

# THE SCIENCE NEWS-LETTER

*A Weekly Summary of Current Science*

EDITED BY WATSON DAVIS

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## RASMUSSEN STARTS ON GREAT JOURNEY ACROSS ARCTIC WASTES OF CANADA

By Knud Rasmussen,  
Leader, Danish Arctic Expedition,  
Now in Far North.

(Rasmussen and his party are now beginning a long sledge journey across the northern-most part of Canada with Alaska and Siberia as their objective. They are exploring the primitive people and customs as well as the geography and history of that frigid region. This article was written by Rasmussen in the Arctic and sent back to civilization under difficulties.)

Arviligjuaq, Pelly Bay, April 20. - At last the great journey has commenced, and every morning I feel like the poor man at the table of Dives. The North West passage is as a great cornucopia of arctic happenings throughout a century, and he who places his footprints here or leaves traces of his sledge in the virgin snow involuntarily feels that he is following in footprints that impose obligations.

Years ago, however, all the great geographical problems have been solved. You travel now along coasts already mapped and known. The inhabitants, on the other hand, the brave Eskimos, fighting their manly fight for existence in these rough and windy regions, they constitute the great unknown I seek; here my discoveries lie hidden in mystic minds, the depths of which my knowledge of Greenlandic enables me to penetrate.

Would that I then might succeed in recovering, for the science nearest my heart, some new land, so that the unappeasable cravings, I, for the time being, am a subject to, may not in vain have sharpened all my senses for observations and experiences to come.

In the following I am endeavoring quite simply to tell of the beginning of the journey. To me it appears that I have lost the power of writing, but then this is scarcely the spot where an artistic style can be cultivated. This wild country, these weather-beaten people living, practically speaking, in a stone-age, make you short-breathed - make you feel that life is too short for those who want to see the world we are born in, and so you lack that peace of mind so necessary when something has to be worked out in detail. That peace of mind I trust will be mine when the journey is over, and therefore, I hope that my readers will excuse my resorting for the present to the conventional, impersonal style of the report. The man who experiences cannot write!

And I shall experience the discoveries of a whole century in two short winters.

From this place - at no distance from the magnetic North pole \* I am taking the opportunity of Helge Bangsted's return to "Blaesebaelgen" ("Windy Corner") to supplement my last report from Repulse Bay with some hints of our most interesting experiences since leaving Lyon Inlet.

#### At Repulse Bay,

Repulse Bay greeted the expedition with its usual snowstorms. Although we had gradually learnt that those who seek this windy country cannot consider wind and weather, the northern storms were in this case of such a character that it was impossible for us to make a move, and therefore we enjoyed the Hudson Bay Company station's stove and hospitality with an absolutely clear conscience until the storm abated and gave us a beautiful and fine start for the Rae Isthmus. Our long Hudson Bay sledges, the runners of which had, according to custom, been provided with sheetings of kneaded peat covered with ice, proved excellent for our heavy loads, and without much difficulty our dogs trotted cross country through stream-beds and small valleys bounded by low stubbly rocks.

The peat-sheeting takes much time with its everlasting repairs whenever stones are encountered; also time and petroleum are wasted when every morning, and preferably at midday too, new icesheeting has to be fitted. And this work makes the fingers pretty cold, be assured, in such gusty weather. The advantages, however, outweigh the inconvenience, for even a few dogs can drag an enormous load with but little difficulty and this means a great saving of dog-power.

The going was good, firm snow, no stones, but, of course, drifting snow with a cutting breeze from the north dead against us. We economized the strength of the dogs as far as possible and were content with short stages daily of about 20 miles in 5 to 6 hours.

#### A Severe Storm

Finally, drifting snow had become a storm against which we could not drive the dogs, therefore we had to lie by and take refuge in the snow-hut. Besides petroleum we also had blubber, and Arnarulunguaq, one of our Eskimo helpers, dried our clothes over the blubber lamp, while we all enjoyed the heat.

The next day we again made a start in the teeth of the usual gale with the temperature at 35 degrees below zero. It had gradually succeeded in making our noses raw, and we were scarcely in the humor to enjoy the landscape that otherwise was inviting with many lakes and small rocks. Almost everywhere in the river valleys and where the lakes narrowed there were numbers of small cairns that at the fords were built as reindeer scares. We passed Rae's North Pole Lake that is surrounded by rocks 300 to 450 feet in height. The landscape which up to that time had been very stony became suddenly almost luxuriant in appearance. Thin grass and willows projected through the snow.

The reindeer had already begun their spring wandering towards the north. Five were seen on a lake. At noon we left the river we had hitherto followed almost straight north, and our course became northwest. From this place that is called Saputit (Salmon Dams), where the Eskimos, especially in former times,

had great salmon fisheries, it is but 6 miles to Committee Bay. Scarcely had we left the river bed before the landscape caused us considerable trouble. It became hilly, and here and there sandy plains showed through the snow. Moreover, we had to go up through various rocky passes that caused great difficulties owing to our heavy loads. Frequently we all had to take one sledge at a time, therefore we had to content ourselves with short journeys each day in the teeth of the usual cutting wind and a temperature of 45 degrees below zero.

#### A Rocky Pass

At the mountain Kildlavait, a rocky pass took us nearly the whole day to cross. The ice-sheeting, that is so economical of dog strength on snow, cracks whenever it touches stone. Therefore our loads had to be transported on our backs through the pass, whereupon we laboriously had to spread reindeer skin on the stones to enable us to drag the sledges over. This was, however, better than carrying them, for they weigh with mud and 18 feet of ice-sheeting about a thousand pounds.

Animals had not been especially abundant. We saw a couple of ravens, tracks of wolves, wolverines and many foxes, many reindeer tracks and one single trace of a hare. The hare is a rarity in these regions.

We found a tent-ring built of huge stones and our two companions, Taparte and Anarqaq, who are acquainted with the country, say that these were erected by primeval settlers called Tunit.

For a couple of days we had existed on pemmican and now we all longed for fresh meat; therefore we decided on a reindeer hunt and bagged ten.

In a violent snow storm we met human beings for the first time. We had just decided that it would be unwise to break camp when Anarqaq, who was repairing our snow-hut, suddenly removed the snow blocks covering the entrance shouting that he had seen human beings.

#### Strangers Approach

In these regions beyond the pale of law and justice the Eskimos regard it as a serious matter to meet strangers, never knowing whether they are friends or foes. The feuds existing between the tribes, among themselves, and with the Indians are still fresh in their memory, and both Anarqaq and Taparte seemed rather awe-stricken. I scarcely think I have ever dressed more quickly to dash out into a snow storm. Two men, armed to the teeth with long knives and spears, slowly approached the snow-hut stopping at a distance of about 200 yards.

I advanced toward them to prove that we were friends. They seemed to be surprised to meet white men in these regions, more so when I addressed them in their own language.

I said, "Lay down your weapons, we come in peace only to visit your country." The elder of the men replied, "We are but ordinary folk whom you need not fear. Our snow-hut is quite near and seeing your snow-hut at a spot where we know none of our tribe lived, we came to find out who you were. Now you have spoken our weapons are not intended for you. Here we are always armed when we approach strangers we do not know."

### Strangers Become Hosts

Then we went to our snow-hut and the two men who, to begin with were shy and embarrassed, soon smiled and cheered up. They were father and son. The father's name was Orpijaglik (He with the Willow-Wand), the son's was Kanajok (The Bullhead). They recounted that last spring while crossing a stream they lost their guns. They had crossed on an ice-float, were caught in the current, sucked under the ice and lost all they had. On this occasion Willow-Wand had lost a son; he had fallen under the ice and was drowned.

The father imagined that he himself had been unconscious from midday until evening. He found himself washed up on the coast, saved by one of his "helping spirits". He searched for his son, found him near the spot where he himself had been washed ashore, carried him up and began to say charms over him. He had hopes of bringing him back to life when his wife just then came from the tents that lay in the vicinity. That very day she was ill and therefore considered impure by the "helping spirits", and the charms consequently lost their power.

Now they were on their way to Repulse Bay with about 75 fox skins to buy new guns.

### Meeting New People

In spite of the snow storm we decided to break camp and move to their snow-huts. In this part of the world you are eager to meet new people; therefore we started in the worst sort of weather and after three terrible hours, during which we struggled through storm and drifting snow, we reached Willow-Wand's camp. They lived in two snow-huts built together, and despite the weather they were warm and comfortable.

Three blubber lamps warmed the huts, and the plank beds were covered with fine new reindeer skins. On a side bench lay salmon and reindeer meat to thaw. They were people who evidently travelled comfortably although they had but few dogs, only four to eight persons.

The reception was very hearty. Frozen salmon and dried venison were laid before us while the men set about building a snow-hut. This was a special form of politeness they wished to show us. The wind blew so violently that they first of all had to erect a great protective wall before they could possibly build the snow-hut proper. The builder was Willow-Wand's eldest son, the fine, stout Nivtajok (The Glade).

He handled the great heavy blocks of snow as though playing a game, and in the course of an hour the white temple was erected. Festally white and pure of line! Now we not only had a shelter, but when the blubber lamp was lighted and our skins and sleeping bags were laid out, it was a really comfortable arctic winter house in which we spent eight interesting days.

Willow-Wand proved soon to be a most interesting man, quite at home in the traditions of his tribe, being not only intelligent and high spirited but also possessing a lively sense of humor.

A first class hunter, perhaps the best among the Arviligjuarmuit. A strong and sure bowman and one of the quickest in a kayak in pursuit of reindeer flocks at the fords. These Eskimos never use their kayaks or hunting canoes at sea, only on the lakes where the reindeer are pursued while swimming and killed with the long, sharp reindeer harpoon or lance.

#### Exchange of Charms

Our packings had been left behind at our old camp to which the going was inconceivably bad on our peat-sheeted sledges. Therefore it took us several days to transport it down to our new camp, and as we hunted reindeer together to obtain food for the dogs, we had ample opportunity of cooperating with Willow-Wand. We went over about one hundred legends, and I succeeded in obtaining several rare old magic songs from him. I paid him for them by recounting those I had learned from other tribes.

These magic songs are otherwise extremely difficult to get hold of because they are owned and employed by one person only. When once they have been recounted they lose their power. Either they have to be purchased by means of valuable objects or by other magic songs. Thus I was told charms to recite before the sledge when it is heavy to make it run lightly; charms that insure a catch for men living in strange countries; and charms to say in the morning before dressing to bring luck during the day - a heathen morning prayer.

(Continued in next week's News Letter)  
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#### BACTERIA RUN ENGINES

By Dr. Edwin E. Slosson.

In India where the elephant was first tamed for

In India where the elephant was first tamed for power, bacteria are now being cultivated for the same purpose. This descent in the course of centuries from the largest to the littlest of living creatures is likely to prove a gain in efficiency for the microbe will feed on sawdust and does not even need air to breathe.

The rodlet bacteria that are being colonized for the running of dynamos thrive best in dark airtight tanks of sewer sludge and sawdust kept at a temperature of 95 degrees Fahrenheit. Under these conditions they multiply amazingly and set about converting the septic slush into harmless and indeed useful compounds. One of the products of their activity is acetic acid which might be used for vinegar - if you did not know where it came from. The fermentation of the cellulose of the woody stuff gives also gases, chiefly carbon dioxide and methane. The former could be used for charging soda-water if it were worth while. The methane is, however, of real value since it is the best of gases for motor fuel or for heating or with a Welsbach mantle for lighting. Natural gas from wells is about nine-tenths methane.

The method of making methane by fermentation with the aid of the airless bacteria is not new. In fact it was first found bubbling up from the decaying vegetable matter in stagnant pools and was formerly called "marsh-gas". If you

look in one of the old text-books of chemistry, in the days when they had space for such interesting little items, you will find a picture of a boy collecting the bubbles of the escaping gas with an inverted funnel and lighting it. But our grandfathers, being impractical and imprudent creatures, although fortunately for us curious in nature's ways, thought of marsh gas only as a plaything and never dreamed of setting it to work as we do nowadays.

In the Ruhr region of Germany a large municipal sewage plant has been constructed so as to save the gases given off from the fermentation of the sludge by putting concrete hoods over the digestion tanks. This gas contains from 65 to 90 per cent of methane and sometimes hydrogen up to ten per cent. The gas is better than the ordinary city gas. In fact, it has about twice the heating value per cubic foot of that furnished by the gas plant of Essen. From the Ruhr experience it is estimated that by employing the proper bacteria a city of 100,000 inhabitants could get eleven million cubic feet of combustible gas a year out of its sewage sludge.

A Dutch manufacturer of strawboard was much annoyed when the government ordered that the waste liquor from the wood pulp should not be allowed to flow into the river but should be run into storage tanks for settling and filtration. It seemed a bother and expense to the manufacturer, but he found that if the tank were inoculated with the proper bacteria and kept warm and closed a gas could be collected from it of twice the volume of the liquid. This gas contained from 70 to 77 per cent of methane; the rest being carbon dioxide. The methane was run into gas-holders and used in internal-combustion engines for running dynamos that furnished light and power for the works and the surplus gas was sold to the local gas works which mixed it with 25 per cent of coal gas and used it for the town. It has been found possible in India to get by fermenting banana stems and skins a gas containing 81 per cent of methane and 14 per cent hydrogen.

It has often happened that the government, in suppressing a public nuisance, has forced a factory to make a profit out of a waste product. It has come to be a proverb in engineering circles that "Wherever there's a nuisance there's a waste, and wherever there's a waste there's wealth."

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#### MICE LEARN MEANING OF THE DINNER BELL

White mice have been taught the meaning of the dinner bell. What is more, they have been able to transmit some sense of its significance to their offspring so that they may be more easily taught to jump for the table when the bell rings. The experiments are told of in an article in "Science" by Prof. Ivan P. Pawlow, the distinguished Russian physiologist who visited this country this summer. They are important in that they testify on a much-disputed point in practical eugenics, whether or not acquired ability may be inherited.

The first generation of white mice required 300 lessons before they realized that the ringing of an electric bell meant that dinner was ready. After that they quickly trotted to the feeding place when they heard it tinkle. Their children caught on to the trick after only 100 lessons, while their offspring in

turn learned after only 30. The fifth generation had apparently so well inherited the tendency to "obey that impulse" that after only five trials they were ready and waiting for the mousy equivalent of boarding house hash immediately after the bell rang.

Professor Pawlow says he hopes future generations will know the meaning of an electric bell just as surely as a new-born chick knows the meaning of a fragment of grain. In the case of the chick, the instinct, which he terms a "conditioned reflex", is inherited. These recent experiments and others which have convinced the professor that all human activity is based upon "conditioned reflexes" are used by him as basis for the opinion not only that such "instincts" may be acquired and inherited, but that their study belongs to physiology rather than to psychology. A study of the physiology of the brain is, he asserts, the best way to a knowledge of the laws of the subjective world.

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#### METEORIC SHOWERS

By Isabel M. Lewis, of  
U.S. Naval Observatory

Every year from about November 13 to 27 meteors in unusual numbers may be expected due to the appearance of two periodic showers, the Leonids and the Andromedes, named for the constellations from which they appear to radiate.

To see the Leonids one must be up before sunrise about this time and look in the general direction of "The Sickle" in Leo which will be seen high in the eastern heavens at five o'clock in the morning. It is not possible to predict how great a display one will see because the intensity of the swarm varies from year to year. The Leonids are traveling in an orbit that crosses the earth's orbit at a point which our planet passes through about November 15 each year. The meteors, which are merely the dust of a disintegrated comet, are not evenly distributed around the orbit but are more or less bunched. Every thirty-three years exceptionally dense swarms of Leonids are to be expected. Such swarms appeared in 1833 and 1866 and would, doubtless, have occurred in 1900 if the great planet Jupiter, the mischief-maker of the solar system, had not chanced to be in a position to greatly perturb their motion and throw them out of their course.

The Leonids are noted for their rapid motion relative to the earth, their intense blue or bluish-green color and their brilliant, persistent trails. In the early morning hours we are on the "fore" side of the earth as it advances in its orbit and so we meet the Leonids "head on". This accounts for their rapid motion with respect to the earth. In the evening hours we are on the "following" side of the earth and so the meteors we meet then are the ones that overtake the earth. As a result, swarms of meteors that are met in the early evening hours are characterized by sluggish motions, reddish color and trails that soon fade away. Such are the Andromedes that appear in greatest numbers about November 24 but which may be seen any time between the seventeenth and

the twenty-seventh. They can be observed only in the early part of the night as they come from the direction of the constellation of Andromeda which will be found a little to the east of the meridian in the early evening in the latter part of November. That the meteors appear to radiate from a definite point in the heavens which is called their "radiant" is simply a matter of perspective. In reality all meteors are moving in nearly parallel lines in their orbits, as they cross the orbit of the earth.

The minute, dust-like particles of which a swarm of meteors consists do not in general weigh individually as much as a single grain. They would appear merely as a cloud of dust reflecting the sunlight if we could view them outside of our own atmosphere. It is only the friction produced by their passage through the earth's atmosphere that raises them to luminescence.

These shooting stars, as they are sometimes misleadingly called, are always noiseless in their flight. In this respect they differ from the large meteorites or fire-balls that rush through our atmosphere accompanied by loud explosions and intensely brilliant flashes of light, finally falling to the surface in small fragments or large masses weighing a number of pounds or even tons. The small particles of which these periodic swarms consist are completely consumed by friction soon after entering the earth's atmosphere. It is probable, however, that both the noiseless meteors, or shooting stars, and the noisy meteorites have a common origin and are but fragments of comets that have gradually become disintegrated and scattered along their orbits.

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#### EUROPEAN ASTRONOMERS SEE INVISIBLE COMET

A comet that cannot even be seen with a telescope from any part of the United States has been reported to the Harvard College Observatory from the Central Bureau of Astronomical Telegrams at Copenhagen. The comet was reported October 14 some distance south of the celestial equator and hustling southwards at the rate of nearly five degrees a day. It was never visible to the naked eye and is now below the southern horizon at any point in the United States.

#### STEALING A SHOOTING STAR

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Making away with a red-hot stove has always been thought to be the high water mark of thievery, but a case even more remarkable is on record where a man made away with a fallen meteorite or shooting star. This mass of iron weighed more than fifteen tons and was discovered by a man strolling on woodland near his home. Working at night, he and his fifteen year old son managed to unearth the meteorite, load it on a specially constructed stoneboat, and dragged it home with the expectation of selling it. But the person on whose land it had fallen, finally learning of what was going on, brought suit and recovered his celestial waif. It may now be seen in the American Museum of Natural History in New York, where it is known as the Willamette meteorite.  
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## ASSOCIATION OF HIGH SCHOOL NATURAL HISTORY CLUBS FORMED

As the result of the interest shown in the Science Sections of the National Educational Association at its meeting held in California last Summer, a cooperative movement in High School science has been launched. This takes the form of an association of science clubs gathered together for the purpose of exchanging information, furnishing news and gathering notes and specimens for exchange with other schools in the organization.

Through the medium of the Curator-Secretary, schools desiring specimens in Natural History may apply and be informed what schools have the desired specimens for exchange or for sale.

Since the association membership already includes school clubs reaching from the Atlantic seaboard to the Hawaiian Islands the advantages of membership are readily seen. Applications for information are also coming in from foreign countries.

Bulletins on subjects of general scientific interest are published by the Association. The September bulletin has for its subject "The Interrelation of Plants and Insects". The example chosen is the story of the fertilization of the Smyrna fig by the insect *Blastophaga grossorum*. The November bulletin will be on the subject of the fossil deposits in the asphalt beds of La Brea Rancho, California.

The annual dues in the Association are \$2.00 per club. Further information with application blanks and exchange cards may be had by applying to the Secretary, Miss Mabel Lockhart, Galileo High School, San Francisco.

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## CLIMATE DOES VARY WEATHER CHIEF SAYS

The Oldest Inhabitant may be right when he proclaims that "the weather wasn't like this when I was a boy". No less a scientific authority than Dr. Charles F. Marvin, chief of the U.S. Weather Bureau, in the course of a technical report on climatic changes willingly gives the older generation its due and says in effect that science has in a way backed up some of its claims about a changing climate.

But these changes, Dr. Marvin says, are not permanent; merely "marked abnormalities which trend steadily in one direction and for many years away from that unchanging constant thing we may call the absolute normal climate". These trends may be as long as from 50 to 100 years in duration.

Rainfall records in New England going back nearly 200 years are given. These show that beginning about 1750 there was a deficit of rainfall for nearly 100 years, as compared with the whole record, during which period the precipitation averaged several inches a year less than it did nearly three generations before. Then the tide turned and an increase of about 10 per cent in New England rainfall is noted, culminating apparently in 1905, since which date there has been an irregular decrease. A somewhat similar change although of an opposite character is noted also in Padua, Italy, where records go back to 1720.

As the result of his mathematical study of these records, Dr. Marvin says he is inclined to believe that fluctuations in climate have occurred and that minor changes can and do take place over restricted areas for relatively long periods of time.

"The evidence submitted will", he continues, "tend to justify the deep-seated conviction in the minds of a great many keen observers of mature years that weather conditions at the present time differ in material ways from corresponding conditions easily within their memory. Our fathers and grandfathers probably entertained like convictions and while memory and personal impressions cannot be accepted as safe guides, it is probably wrong to assume that such generally prevalent convictions are fictions of the imagination.

"There may be some foundation of fact in the ideas of the oldest inhabitants on the subject."

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#### TABLOID BOOK REVIEW

CIVILIZATION AND THE MICROBE , By Dr. Arthur I. Kendall, dean of Medical School, Northwestern University. Houghton Mifflin Company, Boston, Mass. \$2.50

Dr. Kendall believes in germs and appreciates both their faults and virtues. His daughter, Alice, when first introduced to bacteriology got the impression of a world teeming with deadly germs eager to infect mankind. Her father wrote a book for her, "Civilization and the Microbe": Those who fear germs should read it and find out what likeable, helpful creatures some of them are.

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VITAMIN NOT IN MILK IF COWS LACK GREENS

Experiments at Cornell University during a period of fifty weeks have further confirmed the presence of the antiscorbutic vitamin in milk from cows on green pasture and its practical absence when the animals receive only dry feed, Prof. G.W. Cavanaugh told the National Academy of Sciences meeting at Ithaca.

This vitamin was found to be preserved with no apparent diminution of potency in milk dried by the spray process. Dried milk made during the summer and fed to guinea pigs during the winter protected them against scurvy. Fresh milk produced in the winter and dried milk made from it failed to protect the animals against scurvy.

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THE RAINIEST TIME OF DAY

The late afternoon and early evening hours are the wettest of the day. Investigation by Weather Bureau observers in different parts of this country show that in some sections twice as much rain falls on the average between 5 and 8 P.M., as does between 9 A.M. and noon. This peculiarity of the weather is more pronounced in warm than in cool weather, and is due to the rising temperature during the forenoon which enables the atmosphere to hold an increasing amount of water vapor, a condition which is reversed in the late hours of the day and complicated also by the frequency of summer thunderstorms during those hours.

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