

## Why a High Brow May Not Always Be a Sign of Great Intelligence

How a Scientific Study of the Various Types of Human Skulls Solves the Mysteries of Living Brains.

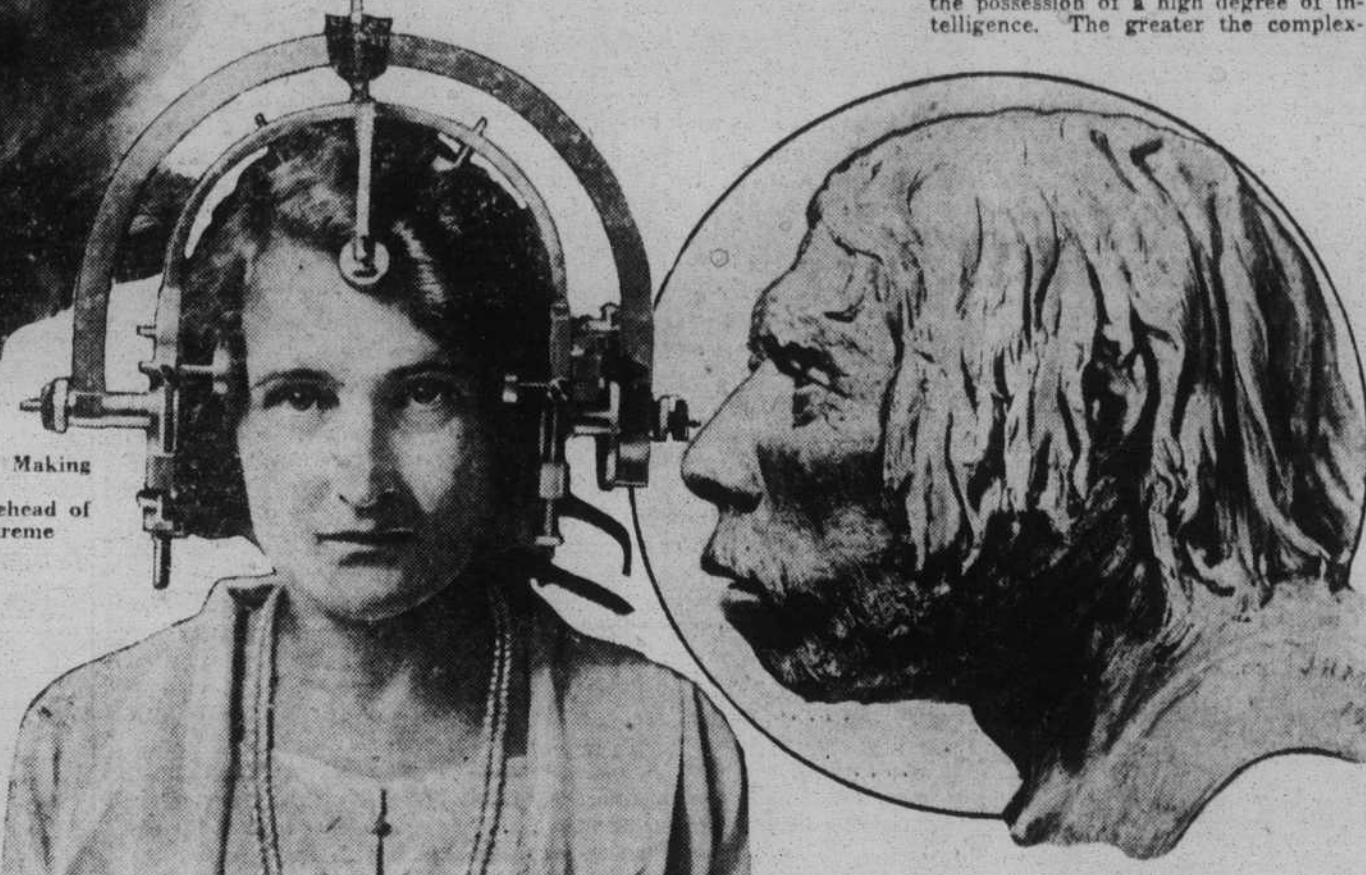


A Low Forehead, as Shown by the Eskimo Type Pictured Above. Scientists Have Found. Does Not Always Indicate a Low Degree of Intelligence. The Center Illustration Shows the Method of Using the Plastometer in Making Character Readings. Even the Low Brow and the Sloping Forehead of the Primitive Man Pictured at the Extreme Right Are Held Not Necessarily to Indicate Low Intelligence.

**H**IGH brows, big brains. Low brows, little brains. That old and popular belief expressed in these words has been entirely disproved by Dr. Ales Hrdlicka, internationally known scientist, of the National Museum, Washington, D. C., as the result of a series of highly interesting examinations of various types of human skulls.

If high foreheads means brains, then some primitive peoples possessing lofty brows should be superior intellectually to the white man, according to Dr. Hrdlicka. Furthermore, the common, full-blooded American colored laborer often has a slightly higher forehead than some educated white men.

Doctor Hrdlicka has been studying this problem ever since 1894. He has investigated not only the forehead, but other parts of the head structure of most of the major races known to man. "Studies show," says Doctor Hrdlicka in Popular Mechanics, "that the height of the forehead is not a safe gauge of intelligence. Indeed, if you take an individual and simply judge him by his forehead alone, nine times out of ten you will be more or less wrong. However, the situation about true intellectuality is entirely different



if you lay less stress on forehead size and instead emphasize the importance of the brain structure itself.

"A sloping forehead does not mean brutality or low intelligence by any means. No doubt there are two good reasons for this generally accepted fallacy, one being that the main headquarters of intelligence is in the frontal lobes of the brain, and the other that many observers have noted a sloping forehead to be prevalent among certain criminal types, some savages, ancient men, and, generally speaking, among the lower animals and anthropoid apes.

"This view, however, although it has some natural foundation, is not all true. In many known cases such a sloping forehead has existed along with

a brain of high intelligence. In this connection I have examined the foreheads of hundreds of type specimens of the major leading races and found that in the case of most of these sloping foreheads it is not the upper section of the brow that actually is depressed but the lower portion that has been carried forward more than usual. The physiological result is that the brain size is not affected in such a way

as to forbid strong intellectual qualities.

Doctor Hrdlicka goes on to explain some other curious situations that may exist and give the casual observer a wrong impression of "highbrowism." A man, for instance, may have a broad skull which serves to take the attention away from the fact that the forehead itself is rather low. Or, in similar fashion, his hair may recede from his forehead, due entirely to baldness, to such an extent that the brow itself gives an erroneous impression of height.

When you consider brain size and structure you are on a new line of investigation entirely, suitable only for the attention of the trained scientist. Such experts, Doctor Hrdlicka points out, while studying the normal brain, with its well-developed frontal lobes, have found a definite relationship to the possession of a high degree of intelligence. The greater the complex-

ity of the brain structure, the greater the gray matter and, under normal conditions, the greater the potentiality of the brain.

While it is true that large brains usually contain much more gray matter and, therefore, more intelligence than small ones, nevertheless, there are comparatively small brains of such complex and refined patterns that they enable the possessor to take an outstanding

place in his particular line of endeavor. Such brains, Dr. Hrdlicka points out, not infrequently are found in persons of small stature and slight build. Notable examples of this type are the famous artist Raphael and the orator Gambetta.

There have also been instances of sizable brains where the possessor shows slight intellectual ability. Here again the reason lies in the complexity and refinement of brain matter.

Another familiar fallacy is that human beings think and work intellectually while using only the front or forepart of the brain, whereas, in truth, the entire brain is necessary in all mental work.

"The frontal parts of the brain," Dr. Hrdlicka explains, "serve the higher mental qualities, while the other sections are largely concerned with sensory and motor brain processes. If you had all forebrain and no hindbrain, your thinking processes simply would not coordinate.

"I consider the human brain to be the most wonderful machine nature has

achieved. There are ten billion nerve cells in the brain, every one of which is connected and related, all organized in a remarkable fashion and each with an important function to perform.

"The brain is a reservoir where everything is received, distributed and acted upon, reflexively or voluntarily. Its potentialities are such that no scientist has been able to come anywhere near gauging its refinements and magnitude. Even the simplest thought is an accomplishment which exceeds the highest and most complicated machine man has invented.

"Just as every machine needs various energy materials, so the brain requires different foods for the performance of its duties, and, like machines, it gives off different gases. It is these gases upon which the physiological chemistry of the future, laboring to solve the hidden mysteries of the living brain, will concentrate its studies. At the present time this promising line of scientific investigation is being given close attention."

## How Much Water Should You Drink Every Day?

**D**O you, or do you not, drink sufficient water? This is a vital question, because it so deeply concerns the health and efficiency of every human being. The human body must be kept decidedly wet, but not so wet, of course as Rudolph Philippak, of St. Louis, who boasts he can drink a gallon of water at one time. For it is nearly two-thirds water, and this proportion must be maintained—if health, strength and happiness are to be conserved.

Water takes precedence over every other element needed to support life. It is the magic medium through which

ful on rising, one at each meal, breakfast excepted, one between meals, and one upon retiring at night.

"However, the quantity required varies with work, climate and mode of life. The nature of the food eaten also constitutes a factor, since a diet consisting largely of fruits and vegetables, or one that includes a considerable portion of milk, is high in water content. When the body is surrounded by super-heated air, as in summer, or in certain occupations, or when engaged in active muscular exercise, perspiration is notably increased. The more water removed from the body, the more must be taken into it to replenish the supply and maintain the proper balance."

Mr. Goudiss summarizes the important subject of water in seven points as follows:

1. Water enters into the composition

Rudolph Philippak, of St. Louis, May or May Not Be the Champion Water Drinker, But He Is Shown Here Making Good His Boast That He Can Imbibe a Gallon of Water at One Setting



## When the Baseball Umpire Wore a Suit of Armor



The German "Schiedsrichter des Spiels" (Baseball Umpire) Wearing His Suit of Armor at the Introductory Game of Baseball in Berlin.

**C**ROWDS are pushing their way through the turnstiles at the baseball grounds throughout the country. There are mayors, governors and even the President of the United States himself, in attendance, for this business of patronizing the great American sport is a serious business. The umpire is in position. The umpire's voice booms out "Play Ball," and the game is on.

A brilliant play followed by wild

cheers. An error and there are hoots and jeers. Peanut vendors hawking their wares; hot dog men handing 'em out and lemonade and pop corn sellers doing a thriving business.

A familiar scene, indeed. But hark back twenty years and witness the first baseball game in a foreign setting, at which the umpire wore a suit of armor.

The day, June 12, 1912, was the date baseball invaded Europe, when a team of American players who had been invited to introduce baseball to the German people, arrived in Berlin.

A tremendous crowd was present at the opening game. Everybody who was anybody in the city of Berlin, made his way out to the athletic field to see this strange game that the Americans were so crazy about. The military, the social, the diplomatic and the common people were all there. It was a gala occasion, when the umpire gave the signal to the American Ambassador who had given his consent to throw out the first ball.

On the field of battle were the American players and the German team, made up of nine picked men who had lived in the United States and knew the rules of the game.

The handful of Americans in the grandstand and in the bleachers, of course, knew what it was all about, but the rest of the crowd was all at sea.

The one who, apparently, knew less about baseball than anyone else was, perhaps, the umpire. He must have thought that he was entering an armed conflict, for he appeared on the diamond all togged out in a suit of armor as if prepared for a jousting bout. Evidently he thought that the baseball was a miniature cannon-ball; a hand grenade or some similar weapon of fearful destructive power. He had no faith, evidently, in the protection afforded by the familiar mask and the breast-protector; hence the armor.

But that was a score of years ago in Europe, where today baseball is as universal a sport as football and the umpire no longer wears a suit of mail.

## The Modern "Shell Game"

**E**NGINEERS of the vacuum tube department of the General Electric Company unwittingly entered the field of gambling, or so it would seem, from device which bears a striking resemblance to an old-time carnival shell game, brought up to date with the aid of vacuum tubes and invoking science to keep it on the level. The element of chance varies 120 times a second—and that is fast enough to defy manipulators with dishonest intentions.

Players of the game have only to roll a steel ball down a track inclined at one end. During the course of its journey the ball passes over three pairs of contacts in the track, joining them and causing their circuits to close. Three thyratron tubes and three incandescent lamps complete the

paraphernalia. In the grid circuit of each tube there is a direct-current and an alternating-current grid voltage, in series. Since the device is run from 60-cycle house current the voltage is added to and subtracted from 60 times a second. If there is sufficient negative grid voltage when the circuit is closed, the corresponding lamp will not light, but if the ball catches the cycle when it is positive, the thyratron tube will operate the lamp. The slower the speed of the ball, the more likely it is to light all three of the lamps, and it is only on rare occasions that one can roll the ball without lighting any of them—the desideratum, necessarily.

With the unexpected gambling element removed, the device is designed to show how to determine the operation of thyratron tubes through adding or subtracting voltage.

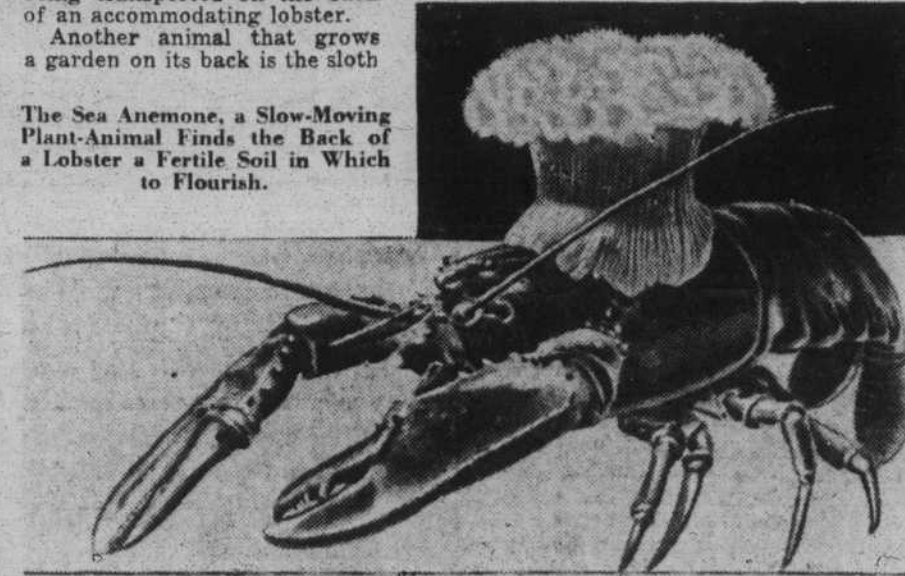
## Animals That Grow Plants

**D**IVERS walking on the bed of the ocean often see plants which really may be classified as animals. Strange as this may seem, scientists have proved that this is true.

Many of these plant-animals rival in beauty the finest products of the greenhouses and cultivated gardens. Among these marine plants, and probably the most familiar is the slow-moving anemone, a specimen of which is shown in the accompanying illustration, as it is being transported on the back of an accommodating lobster.

Another animal that grows a garden on its back is the sloth

The Sea Anemone, a Slow-Moving Plant-Animal Firm the Back of a Lobster in Fertile Soil in Which to Flourish.



King Features Syndicate, Inc., 1933.

all nutritive elements are carried into and through the body, and there held in suspension, for it enters into the composition of all the internal fluids which distribute heat, moisture and body-building material.

These functions may be termed its "incoming" service. It is equally important in its "outgoing" service, for without water no waste matter could be eliminated.

The question of how much water one should drink is answered in the forecast by C. Houston Goudiss.

"Most people drink too little water," says Mr. Goudiss. Very few drink too much. For people in normal health are not engaged in active muscular work—three pints daily, in addition to what is taken in the food, may be regarded as sufficient. A good rule is one glass

of all the tissues and fluids of the body.

2. It is the medium that dissolves the nutrient materials in the process of digestion, making possible their absorption and assimilation.

3. It is the chief constituent of the blood, which transports food to the various tissues of the body.

4. It keeps the soft tissues soft, and the moist tissues moist.

5. It acts as a regulator of body temperature.

6. By virtue of its great solvent action, it is a common medium in which all the chemical reactions of the body take place.

7. It assists the elimination of waste products through the intestinal canal, through the kidneys, the lungs, and the skin.

## Motor Cars as Earthquake Refuges

**M**OTOR cars may be used as a satisfactory refuge in case of an earthquake, as the result of the experience which Dr. T. A. Jagger, the American volcano expert, has had in Hawaiian upheavals. Dr. Jagger describes in a recent announcement of the Hawaiian Volcano Research Association, an experience while driving in his automobile to visit a friend.

On arriving at the friend's house, Dr. Jagger was astonished to find the inhabitants in great excitement and the house partly ruined. A violent earthquake had happened while Dr. Jagger was in his moving automobile. In spite of long experience as an earthquake observer, he had felt nothing.

During the shocks which followed, Dr. Jagger says, many people left their houses and slept in their automobiles.

"Even when not in motion, a sedan on springs and rubber tires produced almost no sensation to the occupants, while adjacent homes were rattling and roaring with the aftershocks.

"Houses usually act, I have found, as magnifiers of earth movements, so that what seems to be a violent earthquake to a person indoors may seem to a person on the ground in the open to be a single and not very strong thud under his feet, or may pass altogether unnoticed."

"This may explain," comments Dr. E. E. Free in Week's Science, "why it is that primitive men have few myths of earthquakes, but many of floods and fires. Having no houses to magnify them, primitive men probably felt only the very greatest earthquakes, but anybody is impressed by a forest fire or a flood."