

the income to be devoted to surgical fellowships for accredited postgraduate students chosen by the faculty of the School of Medicine. The fund is named for Drs. Frank E. Bunts, George Crile and William E. Lower, who founded the clinic in 1921.

THE department of pharmacology of the College of Medicine of Wayne University is the recipient of a grant of \$6,000 provided by Frederick Stearns and Company for a two-year study of the pharmacological actions of methyl cellulose.

A RESEARCH fund to finance studies of diseases of the mouth has been established at the College of Dentistry of New York University, of which Dr. Allen T. Newman is dean. The contributors include graduates of dental colleges here and abroad who have taken postgraduate work in periodontia at New York University and who wish to further that branch of dentistry. Dr. S. M. Robbins, of Cleveland, is chairman of the fund committee. The research will be under the direction of Professor Samuel Charles Miller. Studies of the efficacy of various dentifrices, causes of mouth diseases and an inquiry into the incidence of trench mouth will be undertaken.

*Chemical and Engineering News* reports that officials of the War Production Board have indicated that production of penicillin will be multiplied fifty-five times by March 1, and that the price will again be substantially lowered. Nineteen companies are now in production, but relatively little of the full capacity will be available until early in 1944. The volume of production is still a secret, but ultimately authorizations granted by WPB will result in quantities ranging from 400,000,000 units per month from some smaller laboratories to 20,000,000,000 from large chemical producers.

THE Atlas Powder Company has established a central research laboratory near Wilmington, Del., for expansion of research work for the war programs. Dr. R. S. Rose, Jr., director of the Atlas laboratory at Reynolds, Pa., will be placed at the head of the new central laboratory, the first unit of which is nearing completion. The new laboratory will be devoted chiefly to the development of organic compounds for industrial uses.

THE United States Steel Corporation has announced that its subsidiary, the Oliver Iron Mining Company, plans to establish an iron-ore research laboratory at Duluth, Minn., to enable it to continue its work on the improvement of the Lake Superior district iron ores.

A TELEPHONE message sent from Stockholm to *The New York Times* on December 11 reports that the Germans in Denmark have confiscated the Institute for Theoretical Research in Physics, the center for atomic research which was directed by Professor Niels Bohr until his recent escape to Great Britain. Dr. Boegbild and Herr Olsen, his chief assistant, who with their families live at the institute, were arrested and taken to a prison in Copenhagen. After the confiscation the dean of the University of Copenhagen was ordered to sign a letter agreeing to the requisition.

A UNITED PRESS dispatch states that the Uruguayan Government has accepted a \$500,000 gift from the U. S. Office of Coordination of Inter-American Affairs to be devoted to sanitation work and health measures. Similar gifts have been made to other Latin-American countries out of a special fund in the coordinator's office that is disbursed not as a loan but as an outright gift.

## DISCUSSION

### GIGANTIC DRYING CRACKS IN ANIMAS VALLEY, NEW MEXICO<sup>1</sup>

SOME years ago there was brought to my attention a strange-looking polygonal pattern resembling drying cracks that appeared on aerial photographs of the playa of Animas Valley in southwestern New Mexico. Estimates made from the photographs of the probable size of the polygons gave such surprisingly large results as to raise doubt that they could be drying cracks. The writer requested the Army Air Force to photograph the area to provide additional material for study. This they did most effectively and kindly furnished an abundant series of vertical and oblique pictures. It was evident from these pictures that the

pattern was not transient and it was inferred that the dark boundaries surrounding the light-colored polygons must be some very substantial feature upon the surface of the playa.

Subsequently the writer made three brief, but in time, widely spaced (1937-1941) examinations of the surface of the playa where the pictures indicated well-developed patterns. The first attempt proved disappointing and the investigation was partly hampered by a sheet of water from recent rains which then covered the playa. Nothing remotely resembling the striking pattern seen on the aerial photographs could be found on the playa at that time. The second visit proved more fruitful. By precisely locating a position on the ground with reference to its counterpart on the picture a faint trace was discovered which when

<sup>1</sup>Published by permission of the Director, U. S. Geological Survey.

followed through proved to be the margin of a polygon. The polygons thus identified were of enormous size averaging 80 to 90 feet in diameter. An uninformed person walking upon the playa would never suspect their presence; the only physical mark upon the surface is a broad faint depression more or less straight and trench-like, averaging 3 feet wide and perhaps an inch or more deep in the middle. Each side of a polygon is a line of fracture and fill which could not be recognized from the air were it not for a concentration of vegetation along these faint grooves. Here, either because of better-growing conditions or the more abundant lodgment of seeds, the plants *Suaeda fruticosa* Forsk., with fleshy leaves of a purplish color, and *Atriplex acanthocarpa* (Torr.) Wat., having fuzzy white leaves and bur-like fruits, are concentrated in greater numbers than upon the areas of the polygons and thus form the black borders which are so effective in outlining the polygons. Both plants are bushy and grow about a foot high. This geologic feature might have remained unnoticed were it not for the striking pattern made by the plants as seen from the air.

The year 1934 was one of extreme but brief drought in southern New Mexico. Inquiry disclosed that at least one resident of Animas Valley had remembered seeing that year open fractures on the parched playa. His recollection was that the openings were narrow but may have been two or three feet deep. They were subsequently filled by collapse and inwash of surface material.

The pattern is probably old, and the ground undoubtedly has suffered repeated opening and filling with every severe drought. But why these polygons have formed on such a grand scale is a point of interest which will be enlarged upon at a more propitious time.

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U. S. GEOLOGICAL SURVEY

#### POLLEN RECORD OF CANADIAN SPRUCE AND FIR FROM TEXAS BOG

A PRELIMINARY pollen analysis of the deep peat deposit (22 feet) in Patschke Bog, Lee County, Texas, gave very significant records on former ranges of boreal conifers and *Castanea* in North America.

Patschke Bog is an old lake, perhaps of the meander type, now filled completely with peat, which rests on fine reddish sand. The peat is extremely black and consists chiefly of finely divided wood fragments. The preliminary pollen study indicates a history of the vegetation showing the following changes in composition: Spruce-pine-oak-grasses, to oak-grasses, to grasses, to alder, to chestnut-alder, to chestnut-oak-grasses, to oak-grasses. The most significant discov-

ery is a record of upward to 5 per cent. of Canadian spruce and fir pollen in the lower five foot-levels. *Castanea* attained a pollen representation of 33 per cent. at the 8-foot level, and 30 per cent. at the 6-foot level.

This pollen record shows former distribution of *Castanea* to have been at least one hundred miles westward of the present range limits, and of spruce and fir approximately 800 miles southward of Bacon's swamp, Indiana, the present southernmost profile showing the former range of these genera.

It seems probable that the hypothetical lake in Texas was occasioned by the blocking of a tributary to Yegua Creek. Abundant seep springs now feed the bog with water from under the adjacent hill slope.

The Patschke Bog is located in the Carrizo formation, the lowest member of the Claiborne group, near the middle of the Eocene system. The mineral content consists of about nine tenths medium-grained sands and one tenth sandy clay. Strata of impervious bluish-grey sandy shale occur at intervals, and, where erosion has exposed them, these result in seep lines of generally quite constant function, even during intense drought periods of several years' duration.

The topography is rolling, and the region is covered by a forest of which the dominants are post-oak, blackjack-oak and Buckley's hickory.

The bog itself was originally covered by a dense growth of *Ilex vomitoria* Ait., *Myrica cerifera* L., and *Quercus nigra* L., with *Erianthus saccharoides* Michx., *Panicum* spp., *Andropogon glomeratus* (Walt.) BSP., many species of sedges, *Osmunda cinnamomea* L., *O. regalis* L., *Anchistea virginica* (L.) Presl., *Lycopodium* sp., *Sphagnum subsecundum* Nees., *Rhexia mariana* L., *Pogonia ophioglossoides* (L.) Ker. as representative of the herbaceous flora. *Nyssa sylvatica* Marsh and *Ilex opaca* Ait. reach their southwestern limits along the margins; while the only collection of *Marchantia polymorpha* L. on record for Texas was made from a burned area in the vicinity.

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#### A FORGOTTEN FACTOR IN CARDIAC PHYSIOLOGY

As the result of experience in the devising and use of mechanical hearts,<sup>1</sup> quite naturally my attention has been focused on the mechanical properties of the physiological model. One of these has been utterly impossible to duplicate and, as the efficiency of the machine depends largely on this factor, its consideration becomes of prime interest.

<sup>1</sup> O. S. Gibbs, *Jour. of Pharmacol. and Exp. Therap.*, 35: 197, 1930; *ibid.*, 49: 181, 1933.