouth is a masterpiece of contemporary design. Its clean, forward-thrusting lines give it the air, even at rest, of a well-trained thoroughbred... fleet... trim... taut-muscled

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This year, of all years, *look at all 3*. Not only for styling but for superb engineering and craftsmanship, we believe your choice will be Plymouth.

PowerFlite and all power driving aids available at low extra cost. Enjoy "THAT'S MY BOY," "SHOWER OF STARS," and "CLIMAX" on CBS-TV.

ALL-NEW PLYMOUTH '55

See it...drive it...today at your Plymouth dealer's... a great new car for the YOUNG IN HEART



A **GA**INST THE RAVAGING HORDES
OF ATTILA...STOOD A WARRIOR'S MIGHT
AND A PEOPLE'S FAITH!
AGAINST HIS RUTHLESS PAGAN LUSTS...
THE POWER OF A WOMAN'S LOVE!

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THE STORY OF
ATTILA THE HUN

COLOR BY
Technicolor



Starring **JEFF CHANDLER**

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CINEMASCOPE

**SIGN
OF THE
PAGAN**

A GREAT NOVEL!
A GREAT SCREEN
ENTERTAINMENT

LETTERS TO THE EDITORS

SPEAKING OF PICTURES

Sirs:
My deepest thanks to the photographer, Mr. Arthur Fellig, for his impressive Speaking of Pictures (LIFE, Nov. 29). His pictures certainly reflect some brainless deizens of this community.

MRS. N. BRSKY-KUNTSTOFF

New York, N.Y.

● Fellig doesn't feel that way about his subjects, as shown by the fact that he turned his special lens gadget on himself (*delos*).—ED.



FELLIG AS SEEN THROUGH HIS SPECIAL LENS

MAPPING OF A GREAT MIND

Sirs:
I found "The Mapping of a Great Mind" (LIFE, Nov. 29) by Henry Grunwald a truly enlightening experience. Mr. Toynebe seems endowed with the wisdom of a sage and the lovely simplicity of a child. Such men do immeasurable good in this world rushing headlong to destruction.

VIOLET M. FORELAY

Huntington Park, Calif.

Sirs:
By what logic or evidence does the author make the arrogant statement, "This extraordinary profession of faith must be respected as sincere though theologically hardly tenable"? The Unitarian Church has for the past 100 years expounded substantially the same views that Toynebe has and never before in a responsible magazine has our position been characterized as "theologically hardly tenable." I am quite disturbed by your cavalier treatment of a mental giant and, by implication, the whole liberal religious movement.

REV. THEODORE POPP

Grafton, Mass.

Sirs:
Among all the famous men who gave enlightenment to the historian and philosopher I sorely miss a representative of great music.

FREDERICK LOWENTHAL, M.D.

Brookline, Mass.

● Toynebe mentions no specific musician but says that while listening to monks singing the Office in a Benedictine abbey he was reminded that this work of God "had been carried on without a break" for

1,400 years and that "this Western religious community, which was the matrix of Western Christendom, possessed a greater vitality than any of the secular institutions that had hived off from it."—ED.

Sirs:

Does Arnold Toynebe in his "Acknowledgements and Thanks" give credit to Oswald Spengler? Toynebe's view of history "as a succession of civilizations striving onward and upward" was minutely explored in *The Decline of the West* published 36 years ago.

The important difference between the two great historians is that Spengler predicts an inevitable decline of the West, whereas Toynebe believes our future shall be what we make it.

JOHN K. MACKENZIE

Golden Valley, Minn.

● When Toynebe first read Spengler he wondered whether his "whole inquiry had been disposed of . . . before even the questions . . . had fully taken shape." But he finally decided that Spengler was "most unilluminatingly dogmatic and deterministic" about the genesis of civilizations.—ED.

NOW THEY'RE IN ITALY

Sirs:
Perhaps Photographer Angelo Corzi, who took the picture of a flying saucer ("Now They're in Italy," LIFE, Nov. 29), saw the same yellow luminous disk in the Dolomites in North Italy that a friend and I saw while strolling along the old Appian Way. Suddenly the sky seemed to rip like a velvet curtain, exposing a speeding yellow luminous disk at least twice the size of a full moon. We never did find any explanation for what we saw, and nobody seemed to believe us, but we believe Angelo Corzi.

SAL FABRAGE

Terre Haute, Ind.

Sirs:

You say Hannibal's elephants crossed the Alps 1,736 years ago. Unless his elephants dallied for over 400 years somewhere between the Pyrenees and the Alps, they must have crossed with the illustrious Carthaginian in 218 B.C.

THELMAN S. MACHENAY

El Centro, Calif.

● It was 2,172 years ago.—ED.

FORCING A NORTHWEST PASSAGE

Sirs:
I was a member of the crew on the *Northwind* on that illustrious adventure you described in "Forcing a Northwest Passage" (LIFE, Nov. 29). I think your pictures were excellent. The beauty was of the same true splendor I saw with the naked eye. I was very proud to be on the patrol, and even more proud to see your article.

PHILIP B. JEFF SK3

Seattle, Wash.

United States Coast Guard

Sirs:

Your splendid photographic essay recalled a whaling incident that might interest you since it indicated a Northwest Passage several years before Mr. Amundsen's two in 1906.

Two distant relatives of mine, brothers, were each whaling captains. One sailed directly from Nantucket, the other out of San Francisco. Swapping yarns years later, they discovered a startling coincidence. They found that the brother on the Alaskan side had killed a whale that bore an iron from his brother's whaler cruising off Greenland. Checking dates in their logbooks, they saw that this whale, lost by the eastern brother, could not possibly have swum around Cape Horn in such a short interval of time.

GEORGE SUMNER HILL

New Haven, Conn.

NEW DOCTOR MOVES IN

Sirs:
Congratulations to the Tennessee Medical Foundation and to Dr. and Mrs. Meek ("A New Doctor Moves In," LIFE, Nov. 29). To LIFE I convey deep-felt ap-

preciation for presenting life in the medical profession as seen from the other side of the tracks.
PATRICK J. BOVE
Minneapolis, Minn.

LAST TESTAMENT OF PANICKED PIGEON

Sirs:
A hearty commendation to Arthur Ford for his picture, "The Last Testament of a Panicked Pigeon" (LIFE, Nov. 29) who loomed into the T-33. However a reprinting is in order for saying the T-33 has two engines. It has two air scoops, but only one engine.

BILL R. KEELER

Laredo, Texas

Sirs:

The friends of the panicked pigeon who were caught in the jet air scoops remind me of this cartoon (*before*) I did back in 1949.

ROY WILLIAMS

Burbank, Calif.



ANOTHER RESULT OF BIRDS MEETING JET PLANE

ONE-NUN BUILDING PROJECT

Sirs:
While your account of Sister Teresa's project ("A One-Nun Building Project," LIFE, Nov. 29) fills me with admiration, I can't help wondering: will her convent and retreat, that will be open to people of all faiths, also be open to people of all races? I hope so.

M. ALDEN MORRIS

Woburn, Mass.

● It will.—ED.

MINI PIGS

Sirs:
I think medical research is wonderful, but I'm shocked that in the story of "Mini Pigs for Medical Research" (LIFE, Nov. 29) you say "practically nobody is sentimental about pigs." Having been brought up on an Ohio farm, I've come downstairs many a morning and found newborn piglets being warmed behind the kitchen stove, and I'm sentimental about them!

M. FITZEL

Lake Charles, La.

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1937 Off to a simple start their first year, Irene Wolf holds daughter Alexandra while Billy, playing his flute, holds their setter, Dinny.



1938 Posing as bicyclists in the front yard, Wolf family now includes second child, Nicholas, and second dog, Terry (right), son of Dinny.



1941 As musical equestrians, family balances on some merry-go-round horses picked up at carnival in Maine, where Wolfs go in summer.



1943 As sleigh riders, Wolfs welcome fourth child, Andrew. Like the stork, he was photographed separately and his cutout pasted on.



1944 Wolfs perch on a plane, dramatizing the fact that Billy, who is head of paper company, was taking lessons in flying that year.



1947 As Inlanders, Wolfs show off spaniel, Tassel (right), replacing Dinny, who died. Terry is in center. The spaniel at left is relative's.



1948 As Eskimos, the fur-coated Wolfs display their new Newfoundland, Boomer (left), replacing Terry, who was killed by a train that year.

SPEAKING OF PICTURES

Every new Christmas card tops a family's growing gag



1939 As an instrumental quartet, family adds a new musical touch with Alexandra on violin, Irene on shepherd's pipe, Nicholas on recorder.

In 1937, for their Christmas cards, the Walter Wolfs of Rydal, Pa. decided to try something different in a family pose. Once started, they have kept trying every Christmas since to out-do themselves in making each new card more off-beat. The whole family suggests ideas and then goes all out in tracking down fancy costumes and elaborate props. A patient local photographer, Lucian Loeb, has gone along with all the gags and taken every picture.

In general, no setting is too outlandish for the Wolfs, but Mrs. Wolf put her foot down when her husband, who is called Billy, suggested posing in a racing shell on a river near a dam. Two things in the pictures are always the same. Billy always holds a flute and, to hide his bald spot, he has always worn a hat.



1940 As canoeists on snow-covered lawn, family now includes a third child, Catherine, and two ducks, here tethered by an unseen cord.



1942 As horse-and-buggy family, Irene and children relax while Billy manages their pet, Ranger, which had bolted when posing began.



1945 As firemen, family with borrowed helmets shows off the fifth child, Thomas. As in 1943, the baby picture is a superimposed cutout.



1946 As an Indian family, feathered Irene and the children are overshadowed by Billy's rented headdress, which he had to insure for \$300.



1949 As autoists, seated in a 1908 Oldsmobile at Franklin Institute, Wolf family now includes sixth child, Lucy, goggle-eyed in Irene's lap.



1950 As cowboy musicians, Wolfs clown with their newest instruments. They can all play instruments they hold here and in other pictures.



*Whether You Brush Your Teeth
Just Once, Twice, or 3 Times a Day...*

Colgate Dental Cream Gives The Surest Protection ALL DAY LONG!



Because Only New Colgate Dental Cream
—Of All Leading Toothpastes—Contains GARDOL*

To Stop Bad Breath Instantly . . . Guard Against Tooth Decay Longer!



Gardol, Colgate's wonderful new decay-fighter, forms an invisible shield around your teeth. You can't feel it, taste it, or see it—but Gardol's protection won't rinse off or wear off all day. That's why Colgate's—the only leading toothpaste to contain Gardol—gives the surest protection ever offered by any toothpaste!

Your dentist will tell you how often you should brush your teeth. But whether that's once, twice, or three times a day, be sure you use New Colgate Dental Cream with Gardol! Colgate's stops bad breath instantly in 7 out of 10 cases that originate in the mouth! Fights tooth decay 12 hours or more! In fact, clinical tests showed the greatest reduction in tooth decay in toothpaste history!



*Colgate's Trade Mark For Sodium
Hydroxy Succinate. Patent No. 2,589,710

**Every Time You Use It...New Colgate Dental Cream
CLEANS YOUR BREATH *WHILE* IT GUARDS YOUR TEETH!**

FAMILY'S CHRISTMAS CARDS CONTINUED



1951 As bicyclists, eight Wolfs are only one too many for a seven-seater museum piece. The new spaniel (center) is named Curley.



1952 As grinning sleepyheads, the family gathers on parents' bed, a wooden-canopied antique bought when Wolfs were married.



1953 As 19th Century dandies, the Wolfs overflow English carriage called a "break" owned by a farm at a nearby riding academy.



1954 As ballet dancers, Wolfs wear leotards. From left: Billy, Nicholas, Thomas, Irene, Catherine, Lucy, Alexandra and Andrew.



RATH
BLACK HAWK
CHRISTMAS TREATS
ARE WELCOME
UNDER ANY
TREE!



RATH
BLACK HAWK HAM
—honestly, it's the most scrumptious ham you can find. Tender. flavorful.



RATH
BLACK HAWK CANNED
HAMS—vacuum-cooked,
boneless, no waste.
So easy for father to carve.
Large Size, 9 and 11 lbs.
Party Size, 6½ lbs.
Family Size, 3¼—3¾ lbs.



RATH BLACK HAWK
BACON—lean, meaty
and lightly smoked.
Delicious!

Rath Christmas Treats
come in a very special
Holiday wrapper.

THE RATH PACKING COMPANY,
WATERLOO, IOWA

Merry Christmas eatin'... Iowa style!

The last little angel hung on the tree... the cookies were baked... mince pies were a'cooling and the black, cavernous oven stood hot and ready—waiting for the big Christmas ham.

Oh the goodness, the glorious goodness of the old-time Iowa ham!

Now we can't bring back the wonder of those jolly old Christmases, but the ham? *We do it even better!*

For we start with a real, Iowa corn-fed beauty—the Rath Black Hawk kind that's tender and pink and lean and brimming over with an elegant flavor. Then we use all the modern "know-how" to give it a delicate smoking, a sugar-curing that's sweet and subtle.

They're mighty good eating—these Rath Black Hawk Hams. What about one for *your* Christmas table?

Rath Black Hawk Meats

Rath makes over 1000 meat products—but when you try any one, it's one in a million.



FINER
FLAVOR
FROM
THE
LAND
O' CORN

6 exciting new ways to serve HEINZ QUALITY for festive holiday meals!



What work-savers Heinz Soups are!

Here's how they save you precious minutes as soups, sauces or cooking ingredients. Other recipes on labels.

ANY SOUP BY HEINZ will get your holiday dinners off to a traditional, appetizing start; for these finer-flavored condensed soups *really taste homemade!* Heinz chefs kettle-simmer them to time-honored recipes . . . use plump, tender poultry, selected, government-inspected beef, sweet cream and vegetables the like of which win county-fair prizes. So stock up for the yuletide season—and for good eating *any* time!

For The Youngsters' Party

1 Children love Heinz Cream of Chicken or Cream of Pea Soup brightened with croutons shaped like bells and dotted with chopped parsley or finely grated cheese.

Gay Garnish

4 For The Soup Course Make your croutons in the shape of tiny Christmas trees. Sprinkle the croutons with parsley flakes and paprika. Serve on Heinz Cream of Tomato or Cream of Mushroom Soup.

A Tasty Treat For Your Tree-Trimming Supper

2 Make Jiffy Shrimp Newburg: Blend 1 beaten egg yolk with 2 cans Heinz Condensed Cream of Mushroom Soup, undiluted. Stir in $\frac{3}{4}$ lb. cooked shrimp ($\frac{1}{2}$ lbs. green). Then spoon into 3 cups and sprinkle with 1 cup buttered bread crumbs. Bake at 325° F. 25 min. Serve with toast.

Quick, Easy Snack For Tired Shoppers

5 For a delicious, nourishing hurry-up soup, combine 1 can Heinz Condensed Cream of Chicken Soup with equal quantity of milk, 1 cup cream-style corn, 2 Tbs. minced parsley. Heat just to boiling point. Serve piping hot—with fruit salad, toast and coffee.

Teen-Age Buffet Supper

3 Let your free-for-the-holidays gang fix this easy, tasty Mushroom Rarebit: Heat 1 can Heinz Condensed Cream of Mushroom Soup, undiluted; $\frac{1}{4}$ cup milk, $\frac{1}{2}$ cup grated process sharp cheese in double boiler. Serve over broccoli or asparagus on hot toast.

Make The Most Of Leftover Turkey

6 Heat sliced leftover turkey in a sauce made by adding two tablespoons of milk to Heinz Cream of Mushroom Soup, undiluted. Add blanched almonds—slices of pimiento. Serve in patty shells. So easy to fix—and tastes marvelous!

SOUPS



4

Let Heinz Chefs Fix The Trimmings

Colorful Heinz Jellies lend extra flavor!

● For this important meal, choose the finest jellies you can buy—the kind Heinz puts up for you, using only pure fruit juice, sugar and skill. Heap your prettiest crystal dish with Heinz Quince Jelly, Raspberry Jelly or your other favorites of the 10 sparkling Heinz Pure Fruit Jellies!



Holidays are pickle days!



● Nobody makes pickles like Heinz! So a relish dish filled with Heinz Pickles—Sweet Mixed, Processed Dills, crisp Gherkins and others of the 21 favorites—definitely belongs on your holiday table!

Wonderful ways to finish Christmas Dinner!

HEINZ MINCEMEAT

● Spicy Heinz Mincemeat more than does justice to your flakiest pie crust! Packed with sugar-cured citron and fruit peel, currants and other delicacies, it's fully prepared.



HEINZ PUDDINGS

● Made to an authentic old English recipe, rich, traditional Heinz Plum Pudding is ready to heat and serve. Or if you prefer a lighter, fluffier dessert, serve Heinz Fig Pudding, made from choice, delicious Smyrna figs.



● Watch "HOME" on your NBC-TV station for Heinz recipe suggestions. And consult TV program listings for Heinz "STUDIO 57", a weekly program of outstanding dramas.

HEINZ

57 VARIETIES

You Know It's Good
Because It's Heinz!



Chocolate Chip Cookies

*You can't match the kind
you make with Baker's Chocolate Chips!*

One taste will tell you why Baker's Chocolate Chips are best for cookies. The flavor's so much richer! These semi-sweet chips are made from Baker's Chocolate—finest in the world! And they keep their shape through baking! Make sure you get Baker's Chocolate Chips. Can't-fall cookie recipe on package.



Chocolate makes it good . . . Baker's makes it best



Chocolate Marshmallow Cake

Top a devil's food cake with marshmallow whip and chocolate frosting. And remember—only Baker's Chocolate makes the cake and frosting so dark, so delicious! Recipes on package of superb Baker's Unsweetened Chocolate—America's favorite for almost 2 centuries!

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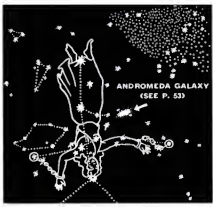
ANDROMEDA AND THE MAMBO

When an enterprising bandleader, in tune with the times, recently recorded his version of *Stardust Mambo*, horrified Hoagy Carmichael fans began to mutter that "this thing had gone too far." Shocking as it may be, however, the new title could be quite appropriately applied to this week's issue of LIFE, where in both stardust (pp. 44-70) and the mambo (pp. 14-19) are current news.

Not that either is really new. The mambo has been around in the U.S. in a more or less quiet state since at least 1949. The universe, with its stardusted galaxies, has been around about five billion years. The point is that the mambo has been bustin' out all over, in juke boxes, fashions, dance halls and the national economy.

And not to oversimplify matters, the universe, according to Lincoln Barnett's account, is also bustin' out all over. Our last report on its condition (LIFE, Oct. 9, 1950), based on then-known

facts, has to be revised in the light of new discoveries. The distant galaxy which sharp-eyed stargazers see beyond the constellation of Andromeda (see p. 53) is really twice as far away as it was thought to be not many years ago. Leaving to the country's planetariums the pleasant task of displaying to their visitors next week what the heavens over Bethlehem looked like at Christmas time, 1954 years ago, LIFE proffers its star-gazing readers an idea (left) of how



shapely Andromeda, upside down, will look to the Earth on Monday night, Dec. 20, 1954. Looking due west, the star on top of her head will be just 45° above the horizon. And the light seen from her galaxy started coming our way 1.5 million light

years ago. That puts it 9,000,000,000,000,000 miles away, according to the latest measurements, which makes its celestial appearance easily the oldest and the newest piece of news for this week.

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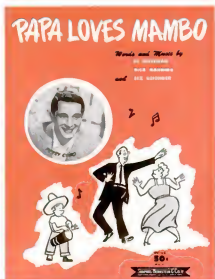
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TOP-SELLING MAMBO proclaims both papa and mama love mambo, but she mamboes out of his arms.

THEY WERE DOIN' THE MAMBO

Words and Music by RUDY BINE and DON BATE



TORCHY MAMBO telling of boy who loses girl to mamboing friend was first big mambo song hit.



YULETIDE MAMBO is coy ditty about a little boy who spies on his mother dancing with Santa Claus.



MASS MAMBO CLASS IS HELD WEDNESDAYS AT NEW YORK'S PALLADIUM BALLROOM WHERE ONLY MAMBO IS DONE

UNCLE SAMBO, MAD FOR MAMBO

Having for some months lured large numbers of Americans to dance halls where they wiggle like lizards on a hot slab, a dance called the mambo has started to erupt in a holiday frenzy. The biggest dance fad since 1935's Lindy hop, the mambo is beloved by housewives, teen-agers, light-footed members of all races, and even, in one song, by horses.

Dancing schools across the land find that 80% to 100% of their customers, limbering up

for the holidays, enroll to learn mambo. Dance palaces like the Chicago Mambo City (above, right), which are dedicated to mambo and give patrons both lessons and prizes, are sprouting in big cities. Mambo songwriters are celebrating the season with numbers like *Santa Claus Mambo*, *Jingle Bells Mambo*, and the salute to Mommy, mambo and Santa shown at left.

Imported from Cuba in about 1949, the mambo gained its adherents slowly. A simple



TEACHER ON PLATFORM (FAR LEFT) DEMONSTRATES STEPS TO SOME 350 STUDENTS WHO FOLLOW HER REVERENTLY



dance, whose basic back-and-forward steps are described on pages 16, 17, its four-four beat is blasted out in hands by saxophones. The drum section, aided by rattles, clappers and cowbells, adds a syncopated jolt to the whole crazy thing. Faster and less classy than the rumba, the mambo permits its practitioners to go hog-wild with improvised solo steps while wearing an expression of ineluctable bliss.

A big part of the mambo's sudden popularity

stems from the deluge of mambo music. More than a hundred mambo songs which attract listeners as well as dancers, have been published in the past three years. Almost any tune can be mamboized by playing it in mambo rhythm. Writing new titles and words is not difficult, as witness *Oink, Oink Mambo* and *Koo-Koo Mambo*. With the music clattering out of juke boxes, radio and television, even the non-dancing public is engaged in mambo beat.



BLUE MAMBO is fashioned from Handy's classic, with melody intact but written in mambo rhythm.



ITALIAN MAMBO was banned on the radio for offensive words but was cleared and is now a hit.

LOOP-DE-LOOP MAMBO



NUTTY MAMBO says, "All you got to do is kick your feet . . . a Memphis hoogie with Latin beat."

DANCERS DO THE MAMBO IN ITS BIRTHPLACE



CUBAN PERFORMERS do the mambo, which originated in Cuba, at Havana's spectacular La Tropicana Night Club. In the background is

Broadway Producer George Abbott, inspecting dancers for possible mambo number in forthcoming musical show, *The Damn Yankees*.

BASIC STEP IS DONE TO EIGHT COUNTS



COUNT ONE

From a feet-apart position, man at Count One brings his left foot beside right, lady brings right beside left.



COUNT TWO

The man steps backward with right foot as the lady steps forward with her left foot.



COUNT THREE

Man taps once in place with left foot, shifting weight to left. Lady does likewise with right.



COUNT FOUR

Man moves right foot forward toward left foot, while lady brings left foot back toward right foot.



COUNT FIVE

Man brings his left foot back toward right, girl moves right foot toward left. Now go back to Count One.



COUNT SIX

Man taps once with right foot, shifting weight to right. Lady taps with left, shifting weight to left.



COUNT SEVEN

The man steps forward with left foot while his partner steps backward with her right foot.



COUNT EIGHT

Partners are now back at same position as Count One, ready to repeat steps in opposite directions.

FANS FLOCK TO WATCH THE PROS DO IT



MAMBO ENTHUSIASTS get as much fun seeing the dance as doing it. They are sitting on floor at New York's Palladium while professional team known as Cuban

Pete and Millie do fancy variations. After the exhibitions the more ambitious watchers get out on the floor and try to match the professionals' fancy steps.

THE MAMBO GETS INTO ALMOST EVERYTHING



MAMBO FASHIONS have produced filmy pajamas for mother and daughter, sold by Kayser lingerie.



MAMBO QUEEN was self-bestowed title of Concetta Nusser caught by cops with loot her husband stole.



MAMBO ON TV had a Santa Claus scene with Jimmy Boyd singing *I Saw Mommy Do The Mambo*.



MAMBO ON FILM will be part of new movie with Silvana Mangano as dancer. Film is named *Mambo*.

CONTINUED ON NEXT PAGE 17



IN HARLEM famous Savoy Ballroom on every Monday night attracts hundreds of devotees like this young mambo improviser, who won one of weekly prizes.

MAMBO CONTINUED



IN SAN FRANCISCO two pretty novitiates (above and below) gyrate at Macumba Club, which opened last summer and is always packed.



IN PORTLAND, ORE. (BELOW) STUDENTS AND INSTRUCTORS AT WASHINGTON HIGH SCHOOL TAKE MAMBO LESSONS AS PART OF GYM WORK, DANCING TO PHONOGRAPH RECORDS





KING OF THE MAMBO is its inventor, Perez Prado. Here, leading band at New Orleans' Municipal Auditorium, he jumps in the air when carried away by beat.

Composer of scores of mambos, Prado created dance in 1933 in his native Cuba, made Mexico wildly mambo-minded and has been highly successful in U.S. tours.

HOW HIGH IS UP FOR STOCKS?

The unfamiliar and the unknown, wonderful as they may prove on exploration, are always somewhat terrifying to behold. For three weeks Wall Street traders and speculators generally have been holding their hats in this mixed feeling of wonder and terror. The reason is that on Nov. 26 the stock market went through a sort of "sound-barrier."

This barrier, which had stood for a quarter century like the weathered obelisk of a vanished age, was the mark of 386.1 made by the Dow-Jones industrial average on Sept. 3, 1929. Within weeks that average had plummeted 170 points, and, as the Great Depression spread in its wake, plunged on to a basement of 40.56. No single economic event ever left such a lasting scar on a whole generation. As the whole jerry-built structure of speculative credit collapsed, taking the banks with it, hardly a family escaped grievous loss. Old fears came welling up when 1954's rampaging bull market knocked down the 25-year marker. Many began wondering, "Are we in for another big crash?"

Nobody can say how high the stock market may go. But no matter what the market boom does, or how soon it falls, it is not going to pull the U.S. production boom down with it. They are two different things. The biggest difference between U.S.A. 1929 and U.S.A. 1954 is that the latter's big economy is built on hard facts and not on moonbeams. In the 1920s the U.S. economy was already in a tailspin long before the 1929 market reflected the fact. Contrary-wise, in 1954, stocks have only recently begun to catch up with the great postwar upswing which has been conquering in America since 1940. For example, in eight postwar years the Gross National Product rose 75% and corporate profits after taxes rose 60%—while stock prices rose only 25%. And in spite of the fact that stock prices have now passed the 1929 average, the average itself is no longer the same (it contains at least 10 stocks including Du Pont which were not in 1929's average).

The U.S. has outgrown all 1929-size clothes. There are 40 million more people. All of them are making more money and keeping more of it. The national income has risen from \$87 billion to \$305 billion, including inflation. But industry's production of real goods has doubled. The output of goods per worker has risen 65%—meaning more leisure for all with the greater income. More than 60% of the population now has incomes in excess of \$3,000 (in 1929 over 60% had less than \$3,000).

The only way to compare 1954 stocks with 1929 stocks is by their price against their earnings. General Electric in 1929 sold at 44 times earnings. Today, even though G. E. has doubled in price in two years, it is at 20 times earnings. Such comparisons could be made endlessly. Even 1954's high prices do not reflect the vast amount of hidden value built into today's companies, by the fact that just since the war alone U.S. industry has spent a staggering \$190 billion on expansion—more than the entire capital equipment of England, France and West Germany combined. Example: even at \$70 (up 80% this year) each share of U.S. Steel stock represents \$90 worth of new postwar facilities.

This market's credit structure looks sound: brokers have only \$1.5 billion in loans to customers vs. \$8.5 billion in 1929.

Moreover, brokers' margins, at 10% then, are at 50% now. The bull market itself is in a sassafras delusion. The

Dow-Jones and other averages are largely made up of "blue chips" which have far outrun the general market. On the very day the "sound barrier" was broken, almost half the stocks traded declined.

Both the market and the whole economy now possess many "built-in" stabilizers which were nonexistent in 1929. For example, industry pension funds, now totaling \$19 billion and growing at the rate of \$2 billion a year, are constantly buying up the better grade stocks. So are the bank trust funds, insurance companies, investment funds—which all told now own some \$70 billion of common and preferred stocks (vs. the current \$160 billion value of all shares listed on the Big Board). More impressive are the stabilizers behind the economy itself—high wages protected by union contracts, automatic pay increases geared to higher productivity, medical and unemployment insurance, pensions. Economists once estimated that \$3 billion, pumped into 1929's economy at the right moment, could have forestalled the depression. Eisenhower's administration is ready to pump \$10 billion a year into a road-building program alone. The U.S., whose total Federal outlay was \$2.6 billion in 1929, this year will spend more than \$30 billion on defense, let alone what additional billions may be needed for schools, for foreign aid, for a World Economic Program. Moreover, the national output is expected to reach \$535 billion in the next decade.

Whatever the stock market does, the prospect ahead for the underlying U.S. economy is Growth—with a very big G. Ralph Cordiner of General Electric says his company will have to double its production within the next decade—at a time when the national work force is due to increase by only 11%. "Our great potential shortage may be people," says Cordiner.

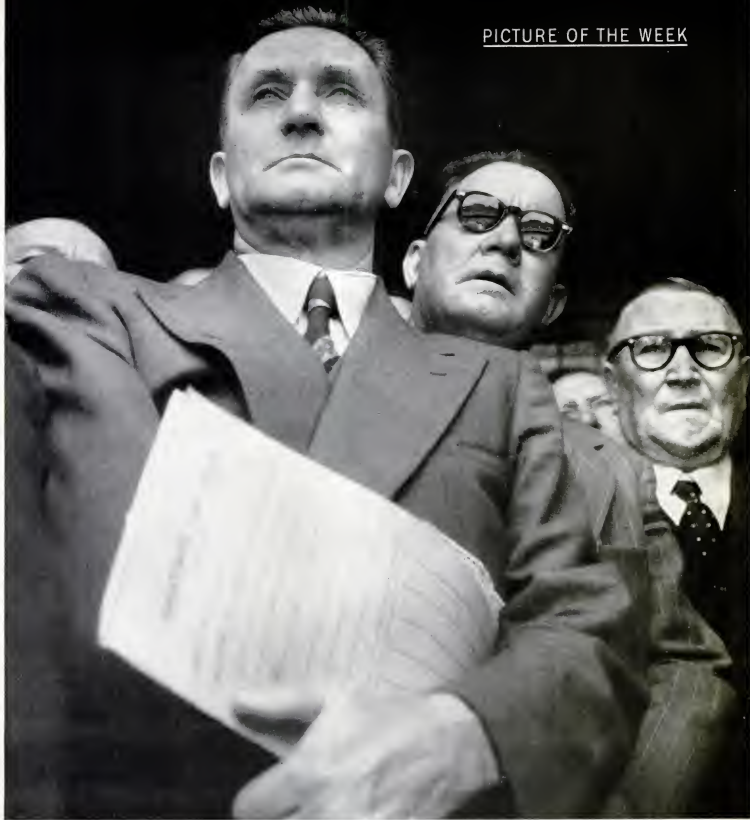
Stocks may indeed be high. But there is nothing flimsy in the tangible growth on which the rise has been based. Where 1929 was overbetting the future, 1954's market is just catching up with the past. And the future growth even now being planned is vaster still. Cordiner places the expansion need at \$55 billion a year by 1965.

Big Steel's Ben Fairless points to the 9,000 miles of turnpike or thoroughway construction now on the boards as merely one of the growing demands for steel, that kingpin of the economy. So vast has been that industry's expansion that its current production of 77% of capacity is more than 100% of the production six years ago, and matches in tonnage the 86 million-ton peak output of World War II. Even if consumption (which has always risen) only stays where it is today—at 1,400 pounds per American—that will require an additional annual capacity of 31.5 million tons by 1975, just to match the 45 million population growth. Fairless says this 20-year growth will require another \$300 billion expansion for all industry.

The sanest course for any investor in 1954's unknown reaches is simply this: judge any stock on its own merits, by the relation of its price to its earnings and dividends. And above all, don't let paper profits in stocks make you lose sight of the fact that the only source of U.S. prosperity is the production which these shares represent. Whenever you begin devoting more time to calling your broker than to increasing your own share in the productive enterprise—watch out for trouble. It will be at hand, and you will be it.



COMPARISON OF MARKET FOR INVESTMENT OPPORTUNITY FROM 1929 TO 1954



A HARD MAN TAKES OVER IN SOUTH AFRICA

Outside the Pretoria Randsaal a steel-hard, superfanatical white supremacist stood glowering triumphantly as he heard the result of a Nationalist party caucus which confirmed him as the new boss of South Africa. In choosing Johannes Strydom (*above, left*) to take over from Daniel Malan both as premier and party leader, the Nationalists ignored the wishes of 80-year-old Malan who, in announcing his retirement, had confidently hand-picked his crony, Finance Minister Nicolaas Havenga (*right, background*), to succeed him. Strydom, a 61-year-old lawyer and M.P. from the Transvaal, is even more extreme in his racial views than Malan. To

him South Africa's 10 million colored are beneath contempt and the one million British are "soldiers." He calls his political foes *Kaffirboeties* (black man lovers), finds "British-Jewish . . . liberal democracy" to be "detestable." The 1.5 million Dutch-descended Afrikaners, of which he is one, he considers a chosen people. Strydom's aims: ruthless segregation and a South African "republic" outside the British Commonwealth, with himself as president. In the past few years, while Malan ran the government and made headlines, Strydom quietly gained control of the party machinery. Stunned Malan could only mumble, "I have miscalculated."



OPENING THE DIET, Emperor Hirohito reads message as the legislators bow heads. Session, called ostensibly on budget, was really convened to oust Yoshida.



LEANING ON HIS CANE, YOSHIDA LISTENS TO SOCIALIST ATTACK. BESIDE HIM

NEW REGIME IN JAPAN

Coalition forms temporarily to force out Yoshida

For seven years Shigeru Yoshida, Japan's impish and imperious little premier, had done a remarkable job in getting his country back on its feet. He had also outfoxed his political rivals, a number of whom admired his accomplishment but resented his arrogance. But when the Diet opened amidst the usual bowed heads and message from the emperor (*left*), the opposition was really ready for him. Ganging up in an illogical coalition, they deposed Yoshida and installed Ichiro Hatoyama in his place.

Hatoyama led a group which bolted Yoshida's Liberals to form the new Japan Democratic party. Yoshida, they felt, had identified himself too closely with the U.S., had failed to explain his supporters' part in a ship-building scandal. Like the Liberals, the Democrats are really conservatives. But to get Yoshida they made a deal with their natural enemies, the Socialists, who believe a general election would gain them power. When the alliance threatened a vote of no confidence, Yoshida quit. Hatoyama promptly announced that a general election would take place by March 10.

DEMOCRATS APPLAUD VICTORY OF HATOYAMA (BACK ROW, LEFT OF FOLD),





IS TAKETORA OGATA, HIS CHOICE AS SUCCESSOR



NEW PREMIER, Ichiro Hatoyama, 71, smiles after the Diet voted him in over Ogata by 257 to 191.

WHO MODESTLY ABSTAINS FROM THE APPLAUSE



SATISFIED SOCIALISTS, Mosaburo Suzuki (*alighting*), party president, and Jieichiro Matsumoto, gloat

over Yoshida's downfall. If Socialists win promised new election, Suzuki would probably be premier.



ORDEAL ENDED

Sea's beauty envelops a rescue

Amid the wild beauty of the scene above a dark ordeal by water ended last week. A freighter, *Helen Lykes*, stands by as a Coast Guard cutter, from which the picture was taken, moves toward figures huddled on a raft. The day before, the tug *Bertha R.*, towing a barge in the Gulf of Mexico, snapped its line in a

storm, then hit the barge. The 11 crewmen tumbled from the sinking tug with two life rafts. After 16 hours in the angry seas, one raft with four men was found by the freighter. When the cutter reached the other raft, it retrieved three survivors, who had in tow the body of one of the four crewmen who died.

OLDSMOBILE  ROCKETS INTO 1955



1955 Oldsmobile Super "88" Holiday Coupe. A General Motors Vehicle.

**NEW, ALL-AROUND-NEW WITH
THAT NEW "GO-AHEAD" LOOK!**

Flashing into the future with flying colors . . . Oldsmobile for '55! . . . more spectacular, more colorful, more powerful than ever! In three exciting series (Ninety-Eight, Super "88", "88"), every one of them new, all-around-new, all the way through! All with the commanding new "Go-Ahead" look, all with the terrific response of the new "Rocket" Engine! With bold, sweeping

new front-end design . . . dazzling new styling, front to rear! Glorious new interiors, superb new "Rocket" ride—the newest new ideas on wheels! And Oldsmobile offers an even wider choice in dramatic new "flying color" patterns. More than ever, Oldsmobile is out ahead to stay ahead! See your dealer . . . see these magnificent new, all-around-new 1955 "Rocket" Oldsmobiles!



ALL-NEW "ROCKET" 202 ENGINE!
Features new 202 horsepower, higher 8.5-to-1 compression, new power-contoured combustion chambers, high-lift camshaft, new higher torque!

OLDSMOBILE



SOUP'S ON!

Try a new one—here are 22

Campbell's Soups to enjoy!



CONSOMMÉ. Stimulating, clear beef stock—delicious with the flavorful essence of tomatoes, carrots, celery. Serve it piping-hot or jellied for pleasing variety.



VEGETABLE BEEF. A country-style favorite—carrots, peas, barley and fine lean beef simmered in beef stock. It's a mainstay soup for big appetites.



GREEN PEA. For flavor and wholesomeness—a creamy-smooth purée of choice green peas enriched with country butter and a sprinkling of fine seasoning.



CREAM OF CELERY. Blends with any meal—garden-fresh Pascal celery, gently simmered, smoothed with dairy cream. . . makes a quick and easy cooking sauce, too.



SCOTCH BROTH. Soup to bolster the spirits—sturdy mutton stock, with barley, carrots, onions and chunks of mutton, blended for flavor and wholesome news.



CHICKEN NOODLE. Soup that makes you want seconds—egg noodles and lots of tender pieces of chicken simmered in chicken stock. Children love it as much as grownups!



BEAN WITH BACON. Wholesome goodness in every spoonful—old-fashioned country beans cooked to a perfect tenderness, accented with smoky bacon.



VEGETARIAN VEGETABLE. Helps round out a meatless meal—15 nourishing vegetables in a delightful vegetable broth. Serve it generously—the family will love it.



ONION. Appetizing favorite of the world's most famous restaurants. Dark and savory beef stock thick with onions, zesty with Cheddar cheese. A real French-style onion soup.



CLAM CHOWDER. Bracing tang of the sea—choice bay clams with finest red tomatoes, carrots, potatoes. . . in a flavorful clam broth. A delicious meal in itself!

We blend the best with careful pains
In skillful combination—
And every single can contains
Our business reputation.



Some of these savory soups you know—some will be new to you! There are clear soups and some that are smooth purées. There are soups brimming with meats and vegetables and some with golden noodles. Each one is different—with character of its own—a blending of finest ingredients, patiently simmered and perfectly seasoned. These are the soups to *begin* the meal, or *make* the meal—or satisfy an appetite any time! Try a new soup today!



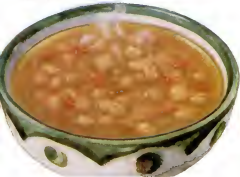
CHICKEN GUMBO. A savory, nourishing combination—chicken with finest garden vegetables—tomatoes, okra, celery—and fluffy rice in old-fashioned chicken broth.



BEEF. Such a satisfying soup any time—whole-some stock brimming with garden vegetables, barley and good-sized pieces of beef. Here's a soup with character!



BOUILLON. Tempting prelude to dinner or breakfast—a clear soup, steaming with the fragrant flavor of fine beef and sweet garden vegetables. A soup to coax appetites!



PEPPER POT. Philadelphia's hearty answer to "What's for supper?"—spicy beef stock, thick with carrots, tomatoes, macaroni and generous cubes of meat.



TOMATO. Favorite of millions—with all the juicy goodness of the famous Campbell tomato... blended with creamery butter, thoughtfully seasoned so everyone loves it.



CREAM OF ASPARAGUS. Picked with the dew still on them—young asparagus spears are pureed, then blended with milk and golden butter to give this soup its spring-fresh look and taste.



CREAM OF MUSHROOM. Creamy elegance to the last sip—fresh, crisp mushrooms in smooth country cream. Perfect for sauces and casseroles, too.



CREAM OF CHICKEN. Smooth and luxurious! Pieces of plump, tender chicken simmered in a chicken broth enriched with heavy cream, and accented with celery.



BEEF NOODLE. Downright delicious—lots of golden egg noodles and bite-sized pieces of beef in wholesome stock. A family favorite any time in the year!



CHICKEN WITH RICE. Welcome treat for you and yours—fluffy rice and juicy morsels of tender plump chicken in a carefully cooked, artfully seasoned chicken stock.



VEGETABLE. Enjoy the garden's best all-year-round soup—15 delicious vegetables in a sturdy beef stock, seasoned by Campbell chefs to bring out scrumptious flavors.



BLACK BEAN. Elegant and so satisfying—a thick purée full of the distinctive flavor of black beans, delightfully seasoned. Makes a hit when you want to serve something special.

Quick-nutritious-
and simply delicious

Campbell's



Soups



Special Gift Bottle and carton—at no extra charge.

The last-minute gift that shows how thoughtful you are!

The same fine Four Roses... America's holiday favorite... in the Special Gift Bottle

For the man who waits till the "last minute," there's nothing much easier than to pick up a gift of Four Roses. Yet, a gift of Four Roses—the same fine whiskey in the beautiful "golden" gift bottle—will show unusual thought-

fulness and consideration for the lucky one who receives it! No matter when you do your Christmas shopping, you can be sure you're doing it right... when you get Four Roses.

FOUR ROSES

ALSO AVAILABLE IN THE REGULAR FOUR ROSES BOTTLE

FRANKFORT DISTILLERS CO., N. Y. C.
BLENDED WHISKEY, 86.8 PROOF, 60% GRAIN NEUTRAL SPIRITS.





MARIAN YEAR WORSHIPERS KNEEL IN THE BASILICA OF SANTA MARIA MAGGIORE IN ROME TO HEAR POPE'S BENEDICTION BROADCAST

LIFE ON THE NEWSFRONTS OF THE WORLD

Pope Pius XII rallies, U.N. condemns China for holding U.S. airmen, Navy launches a supercarrier

Pope Pius XII seemed to grow miraculously stronger. Early in the week the Vatican announced that he was taking nourishment by mouth again, that his temperature and pulse were normal and that the pontiff was sleeping peacefully, free from the nausea and hiccups which had racked him relentlessly. He grew strong enough to give his blessing by radio to end the Marian Year and, by week's end, to spend several hours a day at his desk.

Martin Coles Harman, "king" of 1,000-acre Lundy Island off the southwest coast of England, died in his 69th year. A financier, Harman bought the island for \$800,000 in 1925 and thereafter lived in its castle, issuing his own postage stamps and coins in the values of a "puffin" and a "half-puffin." The puffin (named for a big-billed sea bird) being equal to a British penny. The British government took a dim view of these goings on and for his pains with puffins Martin Harman was fined \$25.

wrong." Malik charged the airmen were spies, was promptly ridiculed by delegates who asked why spies would be walking around China in uniform. At week's end the resolution was adopted, 47 to 5, and Secretary General Dag Hammarskjöld announced he would go to Peking to seek their release.

In the '20s the greatest shimmy dancer of all was Gilda Gray. Last week Gilda was back, hired as a "sex consultant" to train four Hollywood starlets for a new film. Modern glamor girls, said Gilda, "are as exciting as adressed chickens in a butcher shop."

McCarthy spits with the President

Stalking into his Senate hearing room, Joe McCarthy assailed President Eisenhower for his stand on the censure resolution. Then he attacked the Administration for being soft on Communists, apologized for supporting Eisenhower in 1952. Republican reaction would give McCarthy little cheer. Even so close a supporter as Senator Karl Mundt disowned McCarthy's attack. Senator Dirksen, McCarthy's staunch friend, could only say he thought everyone was wrong, including Joe. From General James Van Fleet, who had endorsed McCarthy, came an emphatic wire to the senator: "This last attack on our great President causes me to withdraw all support."



RUSSIA'S MIKOYAN IN HELSINKI

Trying hard to build up better relations with its neighbors, the Soviet Union sent its deputy premier and trade minister, Anastas I. Mikoyan, to Helsinki. He reached an agreement with Finnish officials calling for an exchange of industrial and technical information between the two countries and an additional Russian loan to Finland in an amount to be negotiated later.

Roger Bannister's last mile

Roger Bannister, first man to run a mile in less than four minutes, announced his retirement, ending hopes that he would resume his duel with Australia's John Landy in the 1956 Olympic games. Bannister found it difficult to combine his work as a doctor with athletic training. "It would be wrong," he said, "to produce second-rate performances when representing my country."



U.S. DELEGATES CONGRATULATE NUTTING

'This great and grievous wrong'

In the U.N., Russian Delegate Jacob Malik, defending China's right to imprison 11 U.S. airmen, said the resolution to free them was a U.S. diversion. Replying, Anthony Nutting said he wished to add Britain's voice "in an effort to set aright this great and grievous



U NU PRESENTS BOWL TO HO CHI MINH

Presenting a silver bowl to Vietnam President Ho Chi Minh, Burmese Premier U Nu flew on to Peking and appealed to Chinese Communist leaders for an "understanding" with the U.S. Chou En-lai chilled the idea with a suggestion that the U.S. first withdraw its protection from Taiwan.

Great GIFT!



Give a movie camera and you give a share
of magic and romance...

Give a movie camera—the one instrument that can capture life on the wing, keep rich memories alive for years to come.

Give a Bell & Howell movie camera and you add to your gift a note of quality that says simply, "Here is the best." And the wonderful "Merry Christmas" thing about it is you can put the Bell & Howell 220 Wilshire movie camera on your gift list for the low price of only \$49.95. No other gift can say more or do more than a Bell & Howell movie camera for Christmas.



Bell & Howell movie camera \$49⁹⁵

Free booklet on movie making. Write Bell & Howell, Dept. L-13, Chicago 45, Ill.

NEWSFRONTS CONTINUED



SNOW COVERS "FORRESTAL'S" DECK AS CONSTRUCTION GOES ON

At Newport News, Va., as Navy officers and shipyard workers watched, the world's largest warship was floated. Christened *Forrestal* by the widow of the late Defense Secretary, it is the first supercarrier designed for atomic age jets.



CUB REPORTER JOHNSON AT WORK, ADMIRER PANEK IN JAIL

A devilish printer's devil

In La Porte, Ind., a 25-year-old printer's devil named Robert Panek suddenly dashed into the city room of the *Herald-Argus* and at rifle point kidnaped the pretty cub reporter, Abbey Johnson. For an hour and 40 minutes he drove her about, begging her to marry him. Then, getting nowhere, he let her out of the car near her office in time to get her story and scoop into the regular edition of the paper. After driving about a bit more, he turned himself over to the police who held him for assault and disorderly conduct.

Wakened by smoke in his Franklin, Mass. home, Reginald De Baggis sent his wife and infant daughter outdoors, then turned to save his five sleeping children as the whole house blazed up from a kerosene stove explosion. Struggling to reach them, De Baggis' hands were burned, then cut by glass as he left the house and tried to break in again through a window. Neighbors and two priests restrained him as he stared in unbelieving horror while his children died.



HELD BACK, DE BAGGIS LOOKS IN HORROR AT BURNING HOME



What home-town institution has just set an all-time high in savings?

In 1954 Americans of all kinds—people just like those you see above—put more of their money into savings accounts than in any other year since the war.

This may surprise you: They put over 3.9 billion of these hard-earned savings account dollars into insured Savings and Loan Associations . . . *more than in any previous year . . . and more than they put anywhere else.* Why? Why did millions of Americans elect to save in their home-town, insured Savings and Loan Associations?

There are several very simple reasons:

One—When you put your money into an insured Savings and Loan Association, you know it's *safe*. Your savings are insured up to \$10,000 by the Federal Savings and Loan Insurance Corporation—an agency of the U. S. Government.

Two—Insured Savings and Loan Associations are local, home-town organizations, managed by friendly, trustworthy people of your own community.

Three—Insured Savings and Loan Associations give excellent returns on your savings. That's because they can invest most of their funds in

sound, monthly-paying home mortgages.

Four—The officers of insured Savings and Loan Associations really know their communities. The proof is that people come to them for one third of all home mortgage loans. Last year they were *the nation's largest single source of mortgage loans* for home building, buying and alterations! Savings and Loan Associations *originated* the "pay-like-rent" home mortgage.

Whether you're interested in savings or home loans, drop in at an insured Savings and Loan Association. You'll find it's a mighty good place to do business. © 1954, FSLIC

SAVINGS AND LOAN FOUNDATION

The Savings and Loan Foundation, Inc., is an organization of insured Savings and Loan Associations from coast to coast—dedicated to the preservation of democracy through thrift and home ownership in every American community. Address: Land Tule Bldg., Philadelphia, Pa.



Look for this emblem. It identifies associations insured by the FSLIC.



MARY LEE DIEKESE, a curvaceous coed from Detroit, Michigan, poses for the *FLATIRON*'S nomination for Queen of the Summer School for 1954.

Photograph by Bob Latham
FLATIRON 7



MAGAZINE TEAM, Editor Jim Hutchinson (left), photographers Bob Latham (right), Mort Shuman discuss ban with Mary Diekese (top center), other models.

OVEREXPOSED PICTURES

Coed pin-ups get a college magazine suspended

When the *Flatiron*, a humor magazine at the University of Colorado appeared this fall, it scored an instant success—but not because its jokes were good. In fact, they were awful. (Sample: "Don't yell through the screen door. Mother; you're straining your voice.") What brought a stampede for copies of the magazine were its pin-up photographs of pretty Colorado coeds (left and below). The *Flatiron* published three issues, each a big seller. By then the university's board of publications had seen enough and it unhumorously flattened the *Flatiron*. The editor called the suspension politics, the photographers insisted plaintively that the coeds had been quite willing to pose, and hundreds of sympathetic students quickly signed petitions to have the ban lifted. But the board would not forgive the *Flatiron*'s "emphasis on sex and alcohol." Also, it noted, "the magazine has failed to stimulate creative student writing."

"WELCOME
ALUMS"

MARY ANN BERGER, an Independent Freshman, says "Stick around, Alums—for the football game."

Photographed by Mort Shuman



FLATIRON 23

The most beautiful way
to give fine whiskey



HEAD OF THE
BOURBON FAMILY

OLD GRAND-DAD
in this
CLASSIC DECANTER



PERSONALIZE YOUR
GIFT IN 23 CARAT GOLD

A hint of genuine 23 carat gold is etched with
every Old Grand-Dad Classic Decanter.
With it you can wish your best-wishes
simply on the decanter.

OLD GRAND-DAD
IS ALWAYS AVAILABLE
IN THE STANDARD
BOTTLE





DEBBIE IN AN OUTSIZED WONDERLAND

For long weeks, Debbie Pond had heard her father tell stories of elves and dolls and toy soldiers bigger than any she ever had heard about before in all her two years. Then one day Cal Pond, who is managing director of the Denver Retail Merchants Association, decided that the time had come to give his daughter a special treat. Off they went to a Denver University art studio where students had been working on a project which Mr. Pond had

commissioned. Out of chicken wire, tinfoil and plastic they had created a host of huge characters to be hung for the holidays along 14th Street, Denver's main shopping thoroughfare. Clutching her own doll tightly, Debbie inspected the phantas-magoric figures in silent wonderment. Coming face to face with a 10-foot-high jack-in-the-box towering over her (*above*), she found her voice at last to utter a single word: "Daddy."



“Daddy—can I put this telegram on the tree, too?”

TELEGRAMS are always thrilling to receive—especially at Christmas. They mean something special... make *you* someone special, too. They're gay, colorful... and intriguing as only a telegram can be. Combined with a personal message that's yours alone, they're ideal for anyone on your list.

SANTAGRAMS, the special Christmas telegram for youngsters, are guaranteed to captivate every junior miss or mister. They're dated-lined “North Pole” and signed by Santa himself.

So “rest you merry” this holiday season. Remember loved ones near and far with telegrams. They're easy to send because every telephone is a “telegraph office”. Just call Western Union and say: “Charge it”.

*On any occasion
it's wise
to wire*

WESTERN UNION

**What to give—
what size, what color?**
There's one gift that's always
right—money by telegram!
Gift money orders can be sent
at any Western Union office.



Merry Christmas!

Say it to his face with
PALMOLIVE
After-Shave Lotion

*"Soothes from
shave to
shave"*



deluxe size in the
**HANDSOME GIFT
PACKAGE \$1.00***

All your favorite men will welcome their favorite after-shave lotion . . . refreshing, invigorating Palmolive After-Shave in the handsome green-and-gold gift bottle!



\$1.50*
Palmolive After-Shave Lotion
and Palmolive Brushless
or Lather Shaving Cream

*PLUS TAX



**★
EITHER
\$1.58**
(No Fed. Tax)

Either of these handsome gifts will please any man on your list. (Left) Two packages of Rapid-Shave—for faster, cleaner,

smoother shaves. (Right) Two packages of Colgate Instant Barber Shave—instant lather . . . so rich it stands up!

**Wonderful Gifts—For Wonderful Guys!*



UP FOR DISPLAY, oversized jack-in-the-box is hoisted to top of lamppost. Figures cost about \$300 each, are expected to last for three Christmases.



When I'm eating Jell-O
I wish I were a reindeer

...because then I could
dress up like a Christmas tree
and spread good cheer
in six delicious flavors

Now's the time
for

JELL-O
BRAND
SOFT GELATIN
SIX DELICIOUS FLAVORS

Great names make great gifts

People and time make a name great. And no
whiskey has ever achieved the esteem of so many
millions for so long a time as Seagram's 7 Crown.
That is why this Christmas—and every Christmas—
it is America's greatest gift whiskey!



Give Seagram's and be Sure

5 luscious fruits in "Sweet Cahoots"!
Libby's Fruit Cocktail



Buy Libby's...the peaches
 you too would have picked from
 the trees!



Taste Libby's Pineapple
 ...quick-packed in Hawaii!



*Elegant
 eating
 that's easy and thrifty, too*

Heap it high on ice cream . . . fold it into a pudding . . . top a cake or pie with it, or start a breakfast with it. Here's the most versatile treat of them all! Some say it's the most beautiful, too. Keep a few cans on hand, ready to open when a meal needs a sparkle. Libby, McNeill & Libby, Chicago 9, Illinois.



THIRTEEN NEW PIECES OF PINT-SIZE FURNITURE INCLUDE EVERYTHING CHILDREN REQUIRE FROM DESKS TO BEDS TO ROCKERS

KNOCKDOWNS THAT STAND UP

Easy-to-assemble furniture for children costs little, defies rough use

The average American family spends its home furnishings money first on the living room and the parents' bedroom. It leaves the children mostly to inherit discards and white elephants for their rooms, which psychologists call the most important rooms in the house. To help parents make pleasanter surroundings for their youngsters, a firm called First Furniture has brought out a new and complete line

of knockdown furnishings for 2- to 7-year-olds. Each piece is made of birch or beech, can be quickly bolted or screwed together, then stained or painted, and is so sturdy that the most determined child cannot faze it. Prices range from \$3.50 for the table-bench to \$19.75 for the bed which also makes a sofa. Table tops are laminated and will survive almost any amount of jumping on or knocking over.



PRECUT GROOVES permit parts of the drawer to slip together. All of the pieces are joined in the same way.

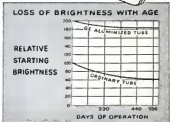


STEEL CORNER BRACKETS give furniture strength, are bolted on. The swivel chair is assembled in 15 minutes.

Make Dim TV Better than NEW



ALUMINIZED
TUBE



Life chart, above, shows how G-E Aluminized Tube starts brighter, stays brighter than ordinary tubes. Change now!

Progress Is Our Most Important Product

GENERAL ELECTRIC

Triple
Comfort Relief[®]
from ACID
INDIGESTION

- 1 Reduces excess stomach acidity with instant alkalinizing action.
- 2 Settles and soothes your upset stomach.
- 3 Relieves that uncomfortable stuffy, too-full feeling.



Alka-Seltzer[®]

MADE AT ALL DRUG STORES
MILES LABORATORIES, INC., ELKHART, IND.



NEW DEPARTURE
Ball Bearings



Packard
Cable Products



DELCO
Brake Parts and Fluid



HARRISON
Radiators

Always replace

Almost half of America's cars use these world-famous

PRODUCTS BY GENERAL MOTORS

You'll find these world-famous parts and accessories at leading dealers and service stations wherever you go—from Maine to California. That's because service men with a reputation for good work just naturally prefer *original equipment* parts and accessories. And

these General Motors products *are* original equipment for almost half the cars, trucks and buses on the road.

So be sure that you, too, get the best. See that you get these same smooth-working, long-lasting parts and accessories—the world's finest!

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ROCHESTER
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with original equipment lines!

Available everywhere through dealers and service stations

** Listen to Lowell Thomas on CBS Radio Network—see Your Newspapers for Time and Station*

GENERAL MOTORS PRODUCTS



UNITED MOTORS LINES

THE STARRY UNIVERSE

Beyond our planet with its rich domains of life lies an endless sea of space jeweled with galaxies and cloaked in mysteries man has but begun to fathom

Text by LINCOLN BARNETT

Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years.

GENESIS 1:14

STEADFASTLY through the ages men of science have sought to strip nature of its disguises and lay bare the hidden order that underlies the diversity of the visible world. Their quest has taken them to the depths of the sea and the highest fringes of the atmosphere, to deserts, jungles and the frozen lands that engird the terrestrial poles. With the slow enlargement of human knowledge, man's perspectives of space and time have correspondingly expanded. He has learned to count himself as one in the endless succession of living things that have populated the surface of the Earth since life appeared. And he has reluctantly recognized his dependency on the system of nature in which he stands—his ineluctable need for air, water and sunlight and for all the substances he must exploit to assuage his implacable hungers.

In no realm of science has new understanding so operated to disclose man's humbling situation in the natural world as in the advance of astronomy. However strong his conviction that he is overlord of Earth, his self-image shrinks to insignificance when he lifts his eyes to the star-strewn vault of night and contemplates the dark and fathomless depths of space within which his petty domain is less than a grain of sand. This revelation was slow in coming and not easy to accept; it has always been man's nature to envisage himself at the center of the universe. From where he stands on the apparently stationary pedestal of Earth, the sun and moon regularly wheel westward from horizon to horizon, and the whole nocturnal sky seems like a great rotating bowl, carrying with it the bright diamonds of the fixed stars. It is only natural that for most of his brief span of existence, man has believed his Earth to be static, a solidly anchored object in a world of moving lights.

One of the paradoxes of science is that ancient astronomers, for all their misapprehensions, were able to chart the movements of celestial bodies with precision, and to employ their observations for utilitarian ends. Their first function was timekeeping; for all measurements of time come from the sky and are actually measurements in space; for instance, what we call an hour is simply an arc of 15° in the apparent daily rotation of the celestial sphere. As early as 3,000 B.C., the Egyptians evolved a calendar dividing the year into 12 months and 365 days. The Chinese kept records of eclipses from the 12th Century B.C. and of comets from the Seventh Century. It was in Greece, however, that certain men of genius, assisted by the new science of geometry, made some inspired deductions. Pythagoras and his followers inferred that the Earth, for all its seeming flatness, was a sphere. Aristarchus not only postulated that the Earth revolves around the sun but, first of all men, understood the difference in size and distance between the sun and moon and the remoteness of the fixed stars. These incredible insights surrendered, however, to the teaching of Claudius Ptolemy (about 150 A.D.), whose major work, the *Alma-*

gest, remained the standard textbook of astronomy for the next 1,400 years but placed the Earth at the center of the universe, with the sun revolving around it.

The Ptolemaic system was still the accepted one in 1512, when the brilliant Pole, Nicholas Copernicus, began the 30 years of study that persuaded him that the Earth is a "wanderer," revolving like other planets in a circular orbit around the sun. It remained for Johannes Kepler in the following century to find that the planets travel in elliptical orbits and for Sir Isaac Newton to formulate the physical laws that define why they behave as they do. Soon after the invention of the telescope about 1600, Galileo discovered many of the major features of the solar system—the mountains of the moon, the phases of Venus, the satellites of Jupiter, and sunspots. As the centuries passed and telescopes improved, astronomers probed deeper into space, and slowly there dawned a sense of the immensity of the cosmos and the profusion of its quenchless fires. From their facts and theories they developed specific concepts of the universe which make possible such detailed paintings as those on the following pages.

On a clear night some 5,000 stars can be seen with the naked eye. But a small telescope discloses over two million and the great Palomar telescope sucks in the light of billions. Yet for all their spangled myriads the distances between them are so vast that on another scale they might be envisaged as lonely lightships, a million miles apart, floating in an empty sea. The nearest star to Earth, save the sun, is Alpha Centauri, 4.4 light years away. (A light year is the distance light travels in a year, or roughly six trillion miles. The sun is only eight light minutes away.) Betelgeuse, the giant red star in the shoulder of Orion, is 300 light years away. The light from Rigel, the blue giant in Orion's knee, takes 540 years to reach our eyes.

Yet even these stars are close neighbors, and their distances are inches in the cosmic scale. It is only in recent decades that the terrifying dimensions and complexity of the universe have been dimly discerned. We know now that our solar system is actually but an infinitesimal unit on the outer rim of the great galaxy of stars that compose the Milky Way. And in turn the Milky Way, which once was thought to constitute the entire universe, is but one unit in a cluster of galaxies linked by gravitation and wheeling together through space. Yet it is not merely the size of the universe that dismay the cosmologist when he reaches the frontiers of vision two billion light years, or 12,000,000,000,000,000,000,000,000 terrestrial miles, away. For here he encounters enigmas that warn him not to assume—as man tends to do—that he can apply the simple physical laws that govern his earthly domain to the depths of space and time. There is evidence that all his systems of measurement break down when he tries to fit them to the exterior vistas of the cosmos. And there is doubt that his ordinary notions of geometry and form, derived from his limited senses, can be used to understand a universe in which space may have

no bounds. Staring into the void, he faces concepts like infinity and eternity, where science and imagination stand together on the brink of darkness, and he can perhaps but echo the words of the philosopher Schiller, "The universe is a thought of God."

Illustrations by CHESLEY BONESTELL, ANTONIO PETRUCELLI,
JAMES PERRY WILSON and ROBERT GARTLAND
Photographs by MEL TINKLENBERG, MOUNT WILSON AND
PALOMAR OBSERVATORIES, A. D. CODE and T. E. HOUCK



AN ECLIPSE OF THE SUN, most awesome of celestial phenomena, briefly darkens the morning sky near St. Paul, Minn., on June 30, 1954. The sun, as seen in this multiple exposure photograph, rises as a golden crescent (*left*), partly

covered by the moon. Its face dwindles as the moon moves on, then disappears and, for a few moments, only its flaring corona is visible. Gradually, in ever widening crescents, the sun soars into view again behind the silhouette of a tree.



THE RINGS OF SATURN gleam against the star-speckled sky of early dawn. They are seen here from a point high in the planet's atmosphere, 11,000 miles above its sheath of everlasting ice, 28,000 miles above its rocky core. The dense clouds of

ammonia that perpetually enshroud Saturn cast their shadow on the rings at right. Although Saturn's three concentric rings rotate in a circle 171,000 miles across, they are only a few inches thick. They are composed of a swarm of gritty



THE WASTES OF MERCURY shimmer beneath the baleful eye of the sun, which glares down hot and white, undimmed by atmosphere or fall of night. Here on the perpetually sunlit side, the solar disk appears two to three times as large as it does

from the more distant Earth. Windless, waterless, airless, the Mercurian landscape is diversified only by occasional craters gouged by meteoric bombardment, and jagged mountains and cliffs formed during the initial solidification of the planet.

NEIGHBORS IN NEARBY SPACE

THE first watchers of the sky, beside the Euphrates and the Nile, noticed that five bright stars changed their positions swiftly from night to night, drifting among the constellations in apparently capricious paths. The Greeks named them $\pi\lambda\alpha\eta\eta\tau\alpha$, the wanderers. Today we know that they are not true stars, burning in distant space, but merely cold companions of the sun, like the Earth, shining by reflected light. We know too that in addition to the five visible to the naked eye, three others may be seen by telescope. Because of their kinship to Earth, man has often wondered if any of these neighboring worlds might support life comparable to his own.

All answers to this question rest on a basic postulate of science: the principle of the uniformity of nature, which asserts that the elements found on Earth persist throughout the universe and obey the same physical laws. For this reason the possibility of life on the five outer planets must be ruled out. They are far too cold; their surface temperatures range from -170° F. on Jupiter to -380° on distant Pluto. All save Pluto are heavily enshrouded in dense clouds of poisonous gases. Neither do the two inner planets offer any friendlier abode. Airless Mercury turns one face perpetually toward the sun. On this side the temperature reaches 670° ; on the other the temperature is near absolute zero (-460°). Venus lies mantled beneath dense clouds containing much carbon dioxide, a gas whose insulating properties are such that the surface temperature of the planet may approximate that of boiling water.

Of all the planets, only Mars remains a possible domain of life. Although its maximum temperature barely reaches 50° , seasonal color changes analogous to those of Earth can be observed over large areas. All one can say is that conditions on Mars are such as to render possible the growth of primitive vegetation. If higher forms of life exist elsewhere than on Earth, they must be found outside the solar system, in the starry fields of the Milky Way or the distant galaxies beyond.

snowballs, each a tiny, individual satellite. The middle ring, largest and brightest of the three, is 16,000 miles wide and separated from the outer by a 2,000-mile gap. The outer ring and the inner or crappe ring are each about 10,000 miles wide.

CONTINUED ON NEXT PAGE



THE DESERTS OF MARS, studded with crescent dunes, are swept by dust storms that rise recurrently in the thin air. Lighted by the small disk of the remote sun, the Martian sky is relatively cloudless, the Martian land relatively arid. Yet

seasonal changes are reflected by the burgeoning of green areas in spring and summer. The rounded reddish rocks in the foreground have been eroded by rapid temperature changes, resulting in a flaking-off of exterior irregularities.

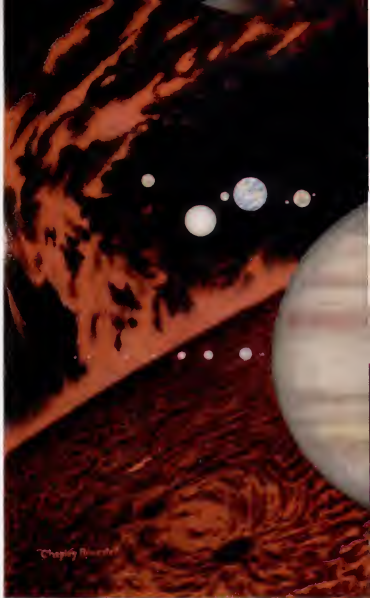
THE HARMONY OF THE SPHERES

FROM the platform of the apparently stationary Earth, the planets appear to wheel across the heavens within a narrow belt which the ancients called the zodiac. Today we know that the avenue of the zodiac is the flat plane of an enormous disk-shaped system in which our Earth and all the planets are forever imprisoned by gravitation, destined to revolve around our central star, the sun, so long as they exist. Infinitely complex, our solar system encompasses not only the nine planets, which are shown in true scale at right, but also 31 moons or smaller satellites of the planets, 30,000 asteroids or minor planets, thousands of comets, and innumerable numbers of meteors which burn their way into the Earth's atmosphere every day.

For all its apparent complexity, the solar system also reveals an order that has ever impressed scientists contemplating the harmonious laws that govern the motions of the skies. The pictures at the bottom of this page show the orbits of the outer and inner planets, ranging from the vast sweep of distant Pluto, 3,670,000,000 miles from the sun, down to Mercury, 36 million miles away. The planets revolve in elliptical orbits, varying their distances and velocities—moving fastest when closest to the sun, more slowly when farther away. Their movements are governed by a delicate balance between their inertia (*i.e.*, their tendency to keep moving in a straight line) and the gravitational pull of the sun. It is this tenuous equilibrium that keeps them from flying away into space on the one hand or falling into the flaming mass of the sun on the other. The same laws rule the comets: as they reach the outer ends of their elongated orbits the gravitational tug of the sun slows their speed and pulls them back; as they reach the inner ends of their orbits their inertia and increasing speed impel them past the sun rather than into it.

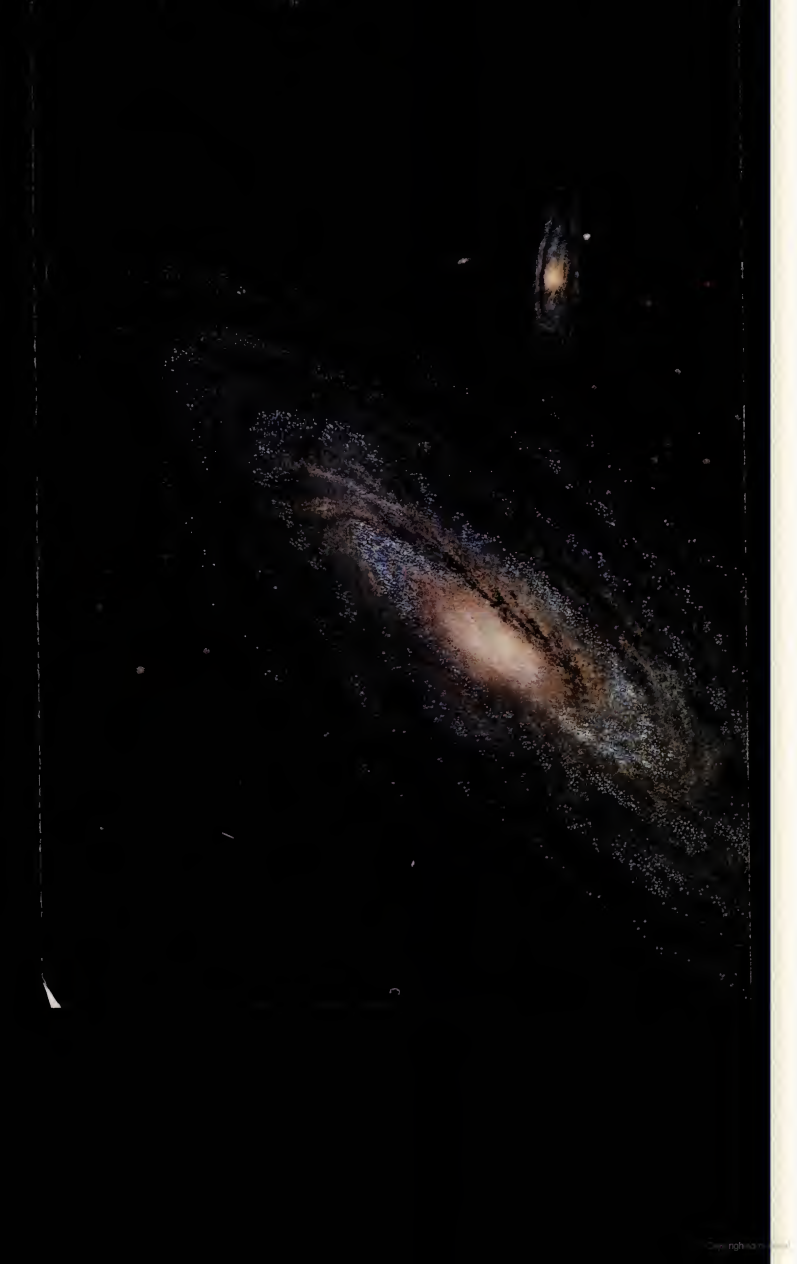
To Earth-bound man the dimensions of the solar system seem stupendous. He himself lives 93 million miles from the sun. His small planet has a diameter of 7,900 miles, less than one tenth that of massive Jupiter and less than one hundredth that of the sun. In terms of volume it would take 1,300,000 building blocks the size of the Earth to make one sun—and the sun is but an average-size star. If the sun were imagined as a ball six inches in diameter, Earth would then be about 55 feet away and Pluto would be about half a mile away—but the nearest stars would be about 3,000 miles away. And even these are but near neighbors in the vastness of the Milky Way,

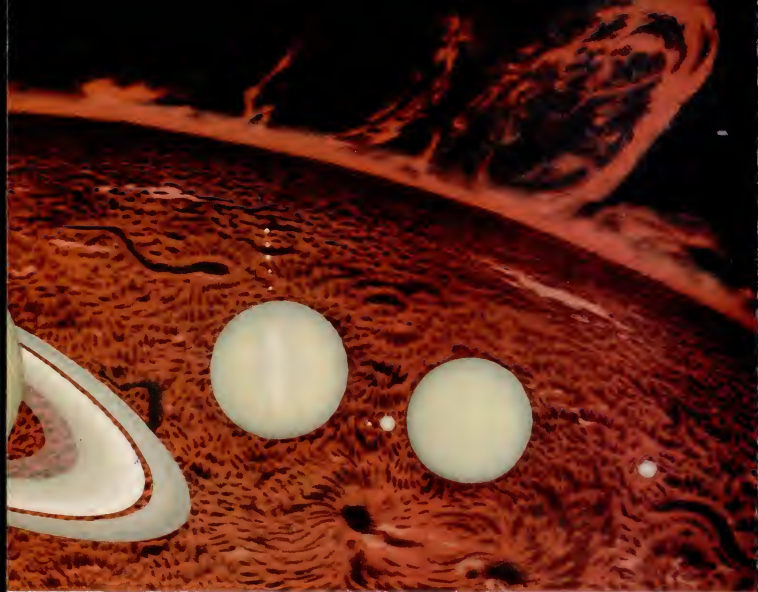
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THE NINE PLANETS and their 31 satellites are shown here in scale above the flaming rim of the enormous sun. On the solar horizon immense plumed prominences feather upward into space; below rages the wild solar atmosphere of

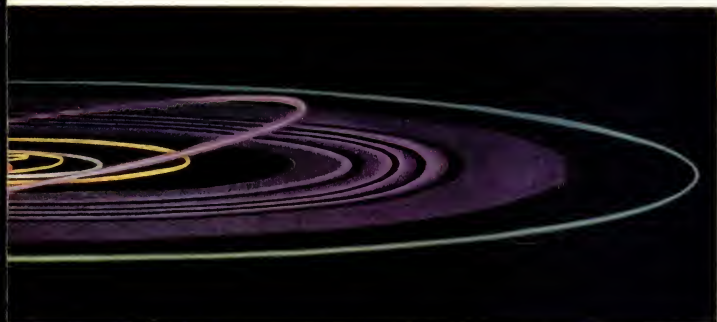






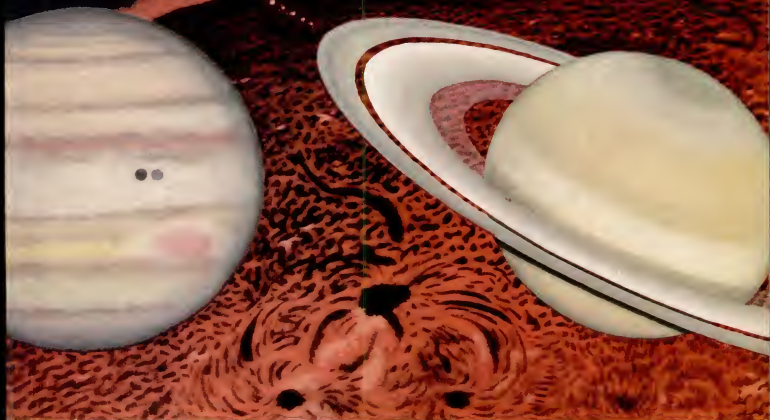
Intricate than the motions of the planets themselves, Saturn has, in addition to its rings of fine particles, nine satellites, one of which, Titan, is larger than our moon. The three outermost planets were discovered in recent times—Uranus

accidentally in 1781; Neptune in 1846 after a deliberate search inspired by evidences of perturbations in the movement of Uranus; and small, distant Pluto in 1930. Astronomers are now certain the roster of the planets is complete.



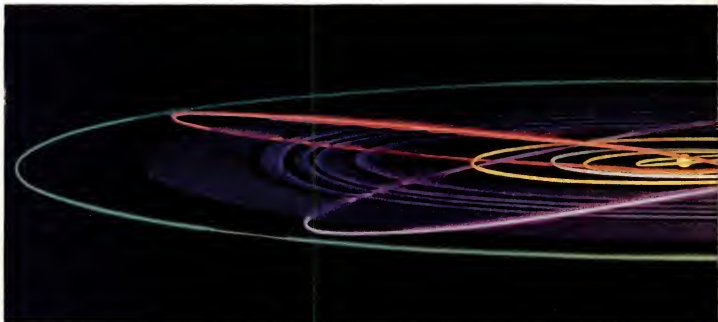
which is calculated to return in four million years. The picture above depicts the orbits of the inner planets, Mercury and Venus (both yellow), Earth (white), Mars (yellow) and, shown again for comparison, Jupiter (green). Between Jupiter

and Mars lies a belt of more than 30,000 asteroids (purple bands), the largest of which, Ceres (purple line), is only 400 miles in diameter. Encke's comet (red) has the smallest orbit and shortest period (3.3 years) of any comet known.



incandescent hydrogen. From left to right the planets march in the order of their orbital proximity to the sun. At the far left floats tiny Mercury and bright, cloud-veiled Venus. Next comes Earth, unique in the possession of a single moon

so large that together they can be considered twin planets, and reddish Mars, escorted by two tiny satellites. Banded Jupiter, mightiest of the planets, is accompanied by a flock of 12 satellites whose motions around the planet are more



THE ORBITS OF THE PLANETS are shown here in two diagrams at left and above. At left are the orbits of the five outer planets (green) and the orbits of two comets (red). From the smallest circle outward the orbits shown are those

Jupiter, Saturn, Uranus, Neptune and Pluto, whose orbit is tilted off the main plane. Of the two comet orbits, the lower one is that of Halley's comet which reappears about every 77 years. The long slender orbit is that of Comet 1910a,

THE MILKY WAY AND ITS COMPANIONS

LIKE a great ring of pure and endless light," the Milky Way girdles the heavens from pole to pole. Throughout the ages its pearly luminescence and intimations of fathomless distance have provoked the awe and imagination of man. It was not until recent times, however, that the Milky Way came to be recognized for what it is: a mighty river of suns, star fields, clusters and clouds composing the visible part of the galaxy in which our solar system moves. The difficulty in envisaging the architecture of the Milky Way is that we are *inside* it. Yet in the last century astronomers have broken through the confining perspective of Earth and ascertained that what we see of the Milky Way is actually the interior arc of a stupendous lens-shaped aggregation of stars similar to the galaxies of outer space. From the Earth, situated some 30,000 light years from the center of our galaxy, we can discern only a fraction of the billions of stars it contains, only a segment of its overall diameter of 100,000 light years.

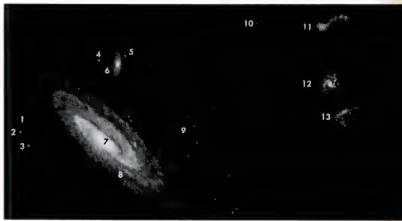
Most of the matter in our galaxy—stars, dark clouds of gas and dust—lies within the main disk of the Milky Way and its tightly coiled spiral arms. The galaxy rotates, completing one revolution every 200 million years and carrying Earth and sun with it at a velocity of about 600,000 miles an hour. In its flight through space the great disk is accompanied by an outer swarm of globular clusters, each containing hundreds of thousands of stars, each revolving at random around the center of the galaxy. Together, the Milky Way and its aureole of globular clusters makes up what astronomers refer to as The Galaxy.

In the stupendous perspectives of the cosmos, however, our galaxy is but one member of a still larger cosmic aggregate, called the Local Group, which includes 17 or more systems held by gravitational force within a radius of 1.5 million light years. Near one end of this vast supersystem rides the glowing wheel of the Milky Way, at the other end the great spiral of its sister galaxy, Andromeda.

In the painting at left the Local Group is shown as it might be viewed by an observer 684,000 light years from the sun, looking down the long axis of the group toward Andromeda in the remote void. The nearest star systems are the two Magellanic Clouds, strange formless galaxies which attend the Milky Way as satellites. Between them, but farther away, whirls the fiery pinwheel of a small galaxy known simply as NGC 598. Distant Andromeda burns in the dark abyss of space, adorned like the Milky Way with globular clusters and accompanied by lesser satellite galaxies.

In addition to the systems shown here, the Local Group also embraces six small elliptical galaxies, possessing no spiral arms and little dust or gas, four structureless veils of stars like the Magellanic Clouds, and perhaps three distant spirals, sparsely distributed through the immense void. Remote as they are, they are nevertheless united by the mysterious force of gravitation and revolve around an unknown center somewhere between Andromeda and the Milky Way.

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KEY TO THE GALAXIES in the painting at left is given above. Most galaxies are identified by numbers and the letters NGC, standing for New General Catalog, the astronomer's guidebook of outer space. The objects shown here are: 1—NGC 278; 2—NGC 147; 3—NGC 185; 4—NGC 205; 5—NGC 221; 6—Andromeda; 7—main disk of the Milky Way; 8—the sun; 9—globular clusters; 10—NGC 401; 11—Small Magellanic Cloud; 12—NGC 598; 13—Large Magellanic Cloud.

J. P. W. 1917
R. Gartland



TWO COLLIDING GALAXIES pass through each other at some trackless crossroad in space. Despite the apparent density of the galaxies, the stars within them never collide, for they are separated by trillions of miles. But the voluminous gas

clouds accompanying them clash and fall behind, glowing red with the heat of molecular impacts. Such galactic collisions, though rare, explain the existence of spiral galaxies that are swept clean of gas like the upper arms of the two above.

THE GALAXIES OF OUTER SPACE

AS the eye of the telescope peers outward, past the familiar constellations, past the more distant star clouds and clusters of the Milky Way, it discovers an ever increasing number of hazy luminous patches suspended like cobwebs in the void. These are the outer galaxies, the so-called "island universes," each composed of billions of stars but so deeply sunk in the abyss of space that the light by which they disclose themselves required millions of years to traverse the distance to the Earth. Within the bowl of the Big Dipper alone, a rectangle enclosing only 1/2000th of the whole sky, faint glimmers of enfeebled light reveal a cluster of more than 300 galaxies. By comparison, our Local Group, with its 17 members, is a dwarf cluster. In general the galaxies of outer space tend to congregate into communities of about 500—into galaxies of galaxies—united by gravitation, often interpenetrating one another in their huge wanderings, like those on the opposite page.

Astronomers estimate that about one trillion galaxies lie within range of our largest telescopes. Three main categories are recognized: elliptical galaxies, representing 17% of those catalogued; spirals, comprising 80%; and irregulars, composing 3%. Because they rotate at various speeds the ellipticals range from perfectly symmetric spheres to flattened saucer-shaped disks. For the same reason, the spirals range from the tightly coiled (*above right*) through the more loosely coiled like the Milky Way (*right, center*) to wide-open pinwheels with small nuclei and arms thrown out by the centrifugal force of rapid rotation. Most spirals have round centers, but about 30% of them are "barred spirals" with elongated nuclei like the one below. The third main group of galaxies, the irregulars, are like the Magellanic Clouds formless, without nuclei or systematic rotational movement.

A few modern astronomers try to fit the various types of galaxies into an evolutionary sequence, suggesting that the turbulent irregular galaxies are newborn systems that will form into fast-spinning spirals, and then in time evolve into slower-moving ellipticals. But most astronomers insist that all galaxies are of about the same age. They assert that the various types of galaxies were shaped by their various rotational speeds at creation and that these speeds determined how much of their primordial matter should coalesce into stars and how much should continue to drift freely in clouds of gas and smoke.

CONTINUED ON NEXT PAGE



A BARRED SPIRAL, so called for the characteristically elongated nucleus of its type, rotates like a fiery pinwheel some 30 million light years distant trailing its loosely coiled arms widely in space, where they finally attenuate in the void.



A TIGHTLY COILED SPIRAL, 20 million light years away is viewed here through the Mount Palomar telescope so that the obscuring masses of gas and dust in its spiral arms form a dark belt around the equator of its glowing nucleus.



OUR OWN GALAXY, seen from the Southern Hemisphere, shows a structure like that of galaxies in outer space. The nucleus is at the center, below the point where the camera's plate mountings meet. The spiral arms taper off left and right.



AN ELLIPTICAL GALAXY in the Andromeda group glows in the depths of space, 1.7 million light years from Earth. In cross section it is a perfect ellipse. The large individual stars around it are in the Milky Way, 100 to 100,000 times closer.



GLOWING STRANDS OF A GAS CLOUD IN CYGNUS FILIGREE THE SKY. THEY PASS BEHIND THE BRIGHT STAR AT CENTER, WHICH IS BLURRED BY LONG PHOTOGRAPHIC EXPOSURE

THE COSMIC CLOUDS

OF all the mysteries of the universe the darkest surround inchoate masses of matter that drift in space in clouds of gas and dust. Floating between the stars in the arms of all spirals and large areas of irregular galaxies, this material reveals itself either by catching the light of adjacent stars, as in the fine-spun nebula above, or by obscuring it behind opaque shrouds, as in the formation on the opposite page. Its density is so inconceivably low—16 atoms per cubic inch—that it surpasses the most perfect vacuums that can be produced on earth. Yet in regions near the sun these diffuse clouds are so vast that they equal in mass the total substance of the stars in these regions.

The cosmic clouds are significant because they are the raw material of creation. Some five billion years ago, according to present theory, our galaxy consisted of a stupendous mass of swirling hydrogen gas rotating invisibly in starless space. As the cloud spun, turbulence developed and eddies formed, and within the eddies gravitational force began to weld particles into ever greater bodies. Then as the enlarging masses felt the squeeze of gravitation their internal temperatures rose. Eventually, in the hot centers of each mass, atomic nuclei began to react; hydrogen changed to helium (as in the H-bomb), and so lit up the first stars. In this way the Milky Way and all other galaxies are thought to have formed. Among the immense dim clouds that can be seen hanging in the depths of the sky, astronomers believe the same slow processes of stellar creation may still be going on.

CONTINUED ON NEXT PAGE



A COSMIC "SMOKE RING" surrounds a faint star in Aquarius. Actually what appears to be a ring is a spherical shell of gas which absorbs the light of the star and re-emits it. The shell is brightest around the edges, hence the ring effect.



A STELLAR EXPLOSION which occurred in 1054 A.D., according to the records of Chinese astronomers, left the gas cloud known as the Crab Nebula. Today the cloud is still expanding at 684 miles per second; its diameter is $3\frac{1}{4}$ light years.



CLOUDS OF GAS AND DUST 3,000 light years away spin turbulent configurations in the constellation Monoceros. At the top of the picture, gray scarves of gas are excited to luminosity by the big bright star with a halo in the background.

Below, a dark promontory of intruding opaque matter points upward from the abyss of space. The other stars in the picture are all much closer to earth; the distortion of their images is a diffraction effect originating inside the telescope.



SPIRAL ARMS on the rim of Andromeda, twin sister of our Milky Way, shine with the brilliance of many young blue stars of Population I (top, opposite page). This section of the galaxy, 1/30 of the total, is about 11,000 light years across.



A GLOBULAR CLUSTER hovering above the main disk of our galaxy contains a million tightly packed stars of Population II, all old ones in varying stages of evolution (chart, bottom opposite page). It is about 215 light years in diameter.

THE LIFE AND DEATH OF STARS

TO the naked eye the stars glitter like silver sequins, spangling the black fabric of the sky without dimension or identity, fixed pinpoints, infinitely remote. It is only through the sorcery of the telescope that their splendor and diversity emerge, for their colors shine forth, transmuting them from white sparks into jewels aglow with every wavelength of the spectrum. Since stars are incandescent, their colors depend on their temperatures. Thus red stars like Antares and Aldebaran are relatively cool, with surface temperatures of about 6,000°F. Yellow stars like the sun are hotter by thousands of degrees, and the hottest ultraviolet stars may reach 100,000°.

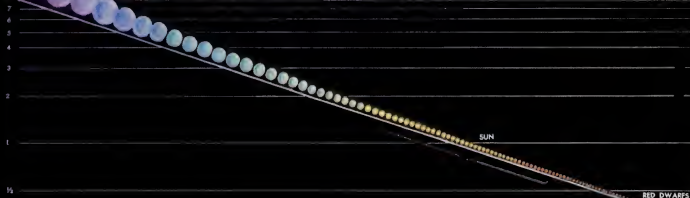
In the unending effort to order the apparent chaos of the skies, astronomers have uncovered certain relationships that link the color and size of stars with their age and location in galactic structures. Thus they divide all the stars into two great categories. Population I, shown in the upper chart opposite, consists of stars in the arms of spiral galaxies and in irregular galaxies like the Magellanic Clouds. Population II, shown in the lower chart opposite, consists of stars in the nuclei of spiral galaxies, in elliptical galaxies and, classically, in globular clusters. This division is based both on distribution in the universe and on stellar types. The biggest, brightest stars in Population I are blue giants, which cause the regions they inhabit to glow with blue radiance. The biggest, brightest stars of Population II are red giants, which impart to their environs an orange tint.

Both groups include myriads of fainter stars of many colors and types. The family ties that unite the stars of Population I are obvious, and the relationship between their colors and sizes is straightforward: the smaller stars are red and cool; the bigger ones blue and hot. Until a few decades ago astronomers believed that this rule—the bigger, the hotter—applied to all stars, save a few unaccountable freaks. Then as telescopes probed deeper into space, into the remote globular clusters and still more distant outer galaxies, whole aberrant populations were disclosed. Here the giants were not blue and hot, but red and cool. Here, too, were curious pulsating stars. And so when they plotted the color-size relationship of these Population II stars they discovered the irregular curve in the lower chart at right.

It was not until the development of nuclear physics that these anomalies could be explained. With an understanding of the thermo-nuclear processes that control the burning of stars, astronomers realized that the different types of stars represented different stages in stellar evolution. In general, the life of a star unfolds as follows: 1) Until it has used up 15% of its hydrogen, it burns steadily, without much changing character. Its rate of combustion depends on its size. Big stars burn more rapidly than small ones. 2) After a star has used up 15% of its hydrogen it starts to evolve. Now it expends its fuel wastefully, consuming the remaining 85% as quickly as the first 15%. It cools and expands, swelling to 50 or 100 times its original size and becoming a red giant or supergiant as much as eight billion times more luminous than the sun. 3) When it has used up 60% of its hydrogen its internal pressure begins to fall, its bloated exterior to cave in. As it contracts it usually becomes unstable and then may pulsate or explode as a nova before it finally collapses into an extinct white dwarf, glowing only by the feeble heat of slow compression, which squeezes its substance until every cubic inch weighs several tons.

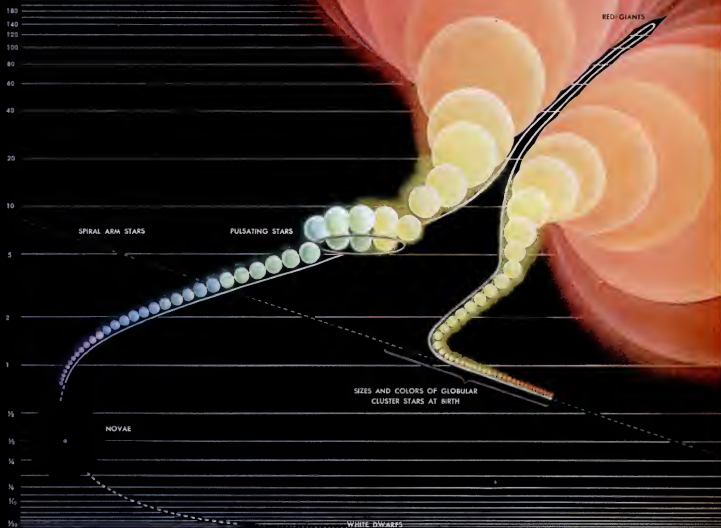
This theoretical life of a star is indicated by the curve in the lower chart on the opposite page. The reason that Population II stars reveal the evolutionary sequence so vividly is that the globular clusters and elliptical galaxies in which they abide are devoid of dust and gas from which new stars can form. They have therefore evolved in isolation, un replenished since their creation, so that their aging individuals illustrate every phase of stellar development. The stars of Population I also undergo the same evolutionary process, but as a group they change little because their spiral arm environments contain quantities of dust and gas out of which new blue giants continually arise to replace those that burn out. It is thus that the Milky Way still burns with blue primordial brilliance. Inexorably, as the cosmic clouds are exhausted and the blue giants extinguished, it too will grow fainter and yellower. Even now it encompasses vastly more small red and yellow stars than blue giants. But its future is still long. Another 50 billion years may pass before the last faint slow-burning star undergoes final collapse and flickers out, leaving the galaxy to everlasting night.

BLUE GIANTS



TYPES OF STARS fall into two great categories. One group (above) consists of stars found in the spiral arms of galaxies. The other (below) is found in globular clusters. Both are arranged here by color and size. The scale at left indicates size in terms of sun diameters. The scale at bottom indicates temperature and color. The spiral arm stars show a simple color-size relationship; the bigger ones are bluer, the smaller ones redder. The globular cluster stars reveal a more complex color-size relationship, which starts like the spiral arm pattern with small red

stars at right but soon sweeps up into the realm of huge, cool red giants, falls again into areas of smaller but hotter pulsating stars and exploding novae, and tapers off among the white dwarfs. This variety is the result of evolution: at birth globular cluster stars resembled spiral arm stars, whose pattern is repeated for reference in the dotted line below. The bracketed segment indicates the original colors and sizes of the globular cluster stars. The smaller ones still lie unchanged on the dotted line; the larger have evolved into the types at top and left.



30,000° F.

24,000°

21,000°

18,000°

13,000°

12,000°

9,000°

8,000°



PURPLE PLEIONE, a star of the familiar Pleiades cluster, rotates so rapidly that it has flattened into a flying saucer and hurled forth a dark red ring of hydrogen. Where the excited gas crosses Pleione's equator, it obscures her violet light.

DOUBLE AND MULTIPLE STARS

OF all the myriad stars in The Galaxy, a few, like our sun, wheel through space alone. More than three quarters, however, belong to compact groups ranging from double stars to populous stellar clusters which revolve around common centers of gravity. In many of these closely coupled systems stars which have been deformed by forces of mutual attraction rotate on their axes and circle their companions so rapidly that they hurl their outer gases into space and envelop themselves in disks and spirals like the ones shown on these pages. The first multiple star to be discovered was Mizar, at the bend of the Big Dipper's handle, two of whose components can be distinguished with the naked eye. The giant blue Dog Star, Sirius, has a dense white-dwarf companion, the Pup, which is not much larger than the Earth. Greatest of all double stars is Epsilon Aurigae, consisting of a yellow supergiant, 250 times the size of the sun, and its still more stupendous companion, a cool, dark star with a diameter 3,000 times the sun's. Polaris is actually three stars, Castor is six. The twinning and tripling of stars may arise in various ways. Recent theories suggest that most star-couples were created from interacting eddies in the primordial gas cloud out of which our galaxy condensed.

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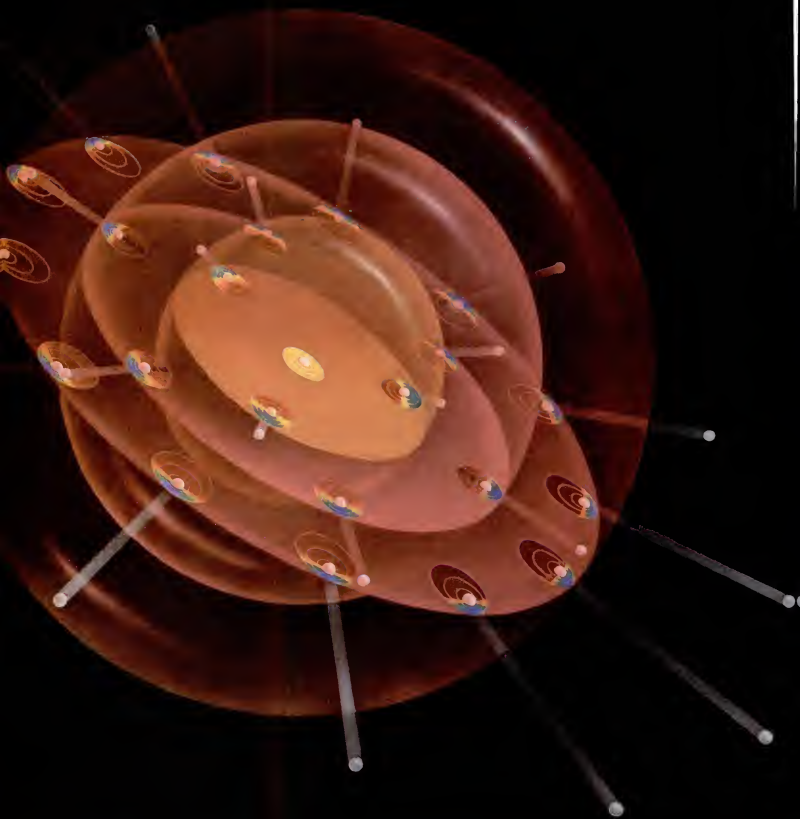


← **A DOUBLE STAR**, RW Persei, casts two-toned shadows on the jagged surface of a hypothetical planet. One member of the pair is a large orange-colored star, the other a smaller, brighter, blue star engirdled by a ring of glowing hydrogen.



AN EXPANDING SPIRAL of incandescient hydrogen gas seen from a hypothetical planet encircles the revolving star-couple Beta Lyrae. Ejected from the spinning equator of the larger blue star, the gas is caught in part by the smaller

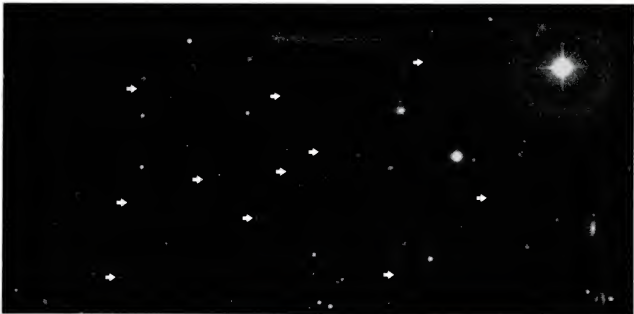
yellow star and in part flung out to dissipate in space. Consuming its fuel extravagantly, the great blue star will probably burn out relatively soon, although its rate of combustion may be reduced as it surrenders mass to its yellow mate.



A. Petrusidis

THE VISIBLE UNIVERSE extends outward in all directions to a distance of two billion light years. In this conception each white ball represents millions of galaxies which are receding from each other and from our Local Group of galaxies (center) as the universe expands. Each has two positions connected by lines: an inner one where it emitted the light we see now and an outer one where it actually is now. In its visible position it is shown in a multicolored disk, for it is traveling so fast that its light crowds up in short blue waves in front of

it and trails out in long red waves behind it. The speed of receding galaxies is computed by this reddening of the light. The innermost of the three large spheres above shows how far astronomers can measure the reddening (8 billion light years). The second sphere indicates the limits of telescopic perception a decade ago (about 1.4 billion light years). The outer sphere indicates the present telescopic horizon (two billion light years) where the most distant galaxies are perhaps fleeing outward at speeds of more than 120,000 miles per second.



THE FARTHEST GALAXIES man can see are indicated by arrows in this photograph taken with Palomar's great telescope. Their light, which took two

billion years to reach Earth, was so enfeeblled that an exposure of one hour was required. The brighter objects are Milky Way stars, invisible to the naked eye.

THE EXPANDING UNIVERSE

THE history of astronomy has been a record of receding horizons. In the beginning the retreat was slow; many centuries passed between the dim age when man believed that the sky—"this majestic roof fretted with golden fire"—hovered only a few miles above the earth and the dawn of his apprehension of cosmic distances. Indeed it was not until the beginning of our century that the focus of astronomy shifted from planets to stars. Only within the last 25 years has it comprehended the galaxies of outer space.

The astronomer most responsible for this change in perspective was the late Edwin Hubble of the Mount Wilson Observatory, who in 1924 published photographs proving once and for all that the far, hazy patches of light which astronomers had called nebulae and believed to be incchoate masses of gas and dust were actually huge systems of stars like the Milky Way. Thereafter he devoted himself to studying the galaxies, measuring their distances, charting their distribution in space and, most important, analyzing their movements. The curious feature of these movements was that they did not seem to be random, like the aimless drifting of molecules in a gas, but highly systematic: each galaxy, wherever it rode in space, appeared to be rushing away from our solar system at a velocity directly proportional to its distance; that is, the greater the distance, the greater the speed. Hubble and his associate, Milton L. Humason, proceeded to work out the ratio, and in 1929 published an equation destined to be of supreme importance in cosmology and known today as the Hubble-Humason Law. It reads: $V_n = 38r$. In the shorthand of science V_n stands for the velocity of the receding galaxies in miles per second, and " r " expresses the present distance from Earth in units of one million light years. Hence a galaxy one hundred million light years away is found moving at a speed of 38×100 or 3,800 miles per second; galaxies one billion light years away flee outward at $38 \times 1,000$ or 38,000 miles per second, about one fifth the speed of light.

The universe thus appears to be expanding about us in all directions. Yet this does not mean that modern astronomy has reverted to the old anthropocentric picture of the cosmos; it does not imply that our Earth stands at the center of the universe any more than it does at the center of the solar system, Milky Way or Local Group. If one thinks of the universe as a balloon covered with inelastic spots representing galaxies, then as the balloon inflates each spot must recede from every other spot. Or to take another analogy, one can envisage the universe as a giant cloud of rarefied gas in which each individual galaxy is an individual molecule. If the cloud expands

uniformly, each molecule doubles its distance from every other molecule in a given interval of time. And so, if sensate observers exist in the galaxies that we see hurrying away from us, they also see us hurrying away from them—at velocities proportional to distance.

Evidence for this flight of the galaxies derives from an analysis of the light they emit. Broken down by a spectroscope, the light of a far galaxy produces the same pattern of bright and dark bands as light from a stationary source. But each band is systematically moved toward the red or long-wavelength end of the spectrum. The distance of this shift across the spectrum is directly proportional to the speed of a galaxy's recession. Known as the "red shift," this effect may be compared to the familiar change in the quality of sound emitted by a moving source as it advances and recedes. Anyone who has paused by a railroad crossing has noticed that the sound of a locomotive whistle seems to rise in pitch as the train approaches and fall as it moves away. The reason for this is that the wavelengths of sound emitted by the approaching whistle are compressed and shortened by the forward motion of the source, which thus raises its pitch. As the train passes, they stretch out and lengthen in its wake, lowering the pitch of the sound. In the same way, light waves from an approaching source are compressed toward the blue or short-wavelength end of the spectrum, while those from a receding source stretch out toward the red or long-wavelength end—hence the deduction that the galaxies of outer space are receding. Since there are other factors that may redden celestial objects in a different way, some skeptics have sought opposing explanations for the red shift. Yet one by one their objections have been vitiated and today it is the almost unanimous view that the outrush of the galaxies is no illusion but an actual and awe-inspiring phenomenon of the mysterious universe.

The concept of an expanding space, however, has presented cosmological problems of enormous subtlety. For example, when an astronomer looks outward in space he looks backward in time. The dim, distant galaxies whose antique light swims to our vision through two billion years of terrestrial time do not actually exist where we see them now. The light by which we discern their images started its immense journey when life on earth was barely stirring in the primordial seas. While it has come to us, they have traveled another one and one-third billion light years farther away. It is thus that in any conception of the universe space and time become inseparable and cosmologists speak of a space-time continuum—which means that to describe the position of a galaxy one must fix it not only in three dimensions of space but also in one of time. In this sense the universe is four-dimensional, and the fourth dimension is time.

The cosmologist cannot therefore think of the universe as here

THE STARRY UNIVERSE CONTINUED

and now in the way that one can think of New York City or the Earth as here and now. For every object in the heavens has two positions: 1) where we see it, and 2) where it is. Even in the case of the nearest star, Alpha Centauri, we cannot say that we see it "now," for its light takes a little over four years to reach our eyes. So what we actually see is the ghost of a star that was shining back in 1950. Whether or not it is still shining in 1954 we cannot know until 1958. The situation becomes vastly more complicated, however, in the case of the flying galaxies, not only because of their immense distance but because of their incredible velocities.

If one assumes that all the galaxies we see today have been traveling outward through eons of cosmic time in the same relative directions and at the same relative velocities—the farthest galaxies most swiftly, the nearer ones at lesser rates of speed—the startling corollary emerges that all started from the same place at the same time. Calculations made from present measurements of their rate of recession indicate that their cosmic journey began about five billion years ago. The extraordinary fact about this figure is that it coincides with recent findings as to the probable age of radioactive substances found in the Earth's crust, and the age of the oldest stars derived from modern theories of stellar evolution. All the clues of science point to a time of creation when the cosmic fires were ignited and the vast pageant of the present universe brought into being. And this time was five billion years ago.

Since the phenomenon of the expanding universe was discovered many hypotheses have been put forth to explain it. One of the first was proposed by the Belgian cosmologist Abbé LeMaitre who suggested that the recession of the galaxies was initiated by a stupendous explosion—the blowing up of a single primordial super-atom whose fleeing fragments we still perceive. A variation of this theme has been developed more recently by Dr. George Gamov, of George Washington University. At some time prior to five billion years ago, according to Gamov, the universe was in a state of contraction which lasted until all matter and radiation was squeezed together in an inferno of elementary particles of incredible mass and density. Gamov calls this contracted state of matter *ylem*—an archaic English word meaning the primordial, elemental substance of all things. Its temperature raged in the billions of degrees. There were no elements in such heat, no atoms—only free atomic particles in a state of chaotic agitation. Directly following the climactic moment of supreme contraction, the cosmic mass began to expand. Light and other electromagnetic radiation flew outward into space. The temperature fell. When it had dropped to one billion degrees, the particles cohered and atoms were formed. As the primordial vapor surged outward and cooled, turbulence and gravitation shaped it into eddies from which galaxies and clusters of galaxies evolved. They were dark at first, but gradually, out of the swirling clouds, stars condensed and shone across the void.

In opposition to Gamov's theory a British school of cosmology has recently proposed a "steady state" universe. In essence it holds that the universe was not created with a bang—that indeed it had no beginning as such—and that creation is a continuous process. Throughout space, according to this theory, matter is continually being formed and condensing into galaxies in the intergalactic voids created by expansion. Yet this picture is less acceptable than Gamov's. In recent years observational evidence

CONTINUED ON PAGE 47

A NOTE OF ACKNOWLEDGMENT

LIFE is indebted to the following scientists for assistance in the preparation of this essay: Dr. Robert B. Leighton and H. P. Robertson, and Mr. Hugo Wahlquist, California Institute of Technology; Dr. Llewellyn Hilleth Thomas, Columbia University; Dr. George Gamov, George Washington University; Dr. Bart J. Bok, Harvard University; Dr. Arnold Schlüter, Max Planck Institute; Drs. Walter F. Baade, Ira S. Bowen, Milton L. Humason, Rudolph L. Minkowski and Allan R. Sandage, Mount Wilson and Palomar Observatories; Dr. Martin Schwarzschild, Princeton University; Dr. Otto Struve, University of California at Berkeley; Dr. Gerard F. Kuiper, University of Chicago; Dr. George C. McVittie, University of Illinois; Dr. Arthur Dodd Code, University of Wisconsin.

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Smart Gifts of Fine Whiskey

This KENTUCKY TAVERN GIFT DECANTER will flatter your friends. Its sophisticated design and the rare quality of the whiskey make it especially appropriate for those "hard to buy for" names.



Got a man to buy for? A week-end host? THE LEATHERETTE CASE is rich in design for the masculine eye and taste! A perfect idea for business associates.



Here's the smart way to breeze through your gift list with "something out of the ordinary!" Always appreciated, these smart Kentucky Tavern Holiday Gift Packages cost no more than the regular bottle! As gifts they'll reflect your perfect taste... because the taste of Kentucky Tavern has made it *The Aristocrat of Bonds.*

*Designed by Glenmore...the House
with the Holiday Spirit...*

KENTUCKY
STRAIGHT
BOURBON
BOTTLED IN BOND
100 PROOF

**KENTUCKY
TAVERN**

GLENMORE DISTILLERIES COMPANY
LOUISVILLE, KENTUCKY

Everybody will get a boot out of the clever KENTUCKY TAVERN "BOOT 'N BOTTLE!" The whiskey is too good to keep, but the boot will find a dozen uses as a novel Holiday decoration piece.



1. Pour 2 quarts of eggnog mix (as supplied by your dairy) into punch bowl.
2. Stir in a fifth of Bacardi, light or dark.
3. Now the secret that will get real raves from your guests is to fold in a pint of stiffly whipped cream, and then chill for at least 3 hours in your refrigerator to "marry" the ingredients.
4. Top individual servings with light sprinkling of nutmeg and serve. Traditional, jolly and delicious. Serves 8 people three times!

Now a brand-new easy way to
make a perfect Bacardi Eggnog!



**TERRIFIC IDEA FOR MAKING
A PRODUCTION OF IT!**
*Put 50-lb. cake of ice in "tray" made of Reynolds
Wrap. Chip out a hollow in the top. Then set a
Pyrex or metal bowl (bowl filled with hot water)
onto the ice until bowl sinks to depth shown.
Makes a magnificent centerpiece, and it keeps
your Bacardi Eggnog perfectly chilled for hours!*

This 18-piece punch bowl set sells for less than \$5.00
at your local department or hardware store.

has been adduced in support of the postulate that all the galaxies were created at the same time. Astronomers have noted that the remotest elliptical galaxies are far redder than nearer ones, and that their intensity of color cannot be explained by the red shift. It can be accounted for only if they contain bigger and brighter red stars than the nearer galaxies—in short, red supergiants. But we see the outer elliptical galaxies by the light they emitted one or two billion years ago and the inner galaxies by the light they emitted a few million years ago. So we are seeing the nearer galaxies at a far more advanced age. Since supergiant red stars evolve and burn out quickly (see p. 58), they have already vanished from the old inner galaxies but still burn in the young outer galaxies. The difference in their colors is precisely what one would expect were outer and inner galaxies created at the same time.

PROFOUND as the problems of the expanding universe are when one looks back in time, enigmas no less deep arise in any attempt to guess what lies beyond the reaches of telescopic vision. It is here that cosmology leaves behind the ordinary realm of human experience. For in trying to separate appearance from reality it has invaded domains of abstraction whose concepts stand utterly removed from the visible, tangible world perceived by man's senses. Yet abstractions, however difficult to comprehend, are necessary if one is to penetrate the mysteries of the cosmos. Those which are discussed on the following pages represent some of the more important implements of reason that cosmologists must work with when they inquire, "What is out there?" For example, would greater and greater telescopes disclose wider oceans of space and new myriads of galaxies, hurtling at ever greater speeds? The question leads to one of the great paradoxes of cosmology. For the galaxies we can see two billion light years away (actually three and a third billion light years away at the present time) are traveling at two-thirds the speed of light. If mightier telescopes extended man's vision to two and a half billion light years (to galaxies which would now be five billion light years away) he would then be in range, according to the Hubble-Humason Law, of galaxies whose speed equals that of light. But would he see them? For if they are rushing away from him at the speed of light, then by Newtonian physics the light they emit would never get back to Earth. At this point the astronomer has to abandon simple logic and introduce the subtler rationalizations of Einstein's theory of relativity.

Early astronomers presupposed that space could be regarded as an immovable frame of reference in which the "true," or absolute, motion of the stars could be defined. This conviction was strengthened by physicists who postulated that space must be filled with an invisible substance, called "ether," which carried light waves as water propagates the waves of the sea. In 1887 two American physicists, Michelson and Morley, performed a classic experiment designed to prove the existence of the ether. They reasoned that if the Earth moves like a ship through a motionless sea of ether, then the speed of a light ray must be retarded by the ether slipstream if it is projected in the direction of the Earth's movement through the ether, and accelerated if projected in the opposite direction. Their instrument, called an interferometer, was so delicate it could detect a variation of even a fraction of a mile per second in the enormous velocity of light (186,282 mps). But it found that the motion of the Earth did not affect the velocity of light regardless of direction. With one stroke the Michelson-Morley experiment demolished the ether and split scientific thought for the next quarter century.

In 1905 when Einstein was 26 years old he published the Special Theory of Relativity which opened a new world of physical thought. He rejected the ether theory and with it the idea of space as a fixed framework within which it is possible to distinguish "true" from relative motion. The one indisputable result of the Michelson-Morley experiment, he pointed out, was its proof that the velocity of light is unaffected by the motion of Earth. He took this as a revelation of universal law. If the velocity of light is constant with respect to Earth, he argued, it must be constant with respect to any galaxy in the universe. Since the speed of light cannot be increased by the motion of the source or receiver, Einstein assumed that nothing in the universe can travel faster than light.

CONTINUED ON NEXT PAGE



The world's favorite shirt with the stay-neat collar

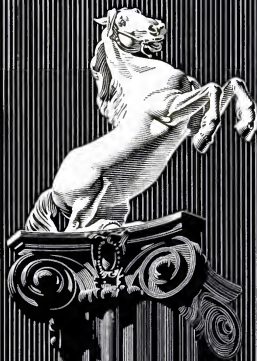
From morn till night,
never a wrinkle,
never a rumple!

The Arrow Dart has the best-fitting collar ever put on a shirt. This stay-neat collar remains fresh and smart-looking all day long. Mitoga® tailor-

ing (body-tapered design), firmly anchored buttons and that all important "Sanforized" label are other famous Arrow features.

And—you can buy your Arrow Dart for only \$3.95. Arrow woven rayon tie \$1.50. Arrow Dale in premium broadcloth, \$5.00.

You'll always look smart in an **ARROW**
DART
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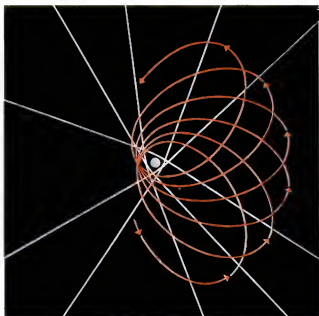


This is the Scotch! Soft,
gentle, golden-hued . . .
light. Have you tried it?

Since 1746

WHITE HORSE
of course!

BLENDED SCOTCH WHISKY, 86.8 PROOF
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LIGHT CURVES as it passes through the gravitational field of any massive body like the sun (center in diagram above). Here the curvature of the light beams (white lines) is exaggerated; near our sun starlight bends less than .002°. The sun's gravitational field also produces an irregularity in the orbit of Mercury, causing its orbit to shift slightly with each revolution around the sun in the type of track indicated here by red lines. This and the bending of starlight represent two observational proofs of the theory of relativity.

THE STARRY UNIVERSE CONTINUED

From these premises Einstein formulated a series of equations that have become an integral part of modern physics and cosmology. Specifically, his equations make all measurements of distance and time vary with the velocity of the observer. For example, we may see two galaxies on opposite sides of the Earth, each one moving away from us at two-thirds the speed of light. Do they then see each other moving away at four-thirds the speed of light, as the simple addition of velocities would assert? According to relativity, observers in both galaxies would measure time and distance differently from observers here on Earth and would compute their combined velocities at somewhat less than that of light.

Strange as its concepts appear to the layman, relativity has been repeatedly validated by observation and experiment. In cosmology the principle of the constant velocity of light has been confirmed by studies of double stars which show that the light from an approaching star in these revolving systems reaches Earth at the same speed as that from a receding star. But relativity also warns the cosmologist never to forget that his observations are limited by his situation in the universe, and that he can never be certain of what he measures in the vast drowned depths of space and time.

With these warnings in mind, modern cosmology has attempted warily to speculate on the possible size and architecture of the universe. Special Relativity plus the Hubble-Humason Law suggest that its radius cannot be greater than five billion light years, for: 1) The universe apparently began to expand five billion years ago; 2) The outermost galaxies have been flying into space since then at a constant velocity close to the speed of light; 3) Relativity asserts that no moving object can exceed the speed of light. Hence the swiftest galaxies can have traveled, at the most, a little less than five billion light years since creation. Since our observations encompass but two-thirds of that distance, we can only assume that invisible galaxies are there, and that their farthest outrushing echelons mark the present limits of the universe.

The human mind recoils from the notion of a universe that somewhere terminates, just as it falters at the opposite concept of a space that never ends. We tend to think of space, however, in the familiar images of our experience—or else more abstractly in the terms of Euclid's plane geometry, where a straight line is the shortest dis-

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About Next Week's

Special Christmas Issue

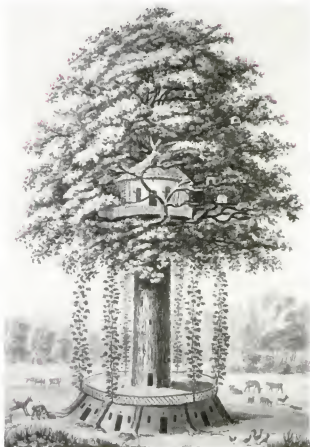
OVER the past 150 years *The Swiss Family Robinson*—the exciting children's story that recounts the imaginary adventures of a real life Swiss family—has been printed in hundreds of editions and read with hypnotic wonder by millions of Americans. But despite their vast affection for the familiar tale, there is still a surprise in store for *Swiss Family* fans. Next week in LIFE's special Christmas issue, you will see for the first time the very spirited and imaginative sketches that illustrated the original manuscript of this children's classic.

These paintings were executed by the author's son, Johann Emanuel Wyss, who, in the story by his father, was a member of the fictional shipwrecked family. Alive with action and remarkably deft for a schoolboy, these drawings depict the exploits of the intrepid Swiss family—the island that harbored them, the perils that plagued them, the ferocious beasts that harassed them and the exotic animals that nourished them. The illustrations which rested unseen in the Wyss family archives for a century and a half will be presented by LIFE in color along with a condensation of the adventures experienced by the cast-away children and shared vicariously by generations of young readers.

A second color essay—10 pages in next week's issue—will reproduce a series of vibrant canvases by the great Flemish master, Pieter Bruegel. Here the harrowing episodes that attended the birth of Christ are painted by Bruegel as they might have taken place in the turbulent Low Lands of the 16th Century, which in harshness paralleled the cruelties of Herod's reign. Yet Bruegel's *Nativity* for all its turmoil reveals with devotion the true moral of the first Christmas—love of mankind.

The spirit is also evidenced in a picture story commemorating the diamond jubilee year of the Salvation Army, the 255,000 selfless men and women who dispense 60 services to the poor, the sick and the derelict. Combining the fervor of the early evangelist with the modern knowledge of the social scientist, these soldiers of Christ seek, through good works, to bring those they serve back to church and to God. This Christmas, as they bring sustenance of the body and the spirit to the hungry, the homeless and the despondent, the joyous "Sallies" can look back on an inspiring 75-year record of charity and love.

ANDREW HEISKELL, *Publisher*



THE SWISS FAMILY'S TREE HOUSE ON THE CASTAWAYS' ISLE



THREE POSSIBLE KINDS OF SPACE, "positively" curved (left), uncurved (middle) and "negatively" curved (right), are illustrated by the sphere, plane and saddle-shaped surface above. Each red section represents the visible universe,

with far galaxies (white balls) at the edge and Earth at center. On each surface light travels by the shortest available route (white lines); great circles on the sphere, straight lines on the plane and various curves on the saddle (see below).

THE STARRY UNIVERSE CONTINUED

tance between two points and the area of a circle is always πr^2 . But in the immensity of the cosmos where so many of our familiar terrestrial concepts fail, it may be that our simple Euclidean geometry is delusive too. Just as man believed till recently that his Earth was flat, perhaps we now are misled by our short perspectives into believing that the space of the universe must be like the space we see in our immediate neighborhood. Ultimately man discovered the curvature of the Earth—by observation and deduction. By analogous techniques cosmologists are now endeavoring to discover whether or not the space of the universe is curved.

Here again the first clues were provided by Einstein when, in 1915, he proposed his General Theory of Relativity, putting forth a new concept of gravitation. Instead of treating gravity as a "force," as Newton had, Einstein pointed out that the space around any celestial body represents a gravitational field skin to the magnetic field around a magnet. He concluded further that the presence of any gravitating body must warp or bend the region of space in which it lies, and hence that light rays passing through a gravitational field must travel not in straight lines but in curves. Four years later during an eclipse of the sun astronomers confirmed his theory by establishing that the light from stars passing through the gravitational field of the darkened sun was deflected precisely as Einstein had forecast.

Since the triumphant validation of Einstein's prediction concerning the bending of starlight, theorists have been speculating as to the curvature of the universe as a whole. They foresee three main possibilities: 1) The universe is Euclidean—it has no curvature and within it a straight line is the shortest distance between two points; 2) It has positive curvature—within it the shortest distance between two points is a closed curve, like the great circles that form the meridians of longitude on the surface of the Earth; 3) It has negative curvature—analogue to a saddle-shaped surface and within it the shortest distance between two points is some type of open curve such as a parabola or hyperbola. The expectation of the cosmologist is that he will be able to choose among these possibilities by counting and analyzing the apportionment of the galaxies in space. At present, according to the most recent observations, the greatest likelihood is that space either curves negatively or not at all.

These concepts, though difficult to envisage, are inextricably entwined with the phenomenon of expansion and with the ancient phil-

osophical debate as to whether space is infinite or finite. If it is Euclidean, it is by definition infinite. If it is negatively curved, it must also be infinite for its outer reaches would then curve away from each other indefinitely. But if it has positive curvature, it would then have the strange property of being at once finite and boundless, like the surface of our Earth which, though finite, has no boundaries.

At this present interval in the march of human knowledge, cosmology thus finds itself drawn ever farther from the familiar world of sensory impressions. Its theorists are constantly tormented by uncertainty as to the choice of their concepts, and beset by doubts as to the accuracy of their interpretations. The whole phantasmagoria of the outrushing galaxies and expanding space so assails the imagination as to make even cosmologists question the intricate framework of observation and deductive reasoning on which it rests. And yet there appears no other way to explain the faint glimmers of light which the great telescopes receive, and the undeniable reddening of that light which the spectrographs disclose.

Less than a century ago scientists felt confident that little remained for them to do but perfect more accurate systems of measurements. There seemed to be no process of nature that could not be described in terms of mechanical laws and accurately defined by Newton's beautiful equations. And the conviction grew that, given the immediate position and velocity of every particle in the universe, its past and future could be perfectly revealed. The events that shattered this assumption were the development of relativity and the swift advance of atomic science. For all the tremendous insights that modern physics has provided in its separate realms, it has also added to the enigma of man's existence, introducing new paradox, uncertainty, duality into his vision of the world he inhabits.

Today we can no longer distinguish clearly among the old entities by which the universe used to be described. In the new science it has become clear that mass and energy are the same thing. And similarly space and time grow indistinguishable in the vast, veiled depths of the outer cosmos. Handicapped by his inadequate conceptions, confined in the prison house of his senses, man can only grope through the twilight that dims both of his ultimate horizons—on the one hand the inscrutable universe of the elementary particles, on the other the illimitable universe of space and time. Whether he will ever penetrate them more deeply is a question that can be answered only with hope, not assurance. For in the words of Paul, "We know in part, and we prophesy in part. . . . Now we see through a glass, darkly."

With "The Starry Universe" LIFE concludes its 13-part science series, "The World We Live In," which during the past two years has included the following articles: "The Earth is Born," Dec. 8, 1952; "The Miracle of the Sea," Feb. 9, 1953; "The Face of the Land," April 13, 1953; "The Canopy of Air," June 8, 1953; "The Pageant of Life," LIFE, Sept. 7, 1953; "The Age of Mammals," Oct. 19, 1953; "Creatures of the Sea," Nov. 30, 1953; "The Coral Reef," Feb. 8, 1954; "The Land of the Sun," April 5, 1954; "The Arctic Barrens," June 7, 1954;

"The Rain Forest," Sept. 20, 1954; "The Woods of Home," Nov. 8, 1954. Reprints of each essay are available to schools, colleges and other educational institutions at the following prices: 20¢ each for the first 25; 10¢ each for additional copies. They may be ordered from Dept. W, LIFE, 9 Rockefeller Plaza, New York 20, N.Y. The editors of LIFE plan to publish "The World We Live In" in book form at a later date. For an announcement of similar picture-and-text series which will appear in the coming months, see LIFE next week.

The minute it's out of the oven, you know why new Swans Down beats other cake mixes!



Don't miss this thrill!
Learn why this is the only mix that wins on all 4 "musts" for homemade cake!

- 1 Homemade size
- 2 Homemade texture
- 3 Homemade moistness
- 4 Homemade taste

Of course, you get a thrill in turning out a big, luscious cake like this! So you'll be interested in the results of these home-baking tests of new Swans Down Mix and all the other leading cake mixes.

In their own kitchens, 4,375 housewives compared new Swans Down with other mixes. Then they voted for their favorite.

Here's the good news: New Swans Down was picked the winner on all 4 "musts" for homemade cake—size, texture, moistness, taste.

We bet you'll pick Swans Down winner, too! And here's one very special reason why—Swans Down wasn't satisfied with the ingredients used by other mixes. So they had ingredients especially made for the new mixes—made to blend just right with your own fresh eggs.

Come on! Whisk together a luscious Swans Down Mix cake today!



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Another Cadillac Has Arrived !

The arrival of this distinguished couple on the scene has, almost certainly, added another Cadillac to their host's driveway. . . . For, over the years, it has become increasingly true that prominent visitors at noteworthy gatherings arrive—in Cadillacs. . . . And, unquestionably, their preference for Cadillac will be even more pronounced in the current automotive year. For the new 1955 Cadillacs are, far and away, the finest of all time!

. . . They are beautiful almost beyond description—with new distinction and majesty in every styling detail. Their performance is incredibly smooth and powerful and responsive. And their interior luxury is truly extraordinary. . . . If you haven't as yet inspected and driven this 1955 version of the "car of cars," come in and do so—soon. . . . It's an experience every motorist owes to himself—and you'll be welcome at any time.

YOUR CADILLAC DEALER



ON POINT OF COLLAPSE, WINNER FRANK DELLA NOCE STUMBLES TO THE FINISH LINE WITH TOY LOAD. THIS LOAD INCLUDED 30 POUNDS OF TRAIN GEAR



ALL THE TOYS A BOY CAN CARRY

Baltimore youngsters get \$1,042 worth

For a few fine frenzied minutes Baltimore was the scene of a contest which Santa Claus himself might have thought up. To push a cereal called Ranger Joe, an invitation was extended the city's children to compete in drawing a picture around a cutout (above left) from the cereal box. First-prize winner would be given all the toys he could carry in five minutes from the Hecht Co. branch store. Second

and third prize winners would get four and three minutes respectively.

The three successful contestants assaulted the toy area in masterpieces of tactical planning. Frank Della Noce, 14, the first-prize winner, outsmarted the regulation that he could have only "all you can carry" by loading a wagon twice and lugging it out. In 12 trips the three made off with a total of \$1,042 in toys.



FIRST PRIZE was won by elaborate drawing of a rodeo scene around "Ranger Joe" cereal-box cutout.

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1. **By the emblem** shown on the opposite page. Blue Cross—and Blue Cross only—is privileged to display it. It means that Blue Cross alone conforms to standards of the American Hospital Association and is officially approved by that organization.
2. **By the listing** in your local telephone directory under the name "Blue Cross". No other groups using the word "Cross" in their names are in any way connected with Blue Cross.
3. **By the full legal title** of the Plan, which is often used in its advertising. These full names differ in their forms, but the principles, aims and methods of the groups are the same.

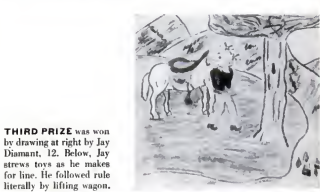
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Oakland, California
COLORADO • Colorado Hospital Service
Denver, Colorado
DELAWARE • Group Hospital Service, Inc.
Wilmington, Delaware
DISTRICT OF COLUMBIA • Group Hospitalization, Inc.
Washington, D. C.
FLORIDA • Blue Cross of Florida, Inc.
Jacksonville, Florida
GEORGIA • United Hospitals Service Association
Atlanta, Georgia
George Hospital Service Ass'n, Inc.
Columbus, Georgia
Hospital Service Association of Savannah
Savannah, Georgia
IDAHO • Idaho Hospital Service
Boise, Idaho
ILLINOIS • Blue Cross Plan for Hospital Care
Chicago, Illinois
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KANSAS • Kansas Hospital Service Association, Inc.
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TEXAS • Group Hospital Service
Dallas, Texas
UTAH • Intermountain Hospital Service
Salt Lake City, Utah
VERMONT • Served by Concord, New Hampshire
VIRGINIA • Piedmont Hospital Service Association
Lynchburg, Virginia
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Richmond, Virginia
Hospital Service Association of Roanoke
Roanoke, Virginia
WASHINGTON • Washington Hospital Service
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WEST VIRGINIA • Associated Hospitals, Inc.
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Charleston, West Virginia
Marion County Hospital Service, Inc.
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MANITOBA • Manitoba Hospital Service Association
Winnipeg, Manitoba, Canada
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Maritime Hospital Service Association
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ONTARIO • Blue Cross Plan for Hospital Care
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QUEBEC • Quebec Hospital Service Association
Montreal, Quebec, Canada



SECOND PRIZE was won by drawing at right by Darylan Heindl, 10. Below, Darylyn, cheered by spectators, gallops across line with doll worth \$23.



THIRD PRIZE was won by drawing at right by Jay Stroman, 12. Below, Jay draws toys as he makes for line. He followed roll literally by lifting wagon.



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Friends and neighbors banded together in Blue Cross form America's greatest nonprofit, nationwide organization for prepayment of hospital care . . . the only one officially approved by the American Hospital Association.

IT ALL started in 1929 when Baylor University Hospital made it possible for Dallas schoolteachers to protect themselves against the sudden cost of an unexpected hospital stay. Each one paid a small amount regularly into a common fund, and this fund paid the expenses of those who had to be hospitalized.

Out of this idea of people helping each other grew Blue Cross. It spread to communities across the nation. Today, it protects 46 million people! Blue Cross has grown because it has held fast to its ideal of public service. Its aim still is to help people get not dollars, but the hospital care they need.

Blue Cross is still nonprofit . . . sponsored in the community by citizens and hospitals. Every penny paid in, except for small administrative expense, is set aside to pay for hospital care. Dues and

benefits are adjusted locally to fit local needs. That's why those who belong to Blue Cross get maximum protection at low cost. For an entire family, the cost is only a few cents daily.

All the basic hospital services and many extras are provided for. Such real help is made possible through the arrangements Blue Cross has with thousands of the nation's hospitals. Among its many advantages, this unique "partnership" enables members to enter the hospital simply by presenting their Blue Cross cards. And the hospital is paid directly; no claims need be filed.

Paying for \$55,000,000 in care each month, Blue Cross today is doing more for American families than any other organization of its type. The protection it brings is a continuing one, a safeguard the

individual may keep despite his changing jobs or frequent use of benefits.

For further information about Blue Cross, contact the local office listed in your phone book. Rural families in many states can simply contact local farm organizations. You may also get full details by writing Blue Cross Commission, Dept. 118, 425 N. Michigan Avenue, Chicago 11, Illinois.

Helping people meet doctor bills—
BLUE SHIELD

To round out the vital protection brought Americans by Blue Cross, famous Blue Shield was organized. It is nonprofit, locally sponsored by doctors and other citizens to help families meet the expense of doctors' services. So practical has it proved that people are joining at the rate of 18,000 each working day.

NEW *Miracle* WATCH BANDS

REFASHION
ANY WATCH INTO
AN EXQUISITE
BRACELET WATCH!



"ENHANCE" \$9.95*



"GOLDEN FLATTERY"
\$9.95*



"CAPRI"
\$7.95*

The secret's in Flex-Let's exclusive "ENDS THAT BLEND"! Miraculously, expansion band and watch mate into a continuous circle of brilliant beauty! Ask to see the new Flex-Let expansion bands with the "ENDS THAT BLEND". In yellow or white gold-filled.

*INCLUDES FED. TAX

Insist on the only watch bands with an Unconditional Repair Guarantee—

FLEX-LET
America's Most Beautiful
WATCH BANDS

580 FIFTH AVENUE, NEW YORK 26 • Canada: Norik Ltd., Montreal

ENJOY TODAY'S **MODERN**

TODAY'S

NEW

RC

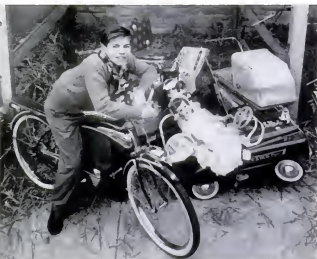


an all-time **LOW** in calories

...all-time **HIGH** in taste



All the Toys **CONTINUED**



THE TOP TAKE, \$393 worth, was seized in five trips by Frank Della Noce. His 19 items were bicycle, fire truck, aluminum set, a bride doll (for his sister), two paint sets, two trucks, Erector set, carriage, table and chair, wagon, microscope, President set, Revell kit, car set, train, a transformer and train switches.



A GIRL'S HAUL, \$314 worth of toys in 16 items, was collected in four trips by Darlynn Heindl: bicycle, two dolls, carriage, skates, chair and desk set, tricycle, Jungo on wheels, Craft Master set, toy horse on wheels, miniature oil paints, train set, phonograph, Whirly-bird, tractor and Groucho Marx quiz.



AN EFFICIENT COLLECTOR, Jay Diamant racked up 15 items and \$335 worth of toys in three trips: bike, tractor, jet car, toy horse, Wonder Pony, hospital kit, hand car, luggage car, doll, train, wagon, tuba, trumpet, phonograph and grader. Stalls were provided outside store to hold youngsters' loot.

It's Sheer Luxury
Tailored To Fit Your Face

Superb Quality
MOLLE*

Tailored—

FOR BETTER BRUSHLESS SHAVES

MOLLE BRUSHLESS is a heavier, richer, lanolin-loaded cream. For tough beards you use it full strength. If it's too rich for your beard... tailor it... simply leave your face wetter when you apply MOLLE. Known everywhere as the world's smoothest, most comfortable shave.



Tailored—

FOR DELUXE LATHER SHAVES



MOLLE LATHER is the richer Instant Brushless lather... because it's loaded with glycerin it stays moist, lets your razor glide smoothly. For tough beards use it full strength. If it's too rich for your beard... tailor it... simply leave your face wetter when you apply MOLLE. Gives you the fastest, most comfortable lather shave—a shave that lasts all day!

EITHER WAY

The world's Best shave

*Pronounced MO-Lay



SET 'EM UP

IN THE OTHER VALLEY

The appalling falling on these pages is part of 175 varied dives, headers and brodies that took place mostly in the Cuernavaca Valley in Mexico during the making of a new \$3-million movie called *Vera Cruz*. The film's stars, Gary Cooper and Burt Lancaster, account for many of the falls as a couple of American mercenary gunmen shooting down assorted assailants—adherents of 19th Century Emperor Maximilian

or his enemies, the followers of revolutionist Juarez. For the film, five Hollywood stunt men and a Mexican cavalry officer on leave did the more intricate spills, and a total of 1,100 injury cases were treated by the company doctor, 200 for movie falls and brawls, the rest ranging from insect bites and sun-stroke to a gunshot wound sustained by Cooper when co-star Lancaster shot off a plank too close to his shoulder.







FREE-DRINKING LANCASTER, who also coproduced the film, shows off his toughness in Emperor Maximilian's palace by slopping wine over himself.



CHARY COOPER is dumfounded by a sudden kiss from rebel sympathiser, played by Mexican film star Sarita Montiel, who wins him over to her cause.

Stomach **UPSET?**

Indigestion? Nausea? Diarrhea?

**Hospital Tests prove Pepto-Bismol works
where Soda and Alkalizers fail!**



1 Pepto-Bismol helps soothe in the stomach...where overdoses of soda and alkalizers may actually prolong the upset!

2 Pepto-Bismol also helps calm distress in the intestinal tract ... where soda and alkalizers never help!

Pepto-Bismol's special medicinal formula soothes both the irritated stomach and intestinal walls with a gentle coating action. Pepto-Bismol helps retard gas formation; calm heartburn, nausea. Hospital tests also prove it controls simple diarrhea—without constipating.

No wonder Pepto-Bismol is America's leading family remedy for upset stomach!



A HEWLETT PRODUCT

Take Hospital Tested

Pepto-Bismol®

...and feel good again!

Overnight—this bra has become a startling success with America's best dressed women—and here's the reason why!

The Playtex Living Bra uses elastic and nylon in a *new* way, to give with your every motion . . . to *live with you!* Exclusive criss-cross design lifts your loveliness, contours your curves, rounds and raises as no bra ever before . . . no matter what size or *in-between* size you are! For the first time in bra history, you can enjoy *upmost uplift in utmost comfort.* See the beautiful difference . . . *feel the comfortable difference . . . on you!*



So flattering, so comfortable . . . that once women try it, they refuse to slip back into their old bras!

New Playtex *living* Bra

"Custom-contoured" to flatter, feel and fit as if fashioned for you alone!



Elastic criss-cross sides self-adjust for Fabulous Fit!

Sculptured Nylon gently cups and ups!

Elastic criss-cross front dips low, divides divinely!

Elastic back sets lower and stays lower!

LOOK FOR PLAYTEX *Living* BRA[®] in the heavenly blue package at department stores and specialty shops everywhere. In gleaming white, wonderfully washable—without ironing!
 Sizes 32A—90C. **\$3.95**



"LOOK WHAT'S HAPPENED TO THE GEARSHIFT!"

says William Lundigan (*Your host on "Shower of Stars" and "Climax!"*)*



1. "BACK IN GRANDDADDY'S day you needed a long reach, a strong arm and a third eye to shift gears. The gearshift was outside the body of the car, where it was a tempting toy for the neighborhood kids. This was before my time!



2. "I REMEMBER IN DAD'S first car, the gearshift had moved in out of the rain, but in everybody's way. Rising like a flagpole from the floorboard, it tangled with legs, hands and handbrake. If you sat three in the front seat—oh, brother!



3. "NEARLY 20 YEARS AGO it moved to the steering post. When automatic shifting came it *stayed* on the post! Now Chrysler Corporation's PowerFlite transmission makes possible a still *more convenient, foolproof* location!



4. "TODAY—WHERE IT BELONGS! In its beautifully-styled 1955 cars, Chrysler Corporation has put the Selector right next to the ignition key, on the instrument panel! I like it there; so does everyone who tries it. You flick your PowerFlite Range Selector to "D" and off you

go—with the smoothest automatic transmission of all! It's simple, convenient—and out of the way. After all, with PowerFlite transmission, you rarely use the Selector! You'll find many exclusives in the cars with THE FORWARD LOOK. See THE FORWARD LOOK at your dealer's today!"

*See Chrysler Corporation's great new TV shows—"Shower of Stars" and "Climax!" Thursday, CBS-TV, 8:30 P.M., EST.

PLYMOUTH • DODGE • DE SOTO • CHRYSLER • IMPERIAL

CHRYSLER CORPORATION



THE FORWARD LOOK

Copyright 1954, Chrysler Corporation



IN HUDDLE just before start of the game, Gola, the captain-player, gives his teammates a pep talk.

FIELD GOALS ON DEMAND

Gola is basketball's super star

Tom Gola of La Salle College in Philadelphia is a basketball player so good that he has to be seen to be believed—and even then the range of his talents is not obvious. A big man (6 foot 7), he moves with such grace that his speed is camouflaged, and he jumps so easily for rebounds and anticipates plays so adroitly that his performance seems effortless. A unanimous All-American for two years, Gola last year singlehandedly made La Salle National Collegiate champions, and this year, as team captain, he helped La Salle win its first three games.

In an era of fabulous scoring, Tom Gola does not rank near the top. With an average of 23 points a game last year, he stood nationally down among the second 20. Time and again Gola would fake an opponent out of position, then pass the ball to one of his teammates. "But nobody can stop Tom when he really wants to score," says his coach, Ken Loeffler. "When we win by 30 points, Gola scores three. When we win by three, he scores 30."

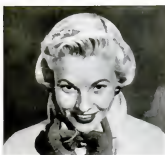
SCORING LEAP against Penn Military College brings Gola high in air to sink driving lay-up shot.





NO UGLY DANDRUFF like this on your collar when you use Fitch Dandruff Remover Shampoo... not even these winter days when dandruff is most serious!

Get rid of WINTERTIME DANDRUFF



A SINGLE SHAMPOO with new milder Fitch removes flaky dandruff... then your hair is up to 35% brighter too! And so much easier to manage!

Brighten hair up to 35% with first FITCH shampoo!

Remember! Dandruff not only sheds on your shoulders, it dulls hair too. So it's a real problem this time of year! Yes, dandruff is at its worst in winter.

Dry, overheated rooms make your scalp flake off more. Tight-fitting hats can interfere with circulation. Glands are also over-active.

So this is the season when you need Fitch Dandruff Remover Shampoo more than ever. The only shampoo especially made and guaranteed to remove every trace of dandruff with just one lathering—or your money back.

Reconditions hair too!

Most amazing, Fitch also brightens hair up to 35% when dulling dandruff is removed. Scientific "Reflectance" tests prove it! New milder Fitch helps recondition hair at the same time!

To get rid of flaky "Wintertime Dandruff"—and brighten hair beautifully too—get Fitch Dandruff Remover Shampoo at any drug counter today. If you're not so bright, return unused portion for full refund from Fitch. Also ask for a professional application of Fitch at any Barber or Beauty Shop.

Only new milder FITCH guarantees 35% brighter, dandruff-free hair... or your money back!



DOING HOMEWORK, Gola, a business student, shares dining room table with younger sister Clare. Golas live only few blocks from La Salle campus.



BASKETBALL BOOTY won by Gola in three-year career includes dozen gold balls, watches, plaques and trophies. They represent 58 major honors.



PRINCE ALBERT

America's largest-selling smoking tobacco

**IF YOU SUFFER
PAIN**

of
**HEADACHE
NEURITIS
NEURALGIA**
get
**FAST
RELIEF** with 

the way thousands of physicians and dentists recommend.

HERE'S WHY... Anacin is like a doctor's prescription. That is, Anacin contains not just one but a combination of medically proved active ingredients. No other product gives faster, longer-lasting relief from pain of headache, neuralgia, neuritis than Anacin tablets. Buy Anacin today!

NEW MINTS Medically Proven Quickly **RID STOMACH**

The very instant they reach of **GAS**

your stomach these new mints go to work—rid your stomach of painful excess acid fast! That's because new B5DeD® Mints contain incredibly fast B5DeD medication—the kind doctors recommend. Don't suffer acid indigestion, heartburn, gas. And don't rely on candy-counter remedies that are over half plain sugar! Feel wonderful fast with new, medically-proven B5DeD Mints!



Toast Merry Christmas with Mulled Virginia Dare Wine

ONE of the dramatic moments of any Christmas season is the instant when a red-hot poker is plunged into a hot mug of mulled Virginia Dare Wine.

A sizzle . . . a puff of steam . . . and the mouth-watering odors of spices and fruit juice and good red wine fill the room.

The complete recipe for Mulled Virginia Dare Wine is on the right. But we offer you two warnings: first, be sure a steady and reliable hand guides the poker and, second, be equally sure that only Virginia Dare Wine is used.

This recipe was invented over one hundred Christmases ago to glorify *smooth, naturally sweet* Virginia Dare Wine.

We guarantee nothing if another wine is substituted. We guarantee a Merry Christmas if you rely on smooth Virginia Dare Wine. And a Happy New Year, too.

VIRGINIA DARE
WINE
GARRETT & CO., INC., N. Y.

Mulled Wine Recipe

Make a syrup by boiling the following ingredients for five minutes:

1 cup of sugar, ½ cup of water, 2 sticks of cinnamon, ½ lemon, sliced, 2 dozen cloves.

Strain syrup and add 4 cups of hot fruit juice (orange, lemon, or pineapple). Heat but do not boil 1 quart of Virginia Dare Red Wine. Combine the wine and the fruit juice and keep hot in double boiler. Serve in porcelain or pewter mugs or a regular drinking cup, and re-heat each serving by thrusting red-hot poker into the mug.

TEST YOURSELF!

How many of these important messages have reached you?

WITH ALL CREDIT TO YOU, it isn't too surprising if your score on this quiz is pretty high.

For the fact is that the public service projects shown on these pages are heavily advertised. You have probably heard them mentioned often over the air and have read about them in many forms of printed advertising.

Yet not one of these projects (U. S. Savings Bonds, Red Cross, CARE, etc.) buys a dollars worth of advertising. Even though they get the benefit of far more advertising than

most commercial products they pay not a penny for it.

Then who does pay for it? American business—large and small. Business firms donate time from their radio and television shows, or space in their printed advertising to bring you these important public service messages. The broadcasting networks and stations, the newspapers, the magazines, car card and outdoor poster—all gladly donate space and time, just as this magazine has donated this space to bring you this message about the Advertising Council

and its public service activities. Not one penny of taxpayers' money is used to pay the cost of this advertising.

The Advertising Council directs without charge this work of turning out these important public service campaigns, all of which are voluntarily prepared by America's leading advertising agencies. Typical results: Last year so many of you joined the Payroll Savings Plan that sales of U. S. Savings Bonds hit a peacetime high; and so many of you were careful with fire that forest fires dropped to the lowest number in years.

3. CAN YOU NAME THESE FAMOUS PUBLIC SERVICE SYMBOLS?



4.



TO PREVENT FOREST FIRES
SMOKEY ASKS US TO...



7. THIS LITTLE KOREAN GIRL HAS JUST RECEIVED A PACKAGE FROM AMERICA



CAN YOU FILL IN THE
LETTERS ON THE BOX?

8.

THIS AMERICAN CITIZEN IS:



- Watching Horses
- Bird Watching
- Watching Girls
- In Ground Observer Corps
- Watching moon

L. P. Winkler

1.

MANY OF OUR
SCHOOLS NEED...



more.....
larger.....
higher.....

2.



CAN YOU COMPLETE THE SLOGAN ?

5.

YOU INVEST THREE AND IN TEN
YEARS YOU GET BACK FOUR.



RIDDLE: WHAT IS IT.....

6.

SPARKY
TELLS US:



Don't smoke in.....
Don't overload.....
Don't use flammable.....
Don't let children
play with.....
Don't let.....collect in attic
and cellar

Don't give
fire a place
to start

9.

THESE PUBLIC SERVICE PROGRAMS
ARE SPONSORED AND PAID FOR BY:

- The Government
- Private Citizens
- Tax Payers
- American Business
- Church Groups
- Charity Groups



ANSWERS: turn upside down

1. Many of our schools need more teachers, larger school buildings, higher pay for teachers. 2. The life you save may be your own. 3. The symbols are Red Cross, Community Chest, and National Safety Council. 4. To prevent forest fires, Smokey asks us to supervise fires, break matches, dress in safe and clear. 5. U.S. Savings Bonds. 6. Don't smoke in bed. Don't overload your wiring system. Don't use flammable cleaning fluids. Don't let children play with matches. Don't let just collect in attic and cellar. 7. Candles. 8. Anti-cannisters in Ground Covering Comps. 9. The entire volunteer program of the Advertising Council is contributed and financed by advertising agencies, all branches of Media and American Business.



FREE

If you would like to know more about this work, we will gladly send you a booklet on The Advertising Council free of charge. Address the Council at 25 West 45th Street, New York 36, New York.

THE ADVERTISING COUNCIL
... for public service



eleven ways to
make her remember

this

Christmas



1. Lotus Perfume. \$3 to \$17.50
2. "Bond Street" Perfume. \$3 to \$17.50
3. Yardley English Lavender. \$1.10 to \$5.75
4. Yardley English Lavender Toilet Essence and Yardley English Lavender Soap. \$1.50
5. Yardley English Lavender Toilet Essence, Talc and 2 cakes of the soap. \$3.75
6. Yardley Soap Assortment—Red Roses, English Lavender, Crushed Carnation. \$3.50
7. Red Roses Bath Set—Bath Salts, 2 tablets of Red Roses Soap. \$2.50
8. "Bond Street" Refreshers—Toilet Water and Dusting Powder. \$3.95
9. "Bond Street" Gift Set—Toilet Water, Talc and a flacon of the perfume. \$4.75
10. Yardley English Lavender Toilet Essence, Dusting Powder and Lavendomeal. \$5.25
11. Yardley Beauty Kit—Night Cream, Cleansing Complexion Milk, Astringent Lotion, Cream Shampoo, Lavender Soap. \$5.50

all prices plus tax

YARDLEY

Yardley products for America are created in England and finished in the U.S.A. from the original English formulae, combining imported and domestic ingredients. Yardley of London, Inc. 620 Fifth Ave., N.Y.C.



IN A Y.W.C.A. PRIMARY SCHOOL IN SEOUL, MRS. MOORE PEEKS THROUGH WINDOW AT CLASS. BEHIND HER IS MISS EMILY RUED, A Y WORKER IN KOREA

A Y.W.C.A. Tour of Asia

TWO WOMEN OF GOODWILL LOOK IN ON GOOD WORKS IN THE ORIENT

Two energetic American sisters, born and brought up in China, set out recently to see how the Y.W.C.A. is carrying out its work of helping people of nine Eastern countries. One of the women was Elisabeth L. Moore, chairman of the Young Women's Christian Association's foreign division, which since 1945 has raised over \$2 million to rehabilitate Y branches abroad. The other was Emmavil Severinghaus, once a Y.W.C.A. field worker herself in Tsinan-fu, China.

For eight weeks, from Tokyo to Cairo, the two women huddled with field directors on policy matters like personnel training and membership campaigns. But their main purpose was to see how individual Y projects are tailored to local needs. In Korea, where education is a luxury, they saw several new Y primary schools (*above*) and an agricultural school for farm wives built out of a converted chicken coop. In the Philippines they found one Y branch helping to pay its way with a thrift shop (*right*), another raising money by raising pigs. Y workers in all nine countries shared a sense of urgency which impressed both Mrs. Moore, whose husband, Maurice T. Moore, is a New York lawyer and director of several corporations, and Mrs. Severinghaus, wife of Haverford School's headmaster, Leslie R. Severinghaus. Said Mrs. Moore, "There is tremendous new excitement among the women of Asia. It comes from being allowed at last to do something important for themselves and for their countries."



Y-MADE WARES are admired by Mrs. Severinghaus (*left*) and Mrs. Moore at San Pablo branch in Philippines. They are sold to support organization's projects.



JAPAN In Nagoya, outside a streetcar converted into a Y.W.C.A. clubhouse. Mrs. Moore (*center*) stoops so as not to tower over Japanese Y workers while their picture is

being taken. Mrs. Severinhaus (*left*) watches the fun. The former Y.W.C.A. clubhouse in Nagoya was wrecked during the war. Japan's 15 Ys are all run by local personnel, many of them U.S.-trained.



KOREA A delegation of Y-Teen girls in Kwangju presents Mrs. Moore with bouquets of flowers in thanks for scarves they had received from Y-Teen girls in the U.S. Mrs.



HONG KONG Children's ballet class in Y.W.C.A. gym is watched by Mrs. Moore (*background*). The Hong Kong Y.W.C.A., established in 1921, is one

of the most active in the Orient. It has 14 centers, 60 paid employees, 350 voluntary workers and some 3,500 members. One of its newest jobs is to help care for the flood of Chinese refugee children.



THAILAND At a Friendship Tea in Bangkok the two Americans (*first row, center*) watch a puppet show put on by the members of the Y.W.C.A.'s Inter-



Moore's son, Michael (right), a GI in Korea, and Miss Rued watch. The girls, who are still going to school, have been trained by the Y.W.C.A. to help care for the 70 infants at a nearby orphan home.



TAIWAN Students at the Institute of Public Administration in Taipeh perform an aborigine harvest dance for the two travelers, who are sitting in the front row. In

addition to her position with the Y. Mrs. Moore is vice president of the Aid Refugee Chinese Intellectuals which gives 100 full two-year scholarships to escaped mainland Chinese attending institute.



national Teen-Age Club. The Bangkok Y. organized in 1947, is still pioneering. It has run recreation program for juvenile delinquents, cares for orphans and runs sewing circle for hospital patients.



INDIA Mrs. Moore returns traditional Indian salutation *Namaste* given her by some women and children in the street in Delhi. She stopped there principally to visit the

eight-year-old School of Social Work which her foreign division of the Y.W.C.A. helps support but does not run. It is one of the few schools turning out badly needed trained social workers in India.

Let him solve
your gift problems

If you've been puzzling over that special gift for that special someone, hurry down to the world's best Santa Claus—your jeweler. He's spent a lifetime suggesting "special" gifts. For that special someone you want so much to please, chances are he'll suggest a Hamilton watch. For he knows so well that a Hamilton says eloquently—often better than words—how very much you care.

It means
so much more
to give—or get—a

Hamilton

Standard, \$79.50. Dawn, \$69.50. Prices include Federal tax.



FREE: Color folder of Christmas watch styles. Send name and address in Dept. L-41, Hamilton Watch Co., Lancaster, Pa. 17602.

FULL-COLOR REPRINTS OF MEMORABLE LIFE ARTICLES

Available in Quantity For Schools, Church Groups, or Adult Education Classes



In order to anticipate the demand for extra copies, LIFE re-prints certain of its major pictorial essays having particular educational value.

Articles like *Michelangelo's Sistine Chapel Frescoes*, *The American Revolution* and, of course, the now-famous *World We Live In* series are just a few that have been re-printed (on coated paper, LIFE-size, in full color) for use in art appreciation, history or science classes.

Requests from teachers have depleted many of the LIFE Reprints originally in stock. However, listed below are the titles and prices of those still available in quantity. To order merely send your request together with a check or money order to:

LIFE DEPT. E, 9 ROCKEFELLER PLAZA, N. Y., N. Y.

ART

- Van Eyck Altarpiece 10¢
- Michelangelo's Sistine Chapel Frescoes 25¢
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- Memorable Victories in the Fight for Justice 10¢
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SCIENCE

- The World We Live In Series (2¢ each for first 25 reprints, 30¢ for each additional reprint)
- The Larkin Ice Bears
- The Miracle of the Sea
- Face of the Land
- Camp of Air
- Evolution: Part I
- Evolution: Part II
- Life in the Sea
- The Coral Reef
- The Uravay
- The Tundra
- The Rain Forest
- The Woods of Home
- The Universe

A Y.W.C.A. TOUR CONTINUED

Some Time Off for Sightseeing



FANCIFUL FIGURE in the Temple of the Reclining Buddha in Bangkok is touched for luck by Mrs. Moore (center) and admired from a distance by Mrs. Severinghaus (extreme left) during their short sightseeing tour of the city.



CAMEL RIDE at night is taken as Mrs. Moore (right) and Mrs. Severinghaus set out to see the Sphinx. They had just visited a Y camp near Pyramids outside Cairo and decided they could not leave Egypt without seeing the Sphinx.

CONTINUED ON PAGE 52

Bright new idea that's sweeping the country!

MARTINI & ROSSI

Vermouth
"on the rocks"

Some like it sweet...



Some like it dry...



Some like it
Half and Half...



Find out why!

SO MODERN... this bright new idea that's sweeping the country! It's delightfully light... and downright delicious. Try Martini & Rossi Vermouth "on-the-rocks" yourself—and taste why so many smart people are serving it today! Yes! find out why it's great when you drink it straight!

And don't forget:

Insist on genuine imported
Martini & Rossi Vermouths...
Sweet for Matchless Manhattans
Extra dry for Marvelous Martinis.



RENFIELD IMPORTERS LTD., N. Y., N.Y.

Wherever you go, you'll find
MARTINI & ROSSI
imported vermouth



Borg-Warner has worked hand in hand with Boeing for years!



Boeing 707 Jet Stratoliner, first U. S. jet transport, can carry up to 130 passengers at more than 9 miles a minute!

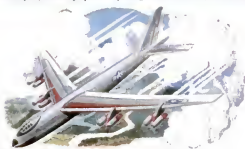
For this world famous aircraft builder, Borg-Warner makes a wide variety of essential operating parts... just as it does for leaders in the automotive, farm machinery, marine, home equipment, and other major industries.

Always faster, farther, higher! And in the unbelievable feats of our planes and rockets today, Borg-Warner plays an important part, for it serves every leading aircraft builder.

One of these is the Boeing Company, creator of the nation's first jet transport plane—the new 707 Jet Stratoliner. Designed to whisk travelers cross-country at speeds that almost outrace the sun, the powerful thrust of its 4 jets depends on special Borg-Warner pumps

for high-volume, unflinching flow of fuel.

In every type of commercial plane, in guided missiles and 90% of our military craft, you'll find essential B-W parts. Such service to the aircraft industry is a job for which Borg-Warner is admirably suited—both in experience and outlook. Behind its creative engineering talents and broad production facilities is a long-standing B-W aim that enforces progress: "Design it better—make it better."



Boeing B-52 Stratofortress, world's most powerful long-range bomber. At every speed, pressure-loaded pumps built by B-W provide accurate fuel flow to each of its 8 jet engines. And flexible roller-bearing joints from Borg-Warner help the pilot to maneuver this giant easily.

ALMOST EVERY AMERICAN BENEFITS EVERY DAY FROM THE 185 PRODUCTS MADE BY

BORG-WARNER

These units form BORG-WARNER, Executive Offices, 310 South Michigan Ave., Chicago; ATKINS SAW • BORG & BECK • BORG-WARNER INTERNATIONAL • BORG-WARNER SERVICE PARTS • CALMET STEEL • DETROIT GEAR • FRANKLIN STEEL • HYDRA-LINE PRODUCTS • INGHOLL PRODUCTS • INGHOLL STEEL • LONG MANUFACTURING • LOMO MANUFACTURING CO., LTD. • MARBON • MARVEL-SCHLEIER PRODUCTS • MECHANIC UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN, LTD. • NORBOR • PESCO PRODUCTS • REFLECTAL CORP. • ROCKFORD CLUTCH • SPRING DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD. • WAUSAU • WFFTON • WOOLTER DIVISION

Strange Places, Familiar Sign



LUNCH WITH CHOPSTICKS under the familiar triangle is given in Taiwan for Mrs. Severinghaus (striped dress) and Mrs. Moore. Afterward Mrs. Moore made speech, translated into Taiwanese, to launch membership drive.



MUDDY SIDE TRIP is taken by Mrs. Moore (light dress) and Mrs. Severinghaus to Y.W.C.A. "Self-Help" center in slum district of Manila. Center runs a community kitchen and provides sewing machines for making clothes.



MORNING STAR CLUB, a junior Y.W.C.A. organization outside Rangoon in Burma, shows Mrs. Moore new appliqued flag its members made. Club is now pasting up scrapbooks to be given out to sick children for Christmas.



Model 77 \$89.95
Slightly higher in
Far West. Available
at leading stores in
CANADA.



ANNOUNCING!

The most sensational vacuum cleaner of all time!

the ALL NEW 1955

LEWYT

on big wheels



ONLY LEWYT ROLLS READY-TO-USE from your closet! Tubes, hose, nozzle can be kept assembled! Just roll out your Lewyt and away you go!



ONLY LEWYT ROLLS OVER SCATTER rugs, door sills, from bare floors to deep carpet! Not only swivels but rolls room-to-room — no lugging or tugging!



ONLY LEWYT ROLLS WITH ALL TOOLS everywhere you go! — no chasing back and forth! Tools ride compactly behind, don't scratch your furniture!

*Tool Rack for back of Lewyt and Wall Rack for closet, optional at small extra cost.

It's here! The world's FIRST and ONLY cleaner that swivels and rolls effortlessly all through the house!

No lifting or carrying—it's on BIG RUBBER WHEELS!

AND—in this great new Lewyt you get more power... instant dust disposal... unequalled quietness! It's today's greatest value — see it at 10,000 dealers coast-to-coast!

- NEW!** Instant dust disposal. Flip open hinged top, toss out "Speed Sack!" No clamps to undo! No dust bag to empty!
- NEW!** Extra rug cleaning power! New Dual-Turbo Motor plus No. 80 Carpet Nozzle clean rugs 4 ways at every stroke!
- NEW!** "Power Dial" for exact suction!
- NEW!** Allergy-proof filter system! New compact, square shape! New deodorizer!
- PLUS!** Comes with all tools to clean floor-to-ceiling! For nearest dealer look under "vacuum cleaners" in your phone book.



OFFICIALLY ENDORSED by National Institute of Rug Cleaning, Inc. . . . official association of professional rug cleaners, owners and operators of professional rug cleaning plants. Vacuum your rugs daily. Have them professionally cleaned at least once a year by a professional rug cleaner.

the all new
DO IT WITH LEWYT

LEWYT CORPORATION, 84 Broadway, Brooklyn 11, N. Y.



HIGH-LEVEL CONFUSION

As a keeper at the Whipsnade Zoological Park near London, Albert Rogers keeps his pockets filled with dog biscuits to treat the giraffes from time to time. Thinking less about treats than tasks one day, Rogers scaled a ladder to inspect the fence which surrounds the giraffe house. His bulging pockets caught the eye of a 7-year-old named Happy, who

suddenly began begging for biscuits by tugging at Rogers' coattails. As a 10-year-old male named Twiga persisted in scratching his ears on Happy's neck and Rogers persisted in his precarious task, Photographer Thomas Lea recorded the lofty confusion, which ended only when Rogers came down to earth to give all the giraffes their morning biscuits.

Season's best!



Enjoy...

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*The lighter, brighter brandy
for your holiday bigballs
and cocktails!*

*Also available in special gift
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