

of Palestine, and Transjordan has heretofore been unaffected by Arab uprisings. But when sudden disturbances broke out east of the Jordan in March, British officials held up permission for digging at the Solomon port. For a time, all Prof. Glueck's arrangements for convoys, camps, and supplies seemed likely to end in no expedition at all.

Strife in Palestine has not stopped the digging at the place most closely associated with wars—ancient Armageddon. The Oriental Institute of the University of Chicago has just finished six months work there, though the road from Megiddo—as it is called today—to Jerusalem is traveled only when armored cars lead and follow private automobiles that travel the highway. On the last day of digging, an ivory “protective instrument” belonging to a woman of 1400 B. C. was found.

Before summer is over, Americans may be telling of discoveries in Iran, in Turkey at the site of ancient Van, in Cyprus, Egypt, Bulgaria, to name other regions where archaeological news may break, in the determined search for the forgotten past.

*Science News Letter, July 29, 1939*

The exact tone required for automobile horns is specified in Argentina.

The Chinese 4,000 years ago realized that goiter generally attacked people who lived inland, and they treated it with seaweed and other sea medicines many of which contained the helpful iodine.

## ● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the Jesuit Seismological Association resulted in the location of the following preliminary epicenter:

*Monday, July 17, 10:26.6 p.m., EST*

In North Pacific Ocean, 300 miles west northwest of Vancouver, B. C. Latitude 49 degrees north. Longitude 130 degrees west.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL, June 17.

## AERONAUTICS

# New Air Route May Link Philippines and East Indies

## Airway Would Have Terminals in Manila and Batavia, Capital of Java; Political Complications Considered

A SERIES of agreements under which a new air route linking the Philippines and the Netherlands East Indies would be operated by Pan American Airways and K.L.M., the Royal Dutch Air Lines, is expected to be successfully negotiated during the next few months.

Terminals of the airway would be Manila and Batavia, prosperous capital of the island of Java. Several alternative routes could be flown. To Pan American, the line would represent a further extension of its transpacific service, which now goes to Hong Kong. To K.L.M., it would be a side branch of their Amsterdam to Australia run, which goes to Sydney, Australia, via Penang and Port Darwin.

Considerable difference of opinion about the wisdom of admitting the Dutch to Manila exists in Federal government circles, but necessary landing rights will be granted, it is understood, with the proviso that an American concern be entitled to operate into the East Indies. Political complications brought about partly by coming Philippine independence are feared by those opposing the grant.

If Pan American and K.L.M., whose full name is Koninklijke Luchtvaart Maatschappij voor Nederland en Koloniën, thus connect, it will be possible to fly around the entire world in American airplanes, as K.L.M. has long used American ships exclusively.

Pan American expansion plans actually under way feature a route from San Francisco to New Zealand via Hono-

lulu. A U. S.-Australia line, which might be an extension of the present transpacific service, has also been discussed by Pan American officials, as has a U. S. operated link between Australia and New Zealand across the Tasman Sea. The proposed Manila-Batavia service could fit into the Australian route as the direct flight passes over a group of colonial islands which would not provide profitable stopping points. Imperial Airways is about to launch New Zealand-Australia service.

The proposed route to Batavia, which might stop over at Saigon, capital of French Indo-China, landing rights at which the French would probably grant upon request, brings up the vision of a round-the-world airline entirely under the American flag. Pan American, whose lines stretch from Hong Kong to Marseilles via the United States, already spans a larger portion of the earth's surface than any other commercial air company.

The agreements necessary before the Manila-Batavia line could become a reality include landing rights for the Dutch at Manila and for an American company at Batavia, and for intermediate points as well. An agreement between Pan American and K.L.M. on operating questions might also be necessary. A Panam official has already stated that needed airplanes and other equipment are available.

*Science News Letter, July 29, 1939*

## PHYSICS

# Molecular Activity Likened To Mountainous Terrain

IF YOU think of chemical molecules as having “populations” of atoms, you can picture chemical reactions between molecules as the interchange of various members of these populations. These interchanges are accomplished over a barrier of electrical force between molecules which can be likened to a mountain range between two valleys in which the atom populations dwell.

Prof. Victor K. LaMer of Columbia

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University points out that physical chemists today represent their energy relations between molecules by energy diagrams which resemble the contour maps of a mountainous country.

He adds that the interchanges in the population of people separated by a mountain range are determined by the number of people in each community, by the height and character of the roads leading over the mountains and by the mountain climbing ability of the natives.

"The higher the mountain pass, which is the same thing as saying that the molecules require a large energy of activation to react, the fewer are the interchanges. The more roads that are constructed over the mountain pass the more easily it can be traversed."

Until recently chemistry's only way of getting "over the mountain" was to make the molecules energetic by heating them, or to prevent them from reacting by cooling them, Prof. LaMer states.

New knowledge of the role of chemical catalysts is, however, showing that molecules can be drawn together (overcome the barrier wall between them) by the presence of electrical charges on the catalysts. Thus two molecules having positive electric charges dislike to react because the like charges repel one another. If a catalyst with a negative charge is placed near them the attractive force helps bring the two incompatibles together and may make them react.

Catalysts, in effect, provide new "pathways" across the barrier "mountains" among molecules. "Definite proof of the existence of this new kind of 'mountain pass' will have its applications throughout the whole of the chemical world," Prof. LaMer states.

*Science News Letter, July 29, 1939*

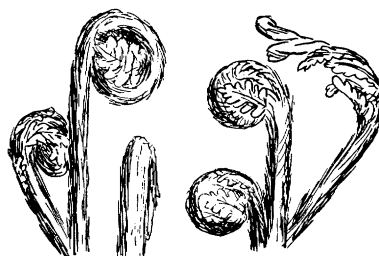
#### PHYSIOLOGY

### Window Lets Scientists Look Into Chest

**A** GLASS window in the chest which lets the scientist look inside and observe the lungs as they breathe air in and out has been devised by Dr. Robert J. Terry of Washington University at St. Louis. A moving picture has been made through the window and in describing the construction of the window (*Science*, July 14) Dr. Terry promises reports of studies made through the window.

*Science News Letter, July 29, 1939*

The Pacific Ocean covers more area than all the earth's land put together.



#### Spirals in Nature

**T**HE SPIRAL is one of the commonest patterns in living nature. It seems to be one of the easiest outlines for life to trace.

Familiar examples will occur to any one almost instantly: snailshells, the way water whirls in an eddy, the twining of a beanstalk around its support. So striking is the pattern of the first of these examples that the Greek word for a snail, *Helix*, means a spiral.

A very little additional searching will disclose the pattern, existing everywhere under the thinnest of disguises. What seem to be the concentric rings of thread in an orb-weaving spider's web are really spirals, starting at the center and gradually widening toward the outside. As a rule the spider spins two such spirals for the web, completing one and then returning to the center to start another.

Almost all common plants have the spiral pattern worked into their bodies in one place or another. Take a twig of a tree, like elm or apple. Trace a line on its bark from one leaf to the one next above it, then to the one above that, and so on. You will find you are working around the twig, in a spiral. The uncurling "fiddlehead" of a young fern leaf is another familiar plant spiral.

Watch a soaring bird, like a hawk or a buzzard, as it sails around in the air watching something below that interests it—usually a possible source of a meal. We commonly say that the bird is "circling"; but if you will wait longer and watch carefully you will see that it is really tracing a wide spiral path through the air.

The spiral seems to be the basic pattern of the universe itself, for we have learned in recent years that the marvelous astronomical patterns called spiral nebulae are really vast aggregations of stars, millions of suns like our own, or

even larger, rotating around a common center in a vast spiral dance.

The earth and all the planets, as they move about the sun, trace spirals. True, it is commonly stated for convenience that the planets revolve around the sun in elliptical paths. But the sun also is moving, so that when a planet gets to the end of its annual ellipse, it is millions of miles from where it started. The ellipse has been broken open and pulled apart—into a spiral!

*Science News Letter, July 29, 1939*

#### BIOLOGY

### Findings May Speed Making of Fat From Sugar

**A** PRACTICAL way of causing yeast cells to manufacture fat from sugar and other carbohydrates may be brought closer to realization by experiments reported by Dr. Theodore J. B. Stier of Harvard's Biological Laboratories.

Knowledge of the intracellular processes of human tissues may also be advanced markedly as a result of his studies on the allied cell-life of baker's yeast.

Particularly significant is his finding that yeasts deficient in vitamin B fall behind in production and storage of animal starch or glycogen. The tests reported are the first ever made in which yeast cells have been kept in an alcohol or sugar bath of constant concentration, an important factor if any implications are to be drawn from the animal cell.

The research dealt quantitatively with the diet of yeast cells and their manufacture of glycogen and fat. For this reason it may also help future perfection of a yeast process for making fats, first utilized by Germany during the World War.

Dr. Stier has confirmed previous findings that yeast forms fat when fed sugar or alcohol. He found that alcohol aids conversion of its stored carbohydrate to fat and that more fat is stored on a diet of both alcohol and sugar. Yeast without food or oxygen goes into suspended animation. This discovery may permit storage of yeast.

He found that the concentration of vitamin B falls if yeast is deprived of food but not oxygen. Ability to produce this deficiency may be useful experimentally. Starved yeast cells fed glucose but no oxygen, store glycogen and produce much alcohol but little fat.

On glucose plus oxygen, deficient yeast makes glycogen but a short time, whereas normal yeast on this diet continues faster production longer.

*Science News Letter, July 29, 1939*