

Measures Paint Color

Physics

Hit and miss methods of mixing paints will soon be replaced by mathematical methods when the results of an investigation into the strength of pigments used in making tints completed by the U. S. Bureau of Standards are put into practical use.

The Bureau has measured with the spectrophotometer the color value of 104 different mixtures of pigments combined with a standard color.

The investigation has disclosed the exact strength and amount of a pigment that should be mixed with a standard color to bring a given result. The investigation is hoped to result in a numerical color value being given to each pigment instead of the mixture depending on more or less uncertain methods of comparing shades.

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Carbohydrates and Colds

Physiology

The old adage, "Feed a cold but starve a fever," needs amending. The kinds of food you eat are now considered important as well as the amount and may have a definite effect on the number of colds you have this winter. A diet that is low in sugar and starch proved successful in keeping one susceptible subject from having any colds at all as long as the diet was adhered to, according to a report in *Science* by Frederick Hoelzel of the University of Chicago.

Mr. Hoelzel, who has been an extremely frequent sufferer from colds all his life, discovered in the course of experimental work that he had no colds at all when he fasted. Further experiments with various diets showed that while colds were numerous on vegetarian diets and on diets containing large amounts of sugar and starches, when the diet contained no more than 500 calories of sugars and starches in a daily

total of 2,500 calories, ordinary colds did not develop. At the same time the protein intake must be adequate.

The explanation of this lies, Mr. Hoelzel believes, in some as yet undetermined relation between the amount of fluid in the body's tissues and their sensitiveness. A considerable amount of water is stored in the body with carbohydrates or starches and sugar. When the carbohydrate intake is lowered, the amount of it and of water stored is lessened, and, according to Mr. Hoelzel's theory, the sensitiveness of the tissues is also lessened, so that a cool breeze or exposure to damp chilly weather will not be so apt to result in a cold.

It may be that the comparative freedom from colds in Arctic regions depends more on the Arctic diet, high in meat and low in sugar and starch, than on the cold weather or the absence of germs.

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To Study Mountains in Making

Geology

By W. A. J. M. *van* WATERSCHOOT
VAN DER GRACHT

A great mountain system, now slowly forming under the waters of tropic seas, whose peaks and partially emerged ranges are now known as the East Indies, is to be the object of study by a Dutch scientific expedition now about to take the field.

The eastern portion of the East Indian Archipelago is a region which is probably more subject to present-day diastrophism than any other area on the earth. The sea bottom between Borneo, New Guinea, and the Australian shelf is different from any other, not even excluding the West Indies. It is an area of most marked unrest, studded with islands and active volcanoes, arranged in an intricate system of looped arches encircling deep basins. Coral reefs, which can only live and grow within a few feet of the surface, indicate that this entire region is subject to continuous changes of level, amounting to not less than 3000 feet, plus or minus, for reefs with a present or almost present day fauna. Such reefs are now being found either elevated to such altitudes above the present sea-level, or submerged to corresponding depths. The fringes of old reef terraces on the Moluccan islands prove

that we have not only vertical changes of level, but regular folds expressed in strongly tilted shore reefs.

These conditions make the Moluccan Archipelago a region of exceptional interest for oceanographic, biological and geologic research. The very pronounced relief of the sea bottom and the occurrence of a number of individual deep basins, separated from the open ocean by shallower sills, cause a complicated subsurface circulation of water and anomalies as to deep-sea temperatures, chemical constitution and food supply of the water, which influence life in these deep basins in a peculiar manner. All this is of the greatest interest to the oceanographer, the zoologist and the geologist.

It is the general opinion among geologists that we are witnessing here a truly Alpine chain of mountains actually in the making: a product of the violent compression of a wide region between the continental masses of Australia (including New Guinea), and of southern Asia (including Borneo). The present sea bottom and the topography of the islands are the surface expression of the mountain folds (and possibly overthrusts) at the time of their formation. What we can now observe in the strata of

the Tertiary mountain chains of the earth, the Alps and others, and of course still more in older mesozoic or palaeozoic mountains, are the folds and thrusts which at the time of their formation were buried miles below the surface and have since been laid bare by erosion of the later emerged chain. What the surface of the young, then mostly submarine chain may have been like, when it was forming, can only be guessed at by attempts at reconstruction of the eroded strata. In the Moluccas we have now the means to observe actual happenings of this nature. But, being largely submarine, we need the oceanographer to give us the accurate picture.

Physical and biological conditions in these isolated deep basins in the ocean floor, subject to active sedimentation of erosional and organic products from the numerous tropical islands, are very different from those in the open ocean, and of the greatest interest for the interpretation of the rocks which we find in the mountains of former geological periods, where conditions of their deposition must have been very similar.

Past oceanographic expeditions have largely confined themselves to the open ocean and have (*Turn to next page*)

Egypt Dead and Alive

Archaeology

JEAN CAPART, in *Lectures on Egyptian Art* (University of North Carolina Press):

Let us begin with their architecture. At once the idea of the colossal comes to our minds. We think of the pyramids, of the temples with their obelisks and their gigantic statues; we see the hypostyle halls with columns and architraves, the proportions of which surpass what has been executed in other countries. Assuredly, the idea of their constructors was to consecrate to the gods "Temples of Eternity"—as the texts say—capable of resisting all causes of destruction. Nevertheless—let us not forget this—these are but transpositions into stone of architectural forms realized in other materials for the houses and the palaces. Here it was granite, sandstone, limestone; there it was brick and wood which constituted the elements the architects combined. The misfortune is that they did not seek to create two distinct types of architecture to correspond to the essentially different characters of the materials they utilized.

To a considerable extent, the stone monuments are but the translation,

heavy and strained, of constructions destined for the living, which, being ephemeral, could not have sufficed to lodge the gods and the dead whose existence was to be eternal. The unbaked bricks have gone back to the earth; the wood has disappeared through the action of time, of men, and even of ants. Once only, for the town of Tell el-Amarna, have special circumstances preserved the remains of habitations sufficient to allow of our studying the plan and making restorations in which fancy has no share.

These houses were constructed in the middle of large and beautiful gardens, with ponds and pleasure pavilions; the outbuildings, which included the warehouses, the work-shops, the granaries, and the servants' quarters, were grouped separately. For the master's dwelling a type had been adopted, which, frequently repeated with slight variations, had become the classical model of a comfortable residence.

If we glance at a plan, we shall be struck by its clearness, to a certain extent modern. The house with its verandas, its central hall, its suites of

rooms in which a bathroom is generally included; all that is well conceived and could still be used nowadays. The restorations of the hall, whether they be made by a German or an English archaeologist, are practically identical. They give an impression of airiness and gaiety very different from the feeling one experiences in the hypostyle halls of the temples, the columns of which thickset and crowded, left insufficient space between them. The doors which led from the hall into the principal rooms were often ornamented with open-work designs of which we have happily faithful copies sculptured in the stone of the tombs. In the upper part, carved ornamentations combined different designs: falcons' heads, tufts of papyrus, protective amulets, little columns; sometimes, but more rarely, figures of sphinxes or cats; the whole mixed with hieroglyphic inscriptions. The simplicity of the plan of these houses at once reveals a veritable science of architecture in a country where dwellings, long since, had passed beyond the stage of merely utilitarian construction.

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Study Mountains In the Making—*Continued*

scarcely touched the East Indies. The only exception of note is the important Dutch Siboga expedition of 1899, the object of which was largely zoological. The number of existing off-shore soundings is still very small for a region with such intricate relief. This becomes very clear if we compare the area with any mountainous district on land. It would be as if the relief of the Alps in Switzerland were known from only 40 to 50 date levels!

A new oceanographic expedition in the Moluccan seas is now in preparation under Commander P. M. van Riel, chief of the Oceanographic Section of the Netherlands Meteorological Institute at De Bilt, near Utrecht, with the support of the Home and Colonial Governments and several institutions and individuals. The funds have been secured to a sufficient amount to permit about 15 months of active work. The expedition is to leave early in 1929. It will use a newly launched surveying vessel of the Dutch Government, the "Willibrord Snellius".

In addition to an extensive program of physical, chemical and biological

research, particular stress will be laid on the configuration of the bottom and the sediments now being deposited there. In addition to the latest oceanographic sounding and sampling equipment and the biological outfit, the vessel will carry sonic sounding apparatus with which it is expected to make at least 10,000 new depth determinations, in order to obtain a reliable and fairly detailed map of the submarine topography of this most interesting region. It is planned that a submarine of the Dutch Navy will cooperate with the expedition, in order to make gravity observations at sea by the method developed by Prof. Vening Meinesz.

A geologist, Dr. Ph. H. Kuenen of Leiden, is added to the staff to assist in these observations, which promise to become of such paramount interest for the study of structural and sedimentary geology. Dr. H. Boschma will give special attention to the plankton in these regions and its relations to the bottom sediments.

The leader of the expedition and Dr. Kuenen have promised to cooperate with the committee in charge

of Project No. 4 of the research work undertaken by the American Petroleum Institute: the study of present-day sediments which can be considered as future source rocks of petroleum now being deposited. The members of this committee are Alex W. McCoy, Austin H. Clark, T. Wayland Vaughan, S. A. Waksman and W. A. J. M. van Waterschoot van der Gracht; research fellow is Parker D. Trask, assisted by C. C. Wu. The Moluccan seas, constituting a tropical region subject to both active sedimentation and contemporaneous diastrophism, is of the greatest possible interest for this research. Dr. Trask will cooperate with Dr. Kuenen in the study of the samples of bottom sediments to be taken by the expedition. Their organic contents and other characteristics of interest for the study of the genesis of petroleum will be determined. This promises to be a most valuable contribution to the work already performed by the committee around the North American continent and in the seas of Central America and Northern South America.

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