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THE PROBLEMS OF THE PACIFIC

Scientific Men of the Western Coast Proffer
their Services to the President to Aid the
Washington Conference

By Dr. William E. Ritter,
Director of the Scripps Institution
for Biological Research,
La Jolla, California.

(Science Service)

It will be no more possible for a Washington Conference actually to solve the problems of the Pacific than it would be for a Washington conference actually to fight a war in the Pacific.

The problems of the Pacific area are located in that area and not in Washington, and their final solution can only be accomplished there.

All the conference can do is to make certain preliminary arrangements for solving the problems. These having been made, the actual tasks will have to be transferred largely to the Pacific area itself.

Just as preparedness for war in the Pacific has to be made largely in the Pacific, preparedness for peace in the Pacific will have to be largely made there, if it is to succeed. As naval stations, naval aviation bases, naval training schools, naval coaling stations, naval ships, etc., have to be located at many strategic points in the Pacific now that Pacific problems threaten war, so agencies for the peaceful solution of these problems will have to be located at strategic points in the area if it is decided to try seriously to solve the problems by peaceful rather than by military methods.

And further, just as the execution of military plans is largely in the hands of scientific experts, so the execution of peace plans if executed at all, will have to be placed largely in the hands of such experts.

I will here specify two fields of the many in which scientific cooperation is necessary:

First, the field of natural resources: Fortunately, we have at hand an example of what is practicable in the way of adjusting conflicting interests of international scope by a proper combination of political and scientific effort. That example is the Fur Seal problem of Behring Sea. Relatively insignificant as this is from the monetary standpoint, from the standpoint of fundamental principles involved in problems of raw material it is vastly significant.

The international treaty by which the seals are protected is working admirably for it is resulting in a regular increase in the size of the herds and is securing regularly increasing benefits to the nations participating so far as they elect to avail themselves of these benefits. These nations are, as is well known, the United States, Canada, Japan and Russia.

But the treaty expires in 1926. Steps are already being taken for its renewal. It undoubtedly should be not only renewed but extended in scope both as to countries and kinds of useful animals affected. But this could be wisely done only on the basis of much scientific knowledge yet to be obtained.

The fur seal question is a stepping stone to the widest possible treatment of Pacific problems of raw material which are international in scope and depend for their solution upon combined political and scientific action.

Second. The field of human population: Staggeringly vast and complex as this is, there can be no question that it must be faced in the true spirit of science and of justice, if progress in world civilization is to be continued, for all far seeing students of life in general and human life in particular are becoming convinced that upon its solution such continuance is absolutely dependent.

Slowly but surely is the stupendous meaning of the fact dawning upon men's minds that geographically the resources of the earth are at last demonstrated, inventoried, and almost wholly appropriated by man.

The habitat of civilized humanity has finally become the whole earth. For all future time increase of numbers will have to be taken care of within the limits of civilizations already existing and cannot overflow into vacant or heathen lands.

Even one or a few world conquering nations could not thereby escape permanently from the operation of the principles here at work for in a few centuries at most the conquerors would be turned back, economically, upon themselves to begin their own self consumption.

Data concerning world population and world raw material are already sufficient to demonstrate the general trend above indicated. It remains for mankind to become actively conscious of that trend; to possess himself of more details of the conditions; and then to solve the problem of how much the numbers of world population must be limited in order that progress of world civilization may be unlimited. Unlimited growth in both world population and world civilization is now seen to be impossible.

This is the world's new and overwhelming problem brought to being in the Pacific by the cosmological fact that peopling of the earth by the human species began in Asia, moved westward on and on, and, completing the circuit, has finally come upon the peoples of the home continent, these being more numerous than ever before and still full of life, strength, lofty purpose and unconquerable determination.

Will mankind be able to solve the problem? The Washington Conference is the first serious move toward a solution.

That science may be brought to the aid of the coming Conference on the limitation of armament and the problems of the Pacific is assured by two resolutions passed by the Pacific Division of the American Association for the Advancement of Science at its meeting in Berkeley California last August. One of these endorsed the idea of the Conference. The other offered the services of the scientists to the President of the United States for solving such Pacific problems as may require expert scientific knowledge.

Resolutions are apt to be about the cheapest, most meaningless acts of public assemblies. Were these of this character? They certainly were intended to be otherwise.

They had two aims. One was generally informative. It would let the government and people of the United States know, so far as it might, where the scientists thus expressing themselves stand relative to the purposes of the Conference. The hope was that the resolutions would do something toward correcting the belief, now too prevalent, that science is in effect more favorable than unfavorable to the militaristic type of international dealing. The other aim was more concrete. It would make scientific knowledge and research, and technical skill, positive factors in solving international problems by intelligence, which usually follows the way of peace, instead of by emotion which usually follows the way of war.

NEW CHEMICAL TEST
DETECTS WATERED MILK

(By Science Service)

Release Tuesday, October 25, 1921.

Washington, October 24.- A new chemical test that will tell with great accuracy the amount of water that has been added to milk has been perfected and recommended as a standard test for food chemists of health departments and other agencies, Julius Horvet, of St. Paul, Minn., announced here today at the annual meeting of the American Association of Official Agricultural Chemists.

By utilizing the fact that the addition of water to milk raises its freezing point, the chemists will be able to detect additions as low as three per cent.

"Certain types of milk may contain as high as 20 per cent. or even more actual added water without yielding positive indications of adulteration by means of any heretofore applied method of examination," Mr. Horvet said in explaining the new cryoscopic test.

During the past year, collaborators in all parts of the country have been making tests on milk from different breeds of cows to determine the utility of the freezing point method. The thermometers used have to be extremely accurate as 10 per cent. water in the milk changes the freezing point only fifteen hundredths of a degree. The thermometers are standardized by determining their reading when placed in freezing distilled water or solutions of very pure sugar.

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NEWS OF THE STARS
Three Swarms of Meteors in November.

By Isabel M. Lewis
of the U. S. Naval Observatory
(Science Service)

Meteors generally appear in greater numbers in the fall than at any other time of year and the latter half of November is a particularly favorable time to watch for meteoric displays.

Three periodic swarms of meteors are scheduled to appear yearly in November. These are the Taurids, the Leonids, and the Andromedes named in each instance for the constellation in which the radiant point is located. This is the point from which the paths of the various members of the swarm appear to radiate and it shows the general direction in space from which the meteors are coming.

The Taurids are likely to appear any time during November but their greatest display is scheduled for November 21.

The Leonids appear any time between November 9 and 20 but are seen in greatest numbers on the 14 and 15th. They follow in the orbit of Tempel's Comet of 1866 which has a period of thirty-three years.

The Andromedes appear between November 20 and 30 but their greatest display occurs between the 20 and 23th. It is believed that the Andromedes are the remains of Biela's Lost Comet and for this reason they are often called Bielids. They appear in exceptionally great numbers every thirteen years. Remarkable displays of Bielids took place in 1872, 1885 and 1898.

When a swarm of meteors is quite evenly distributed around its orbit the displays are equally great every year and occurs at the time the earth's path intersects the path of the swarm. When the meteors are "bunched" at certain points in the orbit as is the case with the Leonids and Andromedes exceptionally great displays will occur in certain years. Dense showers of Leonids occurred in 1833 and 1866 and to a less degree between 1898 and 1901.

The Leonids appear in the early morning hours before sunrise and so the earth meets them "head on". As a result they are remarkable for their rapid flights as well as for their long vivid trails and intense blue or greenish light.

The Andromedes or Bielids, on the other hand, appear in the early evening hours and so have to overtake the earth in its orbit. Consequently they have a slow motion relative to the earth. They are reddish in color with short trails that soon disappear.

The Taurids come midway between the Leonids and Bielids being visible around midnight.

On any clear evening when the moon is absent one may usually see two or three meteors in the course of an evening but if a dozen or so should be seen in a single hour one may be assured he is passing through a swarm of considerable density. Since the field of view of a single observer is necessarily limited he sees but a small portion of the total number that enters the earth's atmosphere.

Meteors or shooting stars traveling in swarms are believed to be in every instance the result of the disintegration of comets. That is they are mere cometary dust. They are entirely distinct in origin and nature from the fireballs or meteorites that strike the earth's surface and whose advent is usually heralded with a blinding flash of light and a deafening explosion. Only in one or two instances has a meteorite appeared with a swarm of meteors.

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(Editors: October 30 to Nov. 5 is Cancer Week. You have undoubtedly received from medical and health organizations interested in telling the public of the dangers of cancer sufficient and trustworthy news stories on the phases of cancer known to the usual physician. This story, however, tells the latest development in the study of cancer in mice and men.)

PREDISPOSITION TO CANCER INHERITABLE BY MAN

(By Science Service)

Studies of 12,000 mice who have lived during the past fourteen years and an investigation into the histories of a large number of American families have led two leading scientists to come to the conclusion that cancer, the disease that kills one out of every ten people who reach the age of 40, is most likely to occur in those mice and men whose ancestors had cancer.

"The cancer rate of any family of mice is a definite characteristic of that family and the hereditary tendency to cancer may be expressed in a quantitative manner," says Dr. Leo Loeb, of the Department of Comparative Pathology, Washington University of St. Louis, Missouri, as a result of his observation of the mice that he has been carefully breeding and raising in his laboratory.

"There is clear evidence for the inheritance of a predisposition to the formation of cancer in man," declares Dr. D. C. Little of the Eugenics Record Office of the Carnegie Institution of Washington at Cold Spring Harbor, N. Y. after the tabulation of family histories on file at that office, considering all types of malignant growths as cancers.

Dr. Loeb kept certain strains of mice separated and let them raise generation after generation of their stock. Some of these families were practically free from cancer and for generation after generation they continued that way. In other lines on the contrary, mice died of cancer, and generally this was found to be a persistent characteristic.

The age at which the cancers develop is characteristic of the individual strains as well as the percentage of mice that were so affected, Dr. Loeb finds.

"The evidence makes it at least probable that the conditions in man are similar to those in mice," he says. "In the case of man, also, in all probability, an intensity factor is hereditarily transmitted, which however in many cases has been equalized among different families as a result of long continued interbreeding."

Discussing the increase in cancer that has caused some alarm in the past few years, Dr. Loeb considers that it is due not merely to improved diagnosis, but that the dominance of parents with a tendency to a higher tumor rate may have much to do with the increase in their offspring.

"The fact of inheritance of cancer in man is clear," says Dr. Little, who points out that the factors that control the inheritance need further study. Cancer is not inherited in the same way as blood diseases, and only the disposition to have the cancer is carried over to future generations. There should be no thought of disgrace of hereditary taint associated with cancer, but those whose families have suffered with this disease should be on the watch for any early symptoms of cancer such as the formation of painless lumps or local growths. Caught early cancers can often be safely and easily removed by surgical treatment or by the use of radium and X-ray.

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DAHLIA ROOT SYRUP
WILL SWEETEN SODAS

(By Science Service)

Washington, October 12. The roots of the dahlia, the beautiful flower that is now blooming at its best, will provide the syrup that will sweeten many fountain drinks, preserves, and desserts of the future, according to Dr. W. E. Safford of the Bureau of Plant Industry of the Department of Agriculture.

The fleshy roots of this flower are not starchy like potatoes but they contain a substance which is known chemically as inulin. From this, a sugar sixty per cent. sweeter than cane sugar can be obtained by the chemist. This sugar, known as levulose or fructose, has heretofore been very expensive and of little commercial importance.

Dr. R. F. Jackson of the United States Bureau of Standards has been making experiments with a view to simplifying the methods of extracting the sugar from the inulin of Dahlia roots. The sugar crystallizes with great difficulty and the expense in the past, has been chiefly due to the fact that it was necessary to use much alcohol in eliminating the water.

For the tests a large supply of roots was furnished by Richard Vincent of White Marsh, Maryland, President of the American Dahlia Society, and from Dr. Jackson's results it is evident that the dahlia has an important commercial future ahead of it as a sugar plant. Already a company has been formed to cultivate thousands of acres of Dahlias, the roots of which will be used as a source of levulose sugar.

Attempts have been frequently made to use dahlia roots as food for animals but, owing to their unpleasant taste, they are rejected both by cattle and pigs.

"It is a very wise Dahlia that knows its own father," says Dr. Safford, who has looked into the history of the dahlia family. "Very few dahlias indeed even know their own mothers, for the species which occurred in nature, after having fallen into the hands of horticulturists and plant breeders, have been crossed and re-crossed to such an extent that it is almost impossible to trace their ancestry. There seems to be an impression that the first dahlias to be cultivated in Europe and America were single-flowered forms. This is a mistake; the very first species to be described and figured, *Dahlia pinnata*, was a form with a duplex or double head. It was propagated in the Royal Garden at Madrid from roots of Mexican origin, and was named by the botanist Cavanilles, in 1791, in honor of Andreas Dahl, a distinguished pupil of Linnaeus."

The earliest descriptions of the dahlia were made about 1570 by Francisco Hernandez, a Spanish physician who was sent by Philip II to study the resources of New Spain, and observed many forms of dahlias adorning the gardens of the Mexicans. It is interesting to note that at that early day types that are usually held to be modern were already developed. The Dahlia was known to the Aztecs under the Nahuatl name *Acocoxochitl*, which may be translated "Water-tube-flower." This name was applied to them on account of their hollow jointed stems bearing a certain resemblance to canes used by the Mexicans for water pipes.

(Editors: These shorts will come in handy as fillers, or will make a feature every day.)

DO YOU KNOW THAT --

Majagua wood, grown in Cuba, is a promising substitute for ash as a material for baseball bats.

Before anything was known about the laws of gravitation, it was commonly believed, on the authority of Aristotle, that every body had a "natural" place, and that its normal state was one of rest in that place. Thus a stone was supposed to sink in water because its natural place was at the bottom of the water.

A frothy substance found on plants, variously known as "frog spit," "cuckoo spit" and "toad spit," is exuded by the larva of the spittle insect, which lives under the mass of "spit." The latter consists of juice sucked from the plants.

The Dead Sea, in Palestine, lies 1292 feet below sea level. At a depth of 1,000 feet the water contains 27 per cent of solid substances.

DO YOU KNOW THAT --

The transporting power of flowing water varies as the sixth power of the velocity. Thus if the velocity of the water is doubled, its transporting power is increased sixty-four fold. This explains the effects of a river in flood in carrying all things before it.

When tobacco first came into use in Europe it was generally regarded as a cure for diseases and a protection against catching the plague, etc.

Pitcher plants catch in their "pitchers" not only insects and spiders in immense numbers but also, occasionally, mollusks and crustaceans and even tree frogs and lizards. Some species of insect are adapted for living with impunity in the pitchers, where they feed on the remains of the captured insects.

The United States has one air port for every 14,000 square miles of territory. The British Isles have one for 1,200 square miles.

DO YOU KNOW THAT --

The old practice of drawing a chalk line to keep off ants is effective on an inverted, vertical or considerably sloping surface. The loose particles give way under the ants' feet and they drop to the ground.

The inner bark of the lacebark tree, growing in the West Indies, separates after maceration in water into layers resembling coarse lace. Frills and ruffles made of it were sent from Jamaica as a present to Charles II. The bark is used in making ropes and whips.

Methods of regulating the humidity of the air in buildings, especially in factories where moisture plays an important part in various industrial processes, constitute a branch of engineering known as "air-conditioning."

Museums devoted to agriculture are very scarce. There are such institutions in Berlin, Budapest and Buenos Aires, and there was once a large one belonging to the U.S. Department of Agriculture, in Washington, but it was abolished many years ago.

DO YOU KNOW THAT --

The color of goldfish is modified by changing the amount of mineral substances in the water.

Seven eights of the residential building permits issued in four California cities were for houses within three blocks of the street car lines.

A new world's record for speed in sinking mining shafts was made at Eureka, Utah recently when a shaft of three compartments, each about 4 feet square, was sunk $427\frac{1}{2}$ feet in 31 working days.

The most rapidly moving glacier of the Alps, the Mer de Glace, travels at the rate of $35\frac{1}{2}$ inches a day. The slowest Alpine glaciers travel less than an inch a day. Much faster movements are found in the polar regions. The Upernivik glacier, in Greenland, travels 99 feet a day near the end where it reaches the sea.

DO YOU KNOW THAT --

The electric railways of the United States carry more than 14,000,000,000 passengers annually; ten times as many as are carried by the steam railways.

"Florida arrowroot" is made from species of Zamia, or "coontie," growing wild in southern Florida. This plant supplied the Seminole Indians with food during their long wars with the United States.

Cinders have been found useful in English road making for preventing clay of the sub-base of the road rising to the surface.

The neighborhood of Moodus, Connecticut, used to be celebrated for subterranean sounds known as "Moodus noises." Sometimes eight or ten reports, like the firing of small arms, were heard in 5 minutes, and again the noise was like cannonading or thunder. Slight earthquakes were probably the cause.

DO YOU KNOW THAT --

A single star cluster, Messier 13, in the constellation of Hercules, is believed to contain at least 50,000 stars brighter than the sun, besides hundreds of thousands of lesser luminaries.

The dingo, or wild dog of Australia, neither barks nor growls in its wild state, but learns to do both when tamed and placed among domestic dogs. The Australian kelpies, the most prized of cattle dogs, which contain a strain of dingo blood, are trained never to bark.

A hand-operated tram running on a rail suspended from the cornice of a building is a device used for window cleaning of buildings of large window area. This device, which also can be used for painting replaces more expensive scaffolding.

To commemorate the bicentenary of the birth of Gilbert White, author of "The Natural History of Selborne," a complete scientific survey of the parish made famous by that work is now being carried out.