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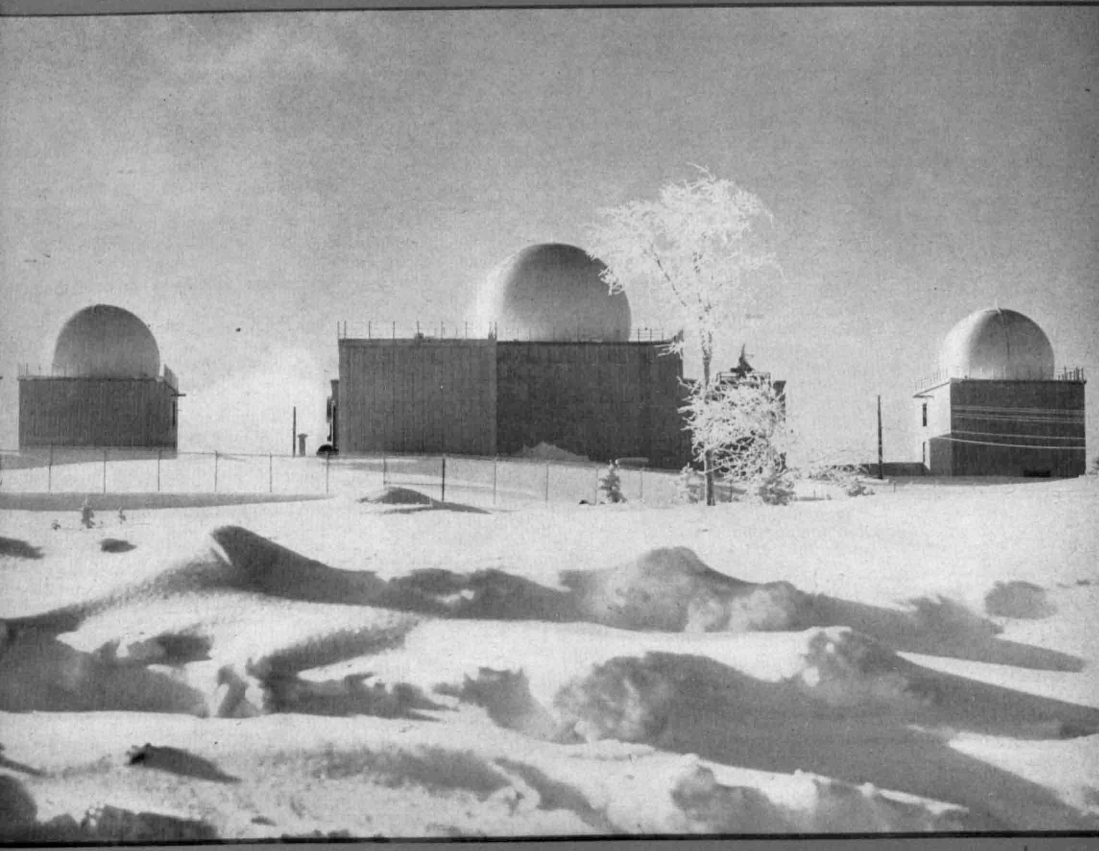
SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Radar Wonderland

See Page 426

A SCIENCE SERVICE PUBLICATION

METEOROLOGY

1955 Weather Highlights

Drought, floods, tornadoes and hurricanes marked U. S. weather. Unusual shift westward in hurricane tracks for second successive year noted.

➤ DROUGHT, FLOODS, tornadoes and hurricanes marked U. S. weather during 1955.

As a whole, the year's weather was good, the U. S. Weather Bureau told SCIENCE SERVICE, resulting in a harvest expected to be the second highest on record.

One outstanding feature of 1955's weather was the unusual westward shift in hurricane paths for the second successive year, threatening to turn the East Coast into "hurricane alley." Hurricanes Connie, Diane and Ione all passed over the North Carolina coast and through Virginia.

More westerly tracks of the tropical storms resulted from abnormal upper winds in the general atmospheric circulation. Weathermen doubt these patterns are permanent, but cannot predict how long they will continue to slam hurricanes onto the coast north of Georgia.

The Western Plains, which have been seared for several years, had no backlog of moisture to tide them over a dry, windy spring followed by a hot, dry summer. Some of the worst dust storms since the 1930's occurred in March, April and May.

Rains brought some relief to the area late in May and in June, but moisture was soon dissipated by the extremely hot summer. Rain in the drought area was spotty, varying from too little to too much, the latter causing flash floods.

Dryness crept into the corn belt in August. The Western Plains and cornbelt experienced little relief until mid-September, after crop yields had been seriously affected.

Tornado Destroyed Udall

Tornadoes were widespread during March and May.

On May 25, one of the worst tornado outbreaks in recent history flattened Blackwell, Okla., and almost completely destroyed Udall, Kans., leaving 75 dead and more than 200 injured there. In all, the outbreak caused 100 deaths, 550 injuries and $10,000,000 in damage.

The floods, except for local flash floods from heavy thunderstorms, occurred mainly in the Northeast. Hurricanes Connie and Diane whirled into the Northeast, dumping up to 12 and 15 inches of rain, respectively, within the period August 12 to 17. Devastating floods in the heavily populated valleys of the Connecticut and Delaware Rivers and their tributaries resulted.

Deaths from the two floods totaled almost 250 and damage was estimated at more than $1,000,000,000. Hurricane flooding also occurred in Virginia, but on a less spectacular scale than for the north. Wind and tide damage from hurricanes was confined to North and South Carolina, where Connie, Diane and Ione first struck the mainland.

Throughout the year, the general temperature picture across the country was one of cold west of the Continental Divide and warm east of it, although in early September California experienced about 10 days of heat, climaxed when Los Angeles recorded 110 degrees Fahrenheit.

The eastern two-thirds of the country enjoyed generally mild weather until the long-lasting hot and humid period of July through early September.

Weather Month-By-Month

Other highlights from the Weather Bureau's summary of 1955 weather month-by-month:

Jan. — The month was relatively mild, notable mostly for lack of severe storms, total damage from which was only about $30,000, with no deaths involved. Southwestern Alabama had three and a half inches of snowfall on the 23rd.

Feb. — Cold, stormy weather prevailed in the western half of the country, and freezing temperatures were unusually frequent in the far Southwest. East of the Mississippi River, the first half of the month was abnormally cold, the second half relatively warm.

March — March as usual exhibited extremes of weather, at one moment lulling the country into spring fever with unusually warm weather and at the next unleashing blizzards, tornadoes and record cold. The month's weather contrasts were highlighted by a flood crest, highest since 1948, sweeping down the Ohio River while choking dust storms were stirred up over the dustbowl. Abnormal cold practically ruined the peach crop and other blossomed fruits in the South. Tornadoes along a squall line from the lower Great Lakes region to Pennsylvania on the 11th caused millions of dollars in damage and several deaths. Only California escaped the violence of winter's last major challenge to spring.

April — Weather continued to exhibit great extremes. While the Pacific Northwest shivered through one of the coldest Aprils on record, and freezing temperatures extended into central California and northern Arizona, the upper Mississippi and Great Lakes region enjoyed record or near-record unseasonable warmth climaxed with occasional brief spells of summer heat. Estimated damage to crops and property from tornadoes, and snow, wind and hail storms, amounted to nearly $10,000,000, including $1,000,000 to livestock from a record April snowstorm in Wyoming.

May — May was also a month of extremes. Unseasonably cold, rather dry weather in the Far West contrasted sharply to the unusual warmth and generous precipitation east of the Continental Divide. Outstanding among numerous severe local storms, was the tornado that left a path of destruction in Oklahoma and Kansas on the 25th, at noted previously.

June — Marked by unseasonably cool weather over most of the country. Rainfall east of the Rocky Mountains varied considerably, but occurred at timely intervals to maintain soil moisture for crops. Numerous wind and hail storms caused many millions of dollars in damage.

July — Hot weather and high humidity persisted in middle and northern areas east of the Rocky Mountains. Thunderstorms, often accompanied by damaging wind and hail, were unusually numerous west of the Great Lakes, in the South and in the far Southwest. One of the worst hailstorms in recent years pelted Billings, Mont., and vicinity on the 6th, with some stones of three and a half inches diameter reported. Damage was estimated at $6,00,000.

Hurricanes Hit East Coast

Aug. — Tropical storms and disastrous floods hit the East Coast, resulting in the greatest disaster on record in the Northeast. Hurricanes Connie and Diane slammed into the North Carolina coast on the 12th and 17th, respectively, with winds and high tides from both storms causing heavy damage along the state's coast.

Sept. — A record heat wave in the Far West early in the month, heavy tropical storm rains in southern Texas, and Hurricane Ione's short path over the North Carolina coast on the 19th, causing losses estimated at $88,000,000, were highlights of the weather in an otherwise uneventful month. Dry sunny weather in nearly all areas during the month's first half favored fall harvesting.

Oct. — Also a normal, rather uneventful month weatherwise, marked only by unusually high rains in the Northeast and Northwest.

Nov.—Record-breaking cold in the Northwest contrasted with late season highs east of the Mississippi River. A severe northeast storm Nov. 4 to 6 left 19 dead and scores injured in New England.

Dec.—An unusually cold month, with temperatures considerably below normal over most of the United States. A low of 45 degrees below zero Fahrenheit was reported at Bemidji, Minn., on the morning of the 19th. Other low temperatures were minus 26 degrees at Sibley, Iowa, and minus 30 degrees in South Dakota. A blizzard increased the severity of the weather in the Dakotas and some adjacent areas on the 13th and 14th.

GENERAL SCIENCE

Four Research Freedoms

Freedoms of time and choice and from pressure and poverty are needed by scientists for productive work, those attending AAAS meeting are told.

➤ FOUR RESEARCH FREEDOMS are cited by scientists as playing a major role in making them productive.

As reported to the American Association for the Advancement of Science meeting in Atlanta by Dr. Beatrix Cobb of the University of Texas, they are:

Freedom of time. Freedom of choice. Freedom from pressure. Freedom from poverty. Added together they spell freedom to do the best possible job within the limits of a particular situation.

The four research freedoms developed from a survey of 62 outstanding scientists, Dr. Cobb told the meeting.

Freedom of time means time to think, to speculate, to study, to read, to plan, to dream, to review and to write.

Freedom of choice means what is often called academic freedom, that is, the right to think and to investigate as the scientist sees fit rather than as an administrator dictates.

Freedom from pressure means freedom from urges to publish too soon, freedom from administrative details and red tape, and freedom from heavy service loads.

Freedom from poverty means a living wage so that families might not be penalized while researchers pursue their careers.

Honest and objective curiosity is essential to maintain the drive to do research, the scientists agree, and yet the scientist's interest in a great variety of things can also be a hindrance to research.

"I have a proclivity for taking on more than I can do," is the central theme in most of the scientists' statements. One statement complained, "I dislike to say no," another "I am just interested in too many things."

This inability to limit activities because of wide interests is linked, Dr. Cobb pointed out, with the "lack of time" listed among the external hindrances to productivity.

In addition to curiosity, a scientist must have "mule-headed persistence" and a love of work.

Personality Defects

➤ A PSYCHOLOGICAL EXAMINATION widely used for testing intelligence of college freshmen can also be used to forecast which freshmen will develop some personality defects, Dr. Robert C. Scarf of Ball State Teachers College, Muncie, Ind., told the meeting.

The examination is in two parts. For most freshmen, the score on one part is pretty much like the score on the other part. But a few have a big difference between their two scores. A student may score average on one part but close to the top or close to the bottom on the other part. A few were near the top on one part, but near the bottom on the other.

It is this inconsistency between scores that points to future personality defects.

A list was made up of 75 students who were reported by deans and counsellors as "queer" or "troublesome." The difficulties included such serious problems as stealing, homosexuality, poor discipline, suicides and one murderer.

Their examination records showed inconsistency of scores.

An additional group that included a few committed to mental hospitals, however, were found to have consistent scores.

Tranquilizing Drugs

➤ EFFORTS to reduce the cost of tranquilizing drug treatment so more patients can be treated with the drugs are being made at the Manteno State Hospital, Ill.

Using a mixture of several active alkaloids from snakeroot plant, Rauwolfia, is one way to do it, Drs. William J. Gallagher, John M. Berry, W. D. Durden and William D. Lazenby of Manteno reported to the meeting of the American Association for the Advancement of Science.

Men with chronic schizophrenia, they also found from this and other studies, respond more slowly to reserpine than women with the same mental disease.

Reserpine from Rauwolfia was given to one group of patients. Another group got a Rauwolfia alkaloid mixture containing 75% reserpine and 25% recanescine, called Riker 529-1, and a second mixture, of 75% reserpine and 25% rescinnamine, called Riker 529-2. A third group got 11-desmethoxy reserpine.

Some members of this third group also got iproniazid to prolong the effect of free serotonin released by the desmethoxy reserpine.

Serotonin, which has an important role in brain function, is said when in the free form to prolong the tranquilizing action of reserpine.

The Rauwolfia alkaloid mixtures used are similar to reserpine, the scientists believe from their studies, in their ability to improve the patients' mental health and in the side effects produced.

Only a small percentage of the patients in each group showed no improvement from the treatment.

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SAMPLING FOR HIGHWAY VISION—To measure the light scattering and absorption characteristics of fog, research engineer Benjamin Pritchard, on the left, and Dr. H. R. Blackwell, director of the University of Michigan's vision research laboratories, use the equipment shown here. Domed device atop the instrument-crammed station wagon makes possible mile-by-mile record of the way fog reflects light. The studies are aimed at improving highway vision.

SCIENTIA INTERNATIONAL

NOVAS DEL MENSE IN INTERLINGUA

➤ **Automobiles.**—R. G. Kamps de Stuttgart in Germania ha patentate su invention del uso de mobile escappamentos de motores a reaction in automobiles de curso. Per adjustar le direction del escappamentos, le chauffeur pote facilitar le passage de curvas a alte velocitates.

➤ **Foresteria.** —In combatter incendias del bosco in certe areas de Queensland in Australia on ha trovate que un grande obstaculo es representate per le population de kangurus. Le capillos del kangurus comencia arder, e le animales, in lor effortio a escappar al foco, porta le incendia a altere partes del bosco.

➤ **Physiologia.**—Le presbyopia que obstrue le vision human post circa un etate de 45 annos non pare manifestar se in cattos. Isto resulta de studios del reaction del ganglion ciliari a electrostimulationes, executate al Universitate California. Le reaction accomodative del ganglion in infantes human esseva mesurate como amontante a 18 dioptrias; in juveniles de 10 annos, illo esseva 15 dioptrias; e in personas de 60 annos de etate, illo habeva cadite a infra un dioptria. In juvene cattos, le correspondente valor esseva duo dioptrias e in un ancianissime catto de 15 annos illo esseva ancora un e medie dioptria.

➤ **Materiales.**—Oleo-raffinerias in miniatura es installate al laboratorios Esso in Linden, New Jersey, in un camera exponite al radiation gamma de cobalt-60 con un potentia de 3100 curies. On vole constatar si le irradiation pote simplificar, reimplaciar, o meliorar certes del processos del raffineria commercial de petroleo.

➤ **Entomologia.**—In recercas al Universitate Durham in Anglaterra on ha constatate que femininas del musca *Simulium ornatum* possede in lor abdomine cossinos de grassia que dispare post el etate de 7 dies. On crede que le disparition del grassia coincide con le prime repasto de sanguine obtenite per le musca e que le absorption de sanguine es requirite pro le maturation de ovos.

➤ **Materiales.**—Sub le nomine de "cermetos" un nove gruppo de materiales consistente de un combination de *ceramicos* e *metallos* es proponite pro uso in partes mechanic que debe indurar altissime temperaturas, per exemplo in motores a reaction. Professor J. T. Norton del Instituto Technologic de Massachusetts reporta que un cermeto consistente de metallo e carburo de titanium se ha provate efficace sub temperaturas de usque quasi 1000 C. Supra iste limite le cermeto mentionate es fragile e non pote concurrer con certe jam cognoscite alligatos de molybdenum. Sed la recercas continua.

➤ **Recercas de Cancere.** — Esseva constatate que le sero de patientes de cancere, specialmente in le prime stadios, revela un specific grado de spectrophotometricamente mesurable spissitate Scientistas del Instituto National pro Cancere a Bethesda spera poter disveloppar ab iste phenomeno (cuje mechanismo es non ancora comprendite) un test pro cancere, usabile in examines in massa. In essayos con circa 5000 personas le methodo esseva circa 90 pro cento correcte.

➤ **Antibioticos.**—Le russe Academia del Scientias Medical a Moscova ha autorisate le publication del reporto que le industria pharmaceutic del U.R.S.S. ha in production un nove antibiotico, derivate ab *Actinomyces subtropicus* e nominate albomycina. Illo es decc vices plus efficace que penicillina, se ha provate de valor special in tractar pneumonia in juveniles, e ha nulle toxicitate e un alte toleration.

➤ **Physiologia.**—Le Royal Instituto Central de Gymnastica a Stockholm reporta studios que demonstra que athletas excellente in effortios a longe durantia se distingue per lor consumption supranormal de oxygeno. Le plus alte valor de iste consumption esseva constatate in John Landy, le famose cursor australian.

➤ **Immunologia.**—Un reporto interime ab le Universitate Minnesota nota progresso in le disveloppamento de methodos de producer lacte continente anticorpores contra varie morbos. Le consumitor de tal lacte acquirerea un passive (temporari) immunitate contra le morbos in question. Le generation del anticorpores resulta ab vaccinationes del pectores de vacca.

➤ **Ressources de Energia.**—Dr. V. A. Baum del Laboratorio Heliotechnic de Moscova ha publicate planos de un speculo solar theoricamente capace a render 10 milliones kilocalorias per hora durante le 1800 horas annual de utilisabilitate probabile. Le speculo haberea un superficie reflectente total de inter 2500 e 3000 metros quadrate. Series de 28 reflectores plan formarea numerose sub-unitates del machina. Cata tal unitate esserea mobile super un wagon de ferrovia, rolante super un de 23 rails concentric.

➤ **Scientias General.** — Le major progressos scientific e technologic de 1955, seligite per Watson Davis, Director de *Science Service*, es le sequente: (1) Le conferentia de Geneva in re le cooperation international pro le usos pacific del energia atomic. (2) Le synthese laboratorial de un virus a fortia infective ex componentes obtenite per su discomposition. (3) Establimento del "regula de area" que governa le factores de velocitate augmentate in aviones a fuselage vespiforme. (4) Successo in le uso del vaccinio Salk contra poliomyelitis. (5) Le generation del "anti-proton" in un accelerator atomic. (6) Le annuncio del planos pro le lanceamento de un satellite terrestre artificial. (7) Le correction del estate del universo a sex milliardos annos. (8) Le production artificial de diamantes sub altissime temperatura e pression. (9) Le uso regular in le Statos Unite de un computator electronic pro le prognose meteorologic. (10) Le prime continue viage de circa 40.000 km del submarino Nautilus sub propulsion atomic.

➤ **Agronomia.**—Recentemente Scientia International reportava le uso de magnetes placiate in le stomachos de vaccas pro prevenir gastritis causate per accidentalmente ingerite pecias de metallo. Un altere solution del mesme problema es le uso de circulos magnetic in le nasos del bestial. Iste methodo ha essite patentate per un citatano de Colorado.

➤ **Ailmentos.**—Le statounitese Administration de Alimentos e Drogas ha autorisate le uso del antibiotico Aureomycina in le preservation de carne de gallina destinate al mercato public. Isto es le prime tal autorisation. Illo segue annos de recerca in re possibile reactiones allergic del organismo human a doses minimal de antibioticos. Le autorisation nunc in fortia restringe le uso de Aureomycina a concentrationes que resulta in minus que 7 partes del droga pro un million partes de carne. Un tal concentration es garantitemente incapace a superviver al temperatura del preparation culinari del carne.

SCIENTIA INTERNATIONAL appears monthly. Send this page to non-English-speaking friends.

● RADIO

Saturday, Jan. 7, 1956, 2:05-2:15p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Richard T. Whitcomb, aeronautical research scientist of the National Advisory Committee for Aeronautics, Langley Field, Va., will discuss "Research for Faster Flying."

In less than 200 years, more than 100,000 organic chemicals have been evaluated as potential *insecticides*, with more than 100 currently in commercial use.

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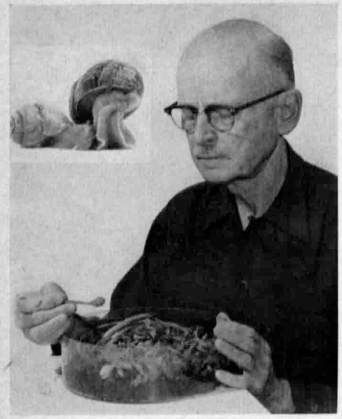

SNAIL ENEMY—A tiny snail from East Africa that eats larger ones is studied by C. P. Clausen, University of California scientist directing efforts to establish the beneficial mollusk in California. The inset shows how the small snail attaches itself to the larger pest as it begins its deadly attack. It has stopped advances of the Giant African Snail in the Pacific.

GEOLOGY

Old Faithful Geyser Only Faithful in Her Fashion

➤ HOW FAITHFUL is Old Faithful?

Not enough to depend on from one eruption to the next, park naturalist Ted Parkinson concludes after studying the famous geyser's 1,357 recorded eruptions in 1955.

The faithless geyser blew its top at intervals ranging from 37 to 93 minutes, contrary to the general belief that Old Faithful erupts every 64 minutes.

Mr. Parkinson found that the average time between eruptions comes out to be 64.55 minutes mathematically, but only about one-half of the eruptions occurred within five minutes of this average. Nearly one-fifth of the eruptions took place more than 10 minutes before or after the average time between eruptions.

However, the name "Old Faithful" undoubtedly will easily survive all these cold, hard statistics. Mr. Parkinson states in *Yellowstone Nature Notes* (Nov.-Dec.):

"Those of us who have the pleasure of introducing Old Faithful to park visitors via the public-address system usually explain how much she has been known to vary from the average . . . After such explanations . . . some of these visitors complimented us for giving such a clear, interesting talk, and then said how wonderful it is that Old Faithful should always be on time every 64 minutes."

WILDLIFE

Over-Protected Elk

Efforts to protect elk in Yellowstone National Park have resulted in herds larger than ranges can support. Park Service starts program to reduce the excess population.

➤ WILDLIFE PROTECTION has succeeded too well in the northern part of Yellowstone National Park, leading to larger elk herds than the range can possibly support, a report by the National Wildlife Federation in Washington indicates.

The U. S. National Park Service is taking steps to reduce the elk herds.

Northern Yellowstone is critically overstocked by some 12,000 elk on winter ranges capable of supporting no more than 5,000. In the absence of sustained annual reductions by hunting or other means, the elk herds "literally eat themselves out of house and home," the NWF said.

Federal law prevents hunting wildlife in national parks.

In summer, elk can move over vast areas in the park's high mountains where food is plentiful. But in winter, they depend on restricted ranges on the lower slopes of mountain valleys. This is when the "pinch" is critical, the NWF said, and animals are forced to take food they normally avoid.

Preferred forage plants that once grew in the wintering areas are gone, the NWF reported. Stands of quaking aspen have been trimmed as high as elk can reach, and young aspen are killed as soon as they appear above the winter snow.

Competition for food seriously affects other big game in the area. White-tailed deer, which were formerly fairly abundant in the Northern Yellowstone area, have disappeared. Bighorn sheep there number less than 200, where herds of several hundred originally ranged. Mule deer are far below their former numbers.

The NWF report in *Conservation News* (Nov. 15) suggested reducing the overstocked elk herds by controlled public hunts within the park or by controlled reduction carried out by the Park Service. Elk is not an endangered species, and could easily renew numbers after heavy depletion.

In 1954, a total of 263,000 elk was reported in 21 states, and over 47,000 elk were taken by hunters during the regular season.

Game experts advise heavy reductions of the herds now, to allow the depleted ranges to recover and to relieve competitive pressure on other wildlife. When this is accomplished, the herds could be rebuilt to the maximum numbers the ranges can support properly.

Since time-consuming legislation would be required to allow public hunting, the Park Service has started a program to reduce the elk herds to numbers that are manageable.

The program includes:

1. Transplanting animals to other areas where there is a demand.

2. Continuing public hunting outside the park area to the north, under the jurisdiction of the Montana Fish and Game Commission.

3. Controlled removing (killing) some of the animals by trained park personnel during the winter of 1955-56 and in the future as long as needed to obtain the required stocking level. Meat so obtained will be sold on a cost basis to Indian agencies, tribes and other federal agencies.

MEDICINE

Relaxing Drug Is Quick D.T. Remedy

➤ THE SNAKEROOT DRUG from India can banish the "little men on the ceiling" of delirium tremens faster than any other treatment for this alcoholic condition, it appears from a report in the *Journal of the American Medical Association* (Dec. 17).

The drug is reserpine, widely used for mental sickness and high blood pressure. Its ability to control hallucinations in patients with acute head injuries led to its trial in 24 patients with delirium tremens.

Most of the 18 men and six women were the type of chronic alcoholics seen in a charity hospital. Because of their excited state and fear of "snakes," "little men," "bugs" and "two-headed elephants,' they had to be kept in firm restraints.

Within six to eight hours after the reserpine, they began to quiet down. They stopped seeing snakes and the like in an average of 18 hours. Most of the patients were completely free of symptoms within 24 hours. For two, relief came in nine hours.

These results are reported by Drs. Milton Avol and Philip J. Vogel of the College of Medical Evangelists and Los Angeles County General Hospital at Los Angeles.

The speedy recoveries with reserpine treatment, compared to the four to six days needed for recovery by other treatments, lead the Los Angeles doctors to say they feel reserpine "holds great promise" in treatment of this condition.

They gave the drug in much larger doses than used for high blood pressure patients. Since the d.t. patients could not be induced to take it by mouth, it was injected either into muscles or veins. No ill-effects were seen in spite of the relatively large doses.

PSYCHOLOGY

Remember Seven Items

➤ THE AVERAGE MAN can remember accurately only seven items on a list heard for the first time, Dr. George A. Miller, an associate professor of psychology at Harvard University, reports.

In an attempt to break through man's "memory barrier," Dr. Miller found men become confused when they try to tell the difference between seven different degrees of any simple sensory magnitude, such as the brightness of light or the loudness of sound.

They make similar errors if they try to recall more than seven items on any list heard for the first time.

It is only coincidental, the Harvard psychologist suggests, that the memory limiting number is seven, but it may explain why the number seven appears so frequently in man's history.

He notes the seven days of the week, the seven deadly sins, the seven ages of man, the seven wonders of the world, the seven notes on the musical scale, and the seven seas.

Dr. Miller believes man's limited memory is caused by something "built into us," either by learning or the design of the nervous system.

To overcome the limitations, he suggests man organize "bits" of information into "chunks" of information. For the husband-shopper, this might mean remembering that he has to buy dairy products, meat and vegetables, and then recalling items like milk, eggs and butter and pork chops and ham for each "chunk."

Another outcome of the study carried out for the Office of Naval Research was finding that the chosen memory recording process may determine the kind of mistakes made.

Dr. Miller explains that, when we witness some event we want to remember, we make a description in words of it and then remember our word picture. When we recall the particular event, we recall the word recording we happen to have made.

This recording in one's own words, Dr. Miller states, depends on the person's whole life history.

Science News Letter, December 31, 1955

HIGH-SPEED PRINTER — The speedy printer shown here is part of "Bizmac," the $4,000,000 electronic data-processing system bought by the U.S. Army from the Radio Corporation of America. It prints an original and three carbon copies of finished paper work at 600 lines a minute. The computer will do in minutes inventory control procedures now taking months at Detroit's Ordnance Tank-Automotive Command.

ENTOMOLOGY

Breezes Bring Insect Pest

➤ AN AIRBORNE INVASION into the United States by the world's worst cotton pest may be a regular occurrence, with winds from the Bahama Islands carrying the pink bollworm moth across the ocean to the Florida mainland, the U.S. Department of Agriculture has revealed.

In spite of constant and apparently successful attempts to eradicate the pink bollworm from infested wild cotton in southern Florida, the pest has continued to frustrate control workers by its sudden reappearances.

A clue to the persistence of the bollworm in Florida came when a survey of two Bahama islands, less than an hour's flight from Miami, disclosed thousands of cotton plants growing in dooryards, on roadsides and in dense bush. Blooms, bolls and squares of this Bahama cotton were found infested with pink bollworm.

Bahamas cotton fruits heavily from January through April, when the bollworm moths there would be expected to be in greatest numbers.

This is also the season when pink bollworms are found in Florida cotton. South Florida's winds are usually from the south and southeast, for about one-third of the fruiting season. This is where the Bahamas lie.

Pink bollworm moths have been found 1,000 feet in the air on other occasions. Precisely how far they can be carried by high wind currents is not known. There is evidence bollworm infestations of west Texas in the early 1920's were windborne from Mexico's Laguna area, over 200 miles south of the border.

Science News Letter, December 31, 1955

MEDICINE

Carbon Dioxide Aids Heart X-Ray Examination

➤ CARBON DIOXIDE GAS is expected to give doctors a safer way to make X-ray examinations of the inside of the human heart.

The method was reported by Drs. Herbert M. Stauffer, Thomas M. Durant and M. P. Oppenheimer of Temple University Medical School, Philadelphia, at the Radiological Society of North America meeting in Chicago.

The carbon dioxide gas would be used instead of air or oxygen to make the chambers of the heart opaque to X-rays so that an outline of them shows up on the X-ray film. The gas is injected into the veins and travels along them to the inside of the heart. Large doses have been well tolerated by dogs, Dr. Stauffer reported.

Carbon dioxide is preferred by the Philadelphia group because it is about 20 times as soluble in blood serum as air or oxygen, which should lessen the danger of bubbles accidentally forming and plugging an artery or vein. Such bubbles when formed from air are called air emboli.

Science News Letter, December 31, 1955

PSYCHOLOGY

Can Control Content of Ordinary Conversation

➤ THE RATE at which an individual expresses his opinion in a conversation depends not only on the speaker's opinionated nature but also on the behavior of the person to whom he is speaking.

Dr. William S. Verplanck of Harvard University found, in experimental conversations, that it is possible to manipulate the conversation without the other person's catching on, so that the opinion expression is speeded or slowed.

It is done by agreeing with the speaker. A nod of the head or a smile or saying "You're right," "I agree," or "That's so," will cause the speaker to express his opinions more frequently. He can also be encouraged to give opinions at a faster rate by rephrasing his statements or repeating them.

On the other hand, a speaker can be discouraged from giving his opinions if the person addressed disagrees with him or remains silent. Some even left the room or lapsed into complete silence themselves.

Thus, commonplace behavior such as ordinary conversation follows the psychological laws of conditioning.

Topics selected for the experimental conversations ranged from dates and vacations to Marxism; from the theory of music to Liberace.

Science News Letter, December 31, 1955

SCIENCE NEWS LETTER

Index — Vol. 68

Nos. 1-27—July to December, 1955

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Lift out and insert in binder at beginning of volume.

ERRATA, Vol. 68, Nos. 1-27, July-December, 1955

PAGE	TITLE BEGINS	CORRECTION
36	Twice Weekly Exercise	Col. 3, line 12, supine *for* prone.
85	Launch Earth Satellite	Col. 1, par. 10, line 5, The device *for* She.
90	We Will Drink the Sea	Col. 1, par. 3, line 2, authorized spending up to $6,000,000 *for* appropriated $10,000,000.
115-6	Predict Harnessing	Col. 3, last 2 lines, *read* at Arco, Idaho, in 1954. Caption, Line 2, Borax *for* "Supo." Col. 1, p. 116, par. 5, lines 1 and 2, Borax *for* Supo"; Arco *for* Los Alamos; 1954 *for* 1953.
182	Ocean Fish	Par. 6, line 5, *delete* land-locked.
188	Corn Cobs	Sheep can digest two-thirds to three-fourths of the nutrients in a feed mixture containing 50% of a high energy feed supplement and 50% low quality roughage.
233	European Trees	Par. 6, line 5, anthocyanin *for* anthrocyanin.
243	Find New Antibiotic	Par. 2, line 6, bacteria *for* molds.
262	Nerve Surgery	Col. 2, par. 1, line 3, *after* patients *add:* operated on for arteriosclerosis of the aorta and lower arteries. Par. 2, line 1, this *for* the. Par. 3, line 1, *after* artery *insert* outside the heart.
296	World's Largest	Line 2, *after* snake *insert* of the species *Thamnophis marcianus nigrolateris;* par 2, delete third sentence entirely.
299	Experts Fret	Myxomatosis not introduced into Great Britain for rabbit control, though it exists there naturally.
324	Bone Marrow Damage	Par. 3, 4 and 7, Brecher *for* Bricker.
389	Electronic Photography	Par. 8, line 3, *after* test *insert* on a telescope.
387	Universe Not	Par. 4, line 2 *read* are receding faster than closer galaxies but not as fast as previously thought.

ASTRONOMY

Jupiter Makes Appearance

Giant planet is seen on January evenings. Venus and Mercury will also be visible. Close approach of Mars highlights astronomical events in 1956.

By JAMES STOKLEY

➤ WITH THE COMING of January, and a new year, two bright planets are visible in the evening sky.

One is Venus, which made its debut a couple of months ago. Still drawing to the east of the sun, it is setting later and later, and becoming still more prominent. Around the first of the month it sets about two and a half hours after the sun and, by the end of January, will be visible even longer.

However, it does not remain visible long enough to appear on the accompanying maps, since these give the appearance of the skies about 10:00 p.m., your own kind of standard time, at the first of January, an hour earlier in the middle and two hours earlier at the end.

Jupiter, largest of the planets, is the other, and is shown in the constellation of Leo, the lion, low in the east. It is close to the bright star Regulus, which it exceeds in brilliance about 21 times. Jupiter, however, is fainter than Venus, which is nearly four times as bright.

Around Jan. 11 it may be possible to get a glimpse of Mercury, for then it will be farthest east of the sun, and will remain very low in the western sky for about an hour and a quarter after sunset. Since it sets before the sky gets completely dark, one should look for it while dusk is gathering.

Sirius Is Brightest Star

Star-wise, the most brilliant part of the heavens these evenings is toward the south and southeast, where Orion and his neighbors are shining, as they always do at this time of year.

Brightest of these stars is Sirius, the dog-star, in Canis Major, the larger dog, which is accompanied by Canis Minor, the smaller dog, higher and farther to the east. Directly above this group we find Gemini, the twins, with the bright stars Castor and Pollux.

Just to the right of Gemini is Orion, the warrior, easily recognized by the three stars in a row that form his belt. Above the belt is Betelgeuse, and below is Rigel. Both are stars of the first magnitude.

To the right of Orion, and a little higher, is Taurus, the bull, with bright Aldebaran. Still higher—at the zenith, in fact, at the times for which our maps are prepared—we see Auriga, the charioteer, and in this group stands Capella, still another star of the first magnitude.

To the west of Auriga is Perseus, the champion, in which the star Algol is marked. It is not its brilliance that entitles this second-magnitude star to fame, but the fact that its brightness varies.

Actually it is two stars, one much brighter than the other, revolving about each other. Once in a period that is three hours and 11 minutes short of three days, the faint body comes in front of the bright one and causes a partial eclipse, reducing its light about two-thirds.

Another first-magnitude star now visible is Regulus, in Leo, the Lion, near which Jupiter stands in the east.

Low in the northwest, Deneb, in Cygnus, the swan, is also seen. Although really a bright star, it is dimmed by reason of its low altitude and the absorption of its light as it passes through a great thickness of atmosphere.

1956 Astronomical Events

Looking ahead into 1956 we find several things of interest on the astronomical program, of which the most important, perhaps, is the closest approach of the planet Mars since 1924.

There is a total eclipse of the moon, which will be visible from the United States and Canada, and one of the sun, which will not be.

The total solar eclipse will occur on June 8 and it would be difficult to arrange one that covers less land area and is more inaccessible.

The path of totality traced out by the moon's shadow, where the sun will be completely hidden, goes over the South Pacific Ocean between New Zealand and the southern tip of South America. Over a larger area, nearly all south of the equator, the moon will partially hide the sun, producing a partial eclipse.

This includes Samoa, and also New Zealand, where the sun will rise already partly eclipsed. No land at all is in the path of the total phase and, since it is far away from most of the world's shipping routes, it is doubtful if anyone will see it.

The moon eclipse comes during the night of Nov. 17. Shortly after midnight, Eastern Standard Time, the moon will start to enter the earth's shadow, and will be completely in it by 1:08 a.m., Nov. 18. The total eclipse will last until 2:27 a. m., so it will mean staying up late if one wishes to see it.

As for the planets, Jupiter and Venus, as noted, are both now visible in the evening and will continue so in the coming months. By June, however, Venus will move in front of the sun, and then to the other side, when it will become a morning star, visible before sunrise for the rest of the year.

We will see Jupiter a little longer, but early in September that planet will be out beyond the sun and invisible. By the end of the year it will reappear as a morning star.

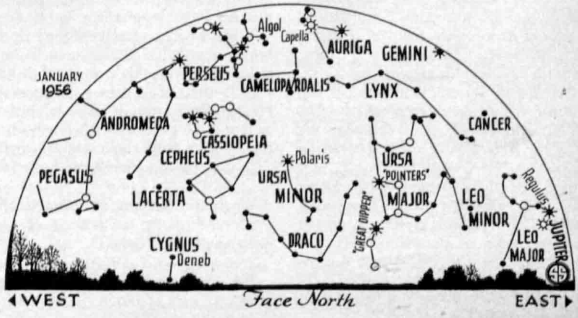
Saturn now is seen in the early morning, rising several hours ahead of the sun in January. By May it will be visible in the evening sky, and will remain so through summer and early autumn, passing out of sight behind the sun in November.

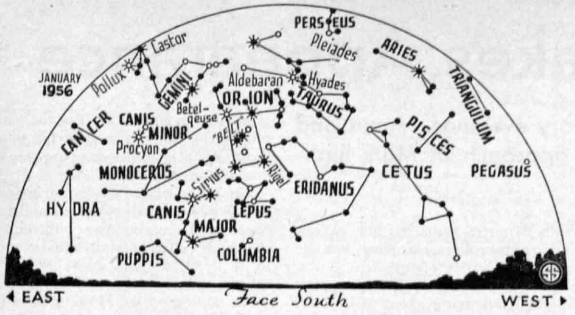
Mars Makes Close Approach

But Mars is the star of this year's act. Now it becomes visible low in the east about four hours before sunrise, and its brightness is that of a second magnitude star.

Mainly this is on account of distance, for on Jan. 1 it is far out beyond the sun, at a distance of 194,000,000 miles. It is moving in, however, and at the beginning of May will be only 97,000,000 miles away. Then it will have brightened greatly, and will be of 0.3 magnitude, which is greater than most of the stars, but it will still be seen in the early morning.

With the coming of July, Mars will have shortened its distance to 58,000,000 miles, and increased in brightness to magnitude minus 1.0, some 12 times as bright as it is





☼ ✷ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

now. It will then be seen late in the evening.

On Sept. 7 Mars will be in opposition, that is, opposite to the sun, and closest, only 35,400,000 miles from earth, which is within less than a million miles of its least possible distance of 34,600,000 miles.

By that time its magnitude will be minus 2.6, which will make it more than 50 times as bright as it is now. After that it will draw away again; at the end of the year it will be 96,000,000 miles away, and of magnitude 0.3.

During the late summer and early autumn, at the time of the closest approach, astronomers will be watching and photographing Mars from observatories in many parts of the world, particularly in the Southern Hemisphere, where it will be more favorably placed than in the north.

Two years ago, when Mars made an approach to a little more than 40,000,000 miles, they had a chance to rehearse some new techniques.

This summer it is the real thing; perhaps some long-standing problems concerning Mars, particularly its mass, atmosphere and changing coloration, will be solved, or at least better understood after the thousands of photographs have been analyzed.

Celestial Time Table for January

Jan.	EST	
1	6:24 p.m.	Moon passes Jupiter
2	8:00 a.m.	Earth nearest sun (perihelion); distance 91,342,000 miles
4	3:14 a.m.	Algol (variable star in Perseus) at minimum light
	5:41 p.m.	Moon in last quarter
7	12:03 a.m.	Algol at minimum
8	6:14 a.m.	Moon passes Mars
	1:20 p.m.	Moon passes Saturn
9	8:52 p.m.	Algol at minimum
11	3:00 a.m.	Moon farthest, distance 252,500 miles
	1:00 p.m.	Mercury farthest east of sun (Visible around this date in west in early evening twilight)
12	5:41 p.m.	Algol at minimum
	10:01 p.m.	New moon
14	4:00 p.m.	Mars passes Saturn
	5:11 p.m.	Moon passes Mercury
16	3:37 a.m.	Moon passes Venus
20	5:58 p.m.	Moon in first quarter
26	8:00 a.m.	Moon nearest, distance 222,900 miles
27	9:00 a.m.	Mercury between earth and sun
	9:40 a.m.	Full moon
29	10:37 p.m.	Algol at minimum
	1:03 a.m.	Moon passes Jupiter

Subtract one hour for CST, two hours for MST, and three for PST.

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MEDICINE

Psychogenic Rheumatism

➤ RESERPINE, relaxing drug widely used for treating mental illness and high blood pressure, now temporarily relieve the aches, pains, stiffness and crippling in some patients with psychogenic rheumatism.

Good results in a preliminary trial of this new use for the drug are reported by Dr. Harry Bartfeld of New York in the *Journal of the American Medical Association* (Dec. 17).

He tried the drug because psychogenic rheumatism is believed to come from emotional stimuli of the sort reserpine might abolish. Psychogenic rheumatism is not uncommon. In oneseries of 500 consecutive civilian patients, it was found in 13.4%.

The drug temporarily relieved the complaints of five out of seven patients with this kind of rheumatism.

With the idea that it might help in other kinds of arthritic disease, which are known to be made worse by emotional disturbances, Dr. Bartfeld tried it in some more patients. He reports it brought some temporary relief to five of 16 patients with osteoarthritis and one of four with rheumatoid arthritis.

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World production of *synthetic fibers* in 1954 reached the equivalent of 11,700,000 bales of cotton.

The average size of a French *farm* is 36 acres.

VITAL STATISTICS

Suburbanites Frustrate Vital Record Keepers

➤ SUBURBANITES are frustrating the vital record keepers who compute birth and death rates. Birth and death certificates will, therefore, have a new line on them, starting in 1956.

The new line will ask the following: Is place of birth (or death) inside the city limits? Is residence inside the city limits? Is residence on a farm?

Reason for the change is that addresses of suburbanites sometimes carry a city name and postal zone number and sometimes a rural route number. Where do these people belong when rural and urban birth and death rates are figured? The answer cannot be given accurately without more specific information which the new form is designed to bring.

The change and reasons for it are reported by Dr. Halbert L. Dunn, Chief, National Office of Vital Statistics, Department of Health, Education and Welfare, in the *Journal of the American Medical Association* (Nov. 19).

Science News Letter, December 31, 1955

PSYCHOLOGY

Assertive Persons Pick Unaggressive Mates

➤ MEN AND WOMEN both tend to marry a person with personality needs complementary to their own. An assertive man will pick a wife who is quite the reverse, and an assertive woman wants a husband who is not himself aggressive.

This finding is from a series of interviews and tests on 25 young married couples of whom husband or wife or both were students at Northwestern University.

This does not mean exactly that "opposite attract." In general, it has been found that Americans tend to choose associates from among persons of similar religion, socioeconomic level and education. And the American generally picks his mate from among his associates. This insures a certain amount of similarity between mates.

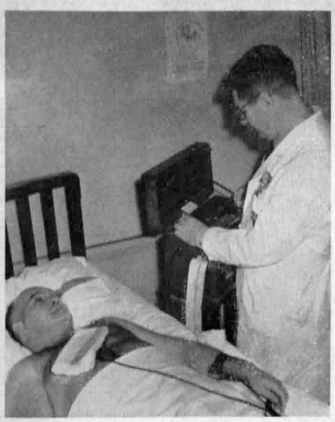
When it comes to falling in love and marrying, each individual feels drawn to that person who is most likely to gratify his or her personality needs, which means a person of dissimilar needs.

No particular aspect of assertiveness is peculiar to women, the study showed, but in middle class men, this personality need is channeled into "getting ahead."

The woman who marries an assertive man is betting on her husband to get ahead instead of seeking advancement for herself.

The study of mate selection is reported in the *Journal of Abnormal and Social Psychology* (Nov.) by Dr. Robert F. Winch of Northwestern University and Drs. Thomas Ktsanes and Virginia Ktsanes of Tulane University, New Orleans.

Science News Letter, December 31, 1955



DETECTING HEART DAMAGE—The electrocardiograph is designed to aid in detecting various types of heart damage. Electrodes, fastened to the arms, legs and chest of the patient, transmit electrical current produced by the heart to the machine, which makes a permanent record on the graph paper. Operating the machine is Capt. Stephen W. Czarnecki, a resident at Walter Reed Hospital, Washington.

BIOCHEMISTRY

Metals Stop Viruses By Attack on Rear

➤ METALS in special combinations stop certain viruses by attacking on the rear, Drs. L. M. Kozloff and K. Henderson of the University of Chicago report in *Nature* (Dec. 17).

The tails of the viruses are shortened by treatment with the metal combinations. The viruses are then inactivated. They lose their ability to attach themselves to their host, they cannot kill their host and they cannot reproduce.

The viruses on which this discovery was made are some of the ones that prey on larger organisms, bacteria, and are called bacteriophages.

When a virus of this kind invades a bacterial cell, the virus attaches itself by its tail, apparently making a hole in the wall of the bacterial cell.

Short-tailed viruses apparently cannot do this.

Mercuric mercury can shorten the virus tails by itself. Zinc and cadmium, however, can only do it when in special combinations with other materials. These combinations are known technically as complexes.

Science News Letter, December 31, 1955

U. S. annual *population increase* rate is quintuple that of the United Kingdom.

ENTOMOLOGY

Grasshopper Increase

➤ AN ALERT against a possible large-scale grasshopper invasion in 1956 has been sounded by the U.S. Department of Agriculture.

From findings in a recent survey, the USDA expects next year's grasshopper threat to be more than three times that of 1955 on western rangelands. The survey indicated grasshoppers will occur in 1956 on more than 20,000,000 rangeland acres in 16 states, compared to the 6,000,000 acres of the preliminary estimate for 1955.

The states involved are Arizona, California, Colorado, Idaho, Kansas, Missouri, Montana, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington and Wyoming.

In 1955, almost 1,650,000 acres of rangeland in 11 states were treated with insecticides to control grasshoppers.

Abundance of Mormon-crickets is expected to be about the same in 1956 as 1955, the USDA said. Some 100,000 acres of rangeland in Colorado, Idaho, Montana, Nevada, Utah and Wyoming will probably need treatment in 1956 to prevent Mormon-cricket damage.

Next spring the threatened areas will be re-surveyed to find what toll predators, parasites, diseases and weather take over the winter of the potential insect population.

Final plans for 1956 control work will be based on the findings of this survey.

In these grasshopper surveys, USDA surveyors count the actual number of insects per square yard at sample stops in suspected areas. Later in the fall, they return to check whether the outlook remains the same or whether a shifting of adult egg-laying insects has changed the picture. The surveyors shovel a measured square foot of soil into a sifting screen, or scrape away plants and dig into the soil, to expose and count grasshopper egg pods.

From these counts the coming year's infestations are rated, and the data are used to make up maps and estimates of the potential infestation for the following year.

Science News Letter, December 31, 1955

ASTRONOMY

Polaris Is Triple Star

➤ EXISTENCE of an invisible companion of the North Star has been confirmed for the first time by a University of California astronomer, Dr. Elizabeth Roemer, a former Science Talent Search winner.

Dr. Roemer's finding came from a study of 1,200 spectrographic plates taken at the university's Lick Observatory over 60 years.

Shifts in the light spectrum of Polaris indicate a motion that can be accounted for by assuming the star circles in a small orbit around an invisible companion.

Actually, the North Star is a three-star system. Only the white supergiant, Polaris, the guide of navigators for centuries, is visible. The telescope shows up a second star, while the third, the invisible companion, is too faint and probably too close to the brilliant Polaris to be seen.

The system's invisible member was first suggested in 1929 by Dr. J. H. Moore, former director of Lick Observatory. Dr. Moore found that Polaris, a Cepheid variable or pulsating star, had spectral irregularities suggesting orbital motion independent of the relationship to the visible companion. That indicated the existence of another, invisible stellar body.

Dr. Moore found the shifts in average velocity of each cycle apparently repeated themselves every 30 years. Dr. Roemer's work, close to the end of a cycle, confirmed the theory about this familiar star.

Based on Dr. Roemer's observations, Polaris' visible partner has been classified as a little hotter than our sun. Polaris' brightness confirms recent findings that the universe is actually twice as large as astronomers several years ago thought it to be.

Dr. Roemer's findings were possible because she used the same instrument used in spectrographic measurements for the past 60 years. Lick Observatory is one of the few places where such measurements have been made.

Science News Letter, December 31, 1955

Losses from *insects* in the U. S., plus cost of insect control, amount to $4,000,000,000 a year, almost equal the value of the nation's entire corn crop.

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• Books of the Week •

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

ADVANCES IN VIRUS RESEARCH: VOLUME III—Kenneth M. Smith and Max A. Lauffer, Eds.—*Academic,* 338 p., illus., $8.00. Covering chiefly plant and insect viruses.

AMATEUR BEEKEEPING—Edward Lloyd Sechrist—*Devin-Adair* 148 p., illus., $3.50. Addressed to the young person who wants to learn something about bees from personal experience with keeping them and to the retired grandparent who wants to get some healthful activity outdoors.

CELEBRATED AMERICAN CAVES:—Charles E. Mohr and Howard N. Sloane, Eds., with a foreword by Alexander Wetmore—*Rutgers University Press* 339 p., illus., $5.00. Here is a book for amateur speleologists, as well as professionals, and also for those interested in the romance of strange underground places.

CHILDREN'S BODY MEASUREMENTS FOR PLANNING AND EQUIPPING SCHOOLS: A Handbook for School Officials and Architects—W. Edgar Martin—*Govt. Printing Office,* Office of Education, Special Publication No. 4, 113 p., paper, 50 cents. Children have increased in body size in the last 25 years and de-segregation may mean an additional change in the size of furniture needed for schools.

EVOLUTION, GENETICS, AND MAN—Theodosius Dobzhansky—*Wiley,* 398 p., illus., $5.50. An effort to show the student that biology is not only a craft but also the fabric of modern humanistic thought; that the development of mankind is a part of the story of biological evolution.

THE HUMAN FIGURE IN MOTION—Eadweard Muybridge with introduction by Robert Taft—*Dover,* 196 plates, $10.00. A popular priced edition of a classic of value to artists, physiologists, anthropologists and others concerned with how man uses his body. These famous photographs are by the same man who proved that when a horse gallops, all four feet leave the ground at the same time.

THE INVERTEBRATES: VOLUME IV, Echinodermata, the Coelomate Bilateria—Libbie Henrietta Hyman—*McGraw-Hill,* 763 p., illus., $10.00. A scientific description of common and conspicuous marine animals.

JUST ONE MORE: Concerning the Problem Drinker—James Lamb Free—*Coward-McCann,* 211 p., $3.50. The author, a former alcoholic, has made a study of how to help others facing the same problems.

THE NORTH AMERICAN MIDWEST: A Regional Geography—John H. Garland, Ed.—*Wiley,* 252 p., illus., $8.00. This extensive inland area, far from both mountains and sea, is a gigantic center of agriculture, manufacturing and transportation that has a dominating influence on the nation and, indirectly, on the world.

THE PATHOGENESIS OF POLIOMYELITIS—Harold K. Faber—*Charles C. Thomas,* 157 p., illus., $5.00. Reporting results of a 20-year study of this disease. The book explains why the Salk vaccine, while it protects a very large proportion of those who use it, cannot protect all.

RESEARCH REACTORS—United States Atomic Energy Commission—*McGraw-Hill,* 442 p., illus., $6.50. Describing light-water-moderated, light-water-and-oil-moderated, heavy-water-moderated, and graphite-moderated reactors. This is one of the books given by the U. S. Government to each delegate at the Atoms-for-Peace Convention in Geneva.

THE STORY OF STANDARDS—John Perry—*Funk & Wagnalls,* 271 p., illus., $5.00. Telling the story of man's attempt to agree on standard weights and units of measurement of various kinds, together with a history of our Bureau of Standards.

STUDIES OF LONG PERIOD VARIABLES—Leon Campbell, prepared for publication by Margaret Walton Mayall—*American Association of Variable Star Observers,* 247 p., illus., paper $5.00, cloth $6.00. Compiled from about 1,000,000 observations by members of the Association.

TEACHERS FOR TOMORROW—*The Fund for the Advancement of Education,* Bulletin No. 2, 72 p., illus., paper, free upon request direct to publisher, 655 Madison Ave., New York 21, N. Y. Discussing various aspects of the problem of providing improved education for ever-increasing numbers of students.

THE THEORY OF HYDRODYNAMIC STABILITY—C. C. Lin—*Cambridge University Press,* 155 p., $4.25. Devoted mainly to the study of the stability of the motion of a homogeneous viscous fluid with respect to infinitesimal disturbances.

TRIGONOMETRICAL SERIES—Antoni Zygmund—*Dover,* 329 p., paper, $1.85. This popular price edition is an unabridged and unaltered republication of an edition published in 1935. The work is intended to give an account of the present state of the theory.

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Deficiency of *vitamin C* is often apparent in elderly patients by cataracts.

DRY Wash Makes Car Last Longer

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BIOCHEMISTRY

Identify Proteins By "Fingerprints"

➤ "MOLECULAR FINGERPRINTS" of fibrous proteins under the electron microscope, making possible sight identification of the substances, have been discovered, a report by Dr. Francis O. Schmitt, biologist of the Massachusetts Institute of Technology, indicated.

Dr. Schmitt told the American Philosophical Society that certain fibrous proteins show a regular cross-banded appearance when viewed in the electron microscope and that the band patterns, "like a molecular fingerprint," are specific for each type of protein.

The location of each band and its width and appearance are determined by the types of amino acid residues and their specific sequences along the main protein chains.

Science News Letter, December 31, 1955

ICHTHYOLOGY

Detergent Cleans Aquarium Sand

➤ MODERN CHEMISTRY has come to the aid of tropical fish enthusiasts in a new technique for solving the old problem of how to clean aquarium sand.

Dr. F. Earle Lyman, zoologist at Southern Illinois University, Carbondale, Ill., reports that modern soapless detergents clean out aquarium sand quickly and thoroughly, halting the cloudiness that usually appears after water-washed sand is added to aquaria. There is no apparent ill effect on the fish from the detergent, Dr. Lyman said.

In his technique, Dr. Lyman uses about one-fourth to one-third of a cup of powder-type, or two tablespoons of liquid-type, soapless detergent together with a small amount of water and the sand of a five-gallon aquarium. Sand, soap and water are mixed together into a thick lather. The mixture is water-rinsed until no more suds are produced.

An aquarium set up with sand washed this way will have clear water on the first day following its establishment, Dr. Lyman reports in *Turtox News* (Oct.).

Science News Letter, December 31, 1955

TECHNOLOGY

Canada Helps Guard Northern Frontier

See Front Cover

Canada is helping to guard North America from surprise attack. Nerve center at any of Royal Canadian Air Force's radar stations is the operations center, housed in domes such as shown on the cover of this week's SCIENCE NEWS LETTER. Beneath the domes, men and women of the RCAF are busy 24 hours a day scanning radar scopes that search the sky continually.

Science News Letter, December 31, 1955

BIOLOGY

NATURE RAMBLINGS

by Horace Loftin

To Eat or Not

➤ THE MOUNTAIN LION circled the porcupine, whose erected quills rattled in warning. Her cubs watched her as she cautiously poked a paw towards the bristled animal. Food had been hard to find all winter, and the cubs were hungry.

Would the tawny mountain lion attempt to kill the well-armored porcupine, and then could she and her cubs eat it without serious internal wounds from the quills?

While this may seem like a perplexing problem, actually it is little or no problem to the mountain lion. Porcupines actually make up a sizable part of the big cat's normal diet.

In killing the porcupine, the lion apparently flips it over on its back to attack the vulnerable underbelly. Numerous quills are eaten along with the flesh, but even large quantities of them usually do little internal harm to the lion. Some experts believe that the quills become softened in the intestinal tract, reducing the hazard.

The porcupine quills can be injurious to the lion if they become profusely stuck in its lips, tongue and roof of the mouth, and there are authentic reports of mountain lions being found dead, apparently killed by the quills of porcupines it has attacked.

Such dire results from a porcupine feast are probably quite exceptional, however.

The formidable protective coat of the porcupine does not keep bobcats, foxes, coyotes and wolves from making a meal of it, too. It is reported that coyotes and wolves make their kill by grabbing the porcupine by the nose and shaking it to death like a terrier might a rat.

The effectiveness of porcupine quills, which are much modified hairs, should not be underestimated, however. Without them, the slow-moving, clumsy animals would provide many more meals to predatory animals than is actually the case.

Although the quills cannot be thrown or shot out, they are shaken loose easily when touched, and their sharp points quickly penetrate the skin, causing considerable pain.

All in all, the bristly porcupine is an animal best left in peace if you would avoid many a painful jab.

Science News Letter, December 31, 1955

MEDICINE

X-Rays Restore Eyesight To Child Cancer Victims

➤ CHILD VICTIMS of a cancer that destroys the optic nerves have had their lost eyesight restored by X-ray treatment, Dr. Juan M. Taveras of New York reported at Radiological Society of North America meeting in Chicago.

Some of the young patients did not get full return of eyesight, but gradual loss of vision was arrested.

The cancer these young people suffered is called glioma of the optic nerve. It is "of relatively low malignancy," Dr. Taveras said, "but the natural course is a progression of growth, the production of blindness and often death."

The dramatic restoration of vision occurred in a significant number of the patients, Dr. Taveras reported.

X-ray treatment and surgical operations were used in a group of 34 patients he and his associates, Drs. Lester A. Mount and Ernest H. Wood, treated. In most cases the surgery was limited to verifying the diagnosis.

Science News Letter, December 31, 1955

VIROLOGY

Diseases for Viruses

➤ ORPHAN VIRUSES, many of them discovered in studies of suspected poliomyelitis cases, now number 13.

They have been renamed ECHO viruses and they are "in search of disease." That is, scientists who know about these viruses are seeking specific diseases the viruses cause.

Announcement of the 13, where and by whom discovered and whether they were found in sick persons is made in *Science* (Dec. 16). Some were found in healthy children, others in children with aseptic meningitis, often diagnosed as nonparalytic polio.

The name Orphan for viruses in search of disease was first suggested "in a moment of conviviality" by Dr. F. Duran-Reynals of Yale University School of Medicine.

The new name ECHO is made of the first letters of scientific terms describing the viruses more exactly, Enteric (meaning intestines where the viruses are found), Cytopathogenic (meaning they attack body cells), Human and Orphan.

ECHO viruses have been found in Egypt, Connecticut, Maine, Rhode Island and the Philippine Islands.

The 13 have been tested and found distinct from each other and from the three known polio viruses, the Coxsackie viruses, and the viruses of fever blisters, influenza, mumps, measles, chickenpox, ARD and APC viruses, all of which also have been found in human intestines.

The 13 are neutralized by human gamma globulin and by individual human blood serums. This means they infect human beings. They can be grown in cultures of monkey kidney cells.

The latest information on them is announced by the Committee on ECHO viruses of the National Foundation for Infantile Paralysis, of which Dr. J. L. Melnick, Yale University, is chairman.

Science News Letter, December 31, 1955

In the U. S., each person uses about 3,000 *calories* as food daily, and about 40 times this amount for heat and power.

This year makes the eighth successive year for which the nation's *death rate* has been below 10 per 1,000 population.

Questions

ASTRONOMY—What are the top astronomical events in 1956? p. 423.

□ □ □

GEOLOGY — How faithful is Old Faithful really? p. 421.

□ □ □

PSYCHOLOGY—How many items can the average man remember? p. 422.

□ □ □

WILDLIFE—How is it proposed to cut elk herds down in Yellowstone National Park? p. 421.

□ □ □

Photographs: Cover, Canadian National Defence; p. 419, University of Michigan; p. 421, University of California; p. 422, Radio Corporation of America; p. 425, U. S. Army; p. 428, Poppet Corporation.

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By H. T. Behrman, M.D., and O. L. Levin, M.D.

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SUEDE LEATHER KIT for making a lady's suede handbag contains all necessary parts. The suede can be sewed by machine and is described as washable. The do-it-yourself handbag is available in six colors.

Science News Letter, December 31, 1955

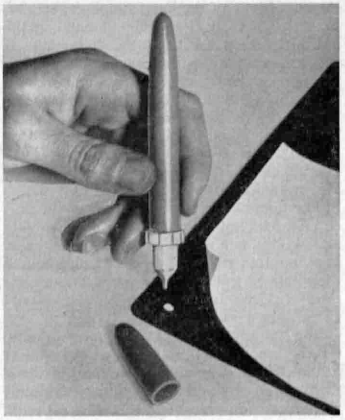
YOUNGSTER'S GUITAR has automatic chord-forming device that fits over the top frets of the instrument. Molded of styrene plastic, the junior full-sized guitar can be played in conventional manner or with chord device. It comes with metal tuning pegs, harness, pick, music book and carrying case.

Science News Letter, December 31, 1955

PORTABLE DUST COLLECTOR is designed to help the home craftsman keep his shop clean. Powered by a one-third horsepower motor, the dust collector draws sawdust and dirt through a two-and-one-half-inch diameter hose into garbage or waste can. The shop cleaner is mounted on a dolly.

Science News Letter, December 31, 1955

PEN-LIKE ADHESIVE APPLICATOR, shown in the photograph, ejects a dot of rubber cement each time it is tapped where cement is desired. Capped, the adhesive dispensing device can be carried in the pocket. It has 5,000 dots



of cement and can be refilled. The cementer is designed for hobbyists, engineers, draftsmen and students.

Science News Letter, December 31, 1955

CURBSTONE COURT automatically collects fines for parking tickets and returns a receipt. Made of cast aluminum, the ticket taker is about the same size and shape as a parking meter. A ticket is inserted, quarters or half-dollars put in and a crank turned to pay the fine.

Science News Letter, December 31, 195

PORTABLE PUBLIC ADDRESS system has a range up to one-quarter of a mile. It can be shoulder-carried and operated by one man. The paging system has a nine-inch diameter speaker and a microphone with an eight-foot extension cord. Four six-volt dry batteries power it.

Science News Letter, December 31, 195

INDUSTRIAL SAFETY FLASH LIGHT prevents a broken bulb from touching off explosive gas mixtures. A plastic triggered reflector unit acts likes a circuit breaker. A spring-loaded contact in the reflector snaps a wire guard and cuts off the current if the bulb breaks.

Science News Letter, December 31, 195

FOOT WARMER for cold weather can be used in the home, office or factory. Plugged into the wall, the neoprene rubber mat throws off a gentle warmth. The portable electrical mat measures 14 by 21 inches.

Science News Letter, December 31, 195

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12-31-5

Do You Know?

About 30 subspecies of *pheasants* have been named by ornithologists.

In less than a decade, the capital investment in the *atomic energy* industry has reached nearly $5,000,000,000, exceeding the investment of any one major industry in the country.

In frying *venison*, do not cover the pan until a few minutes before serving, since covering too soon will cause the meat to boil.

A blue-whale unit is the measurement of the amount of oil extracted, and represents either one blue whale, two fin whales, or two and a half humpbacked whales.

The U. S. national *forests* supply water for more than 13,000,000 of the 21,000,000 acres of irrigated lands.

In some energy-poor countries, as much as 80% of the *energy* used may come from the burning of dung.

Several types of human *cancer* can now be grown routinely in laboratory animals, test tubes and fertilized eggs in unlimited quantities.