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We should/expected the rotor ship to have been an American invention for two reasons; first, because the principle involved is the same as our pitchers employ in putting the curve on a baseball in the national game, and, second, because this force has been thoroughly studied in American laboratories of aerodynamics. A recent technical paper by Elliot G. Reid of the Langley Memorial Aeronautical Laboratory is devoted to "tests on rotating cylinders" and gives the formulas by which the force can be calculated and photographs showing how air currents behave in passing around a cylinder. If the cylinder is stationary, the wind divides and goes by equally on both sides, producing no effect except a push on the windward side. But if the cylinder is revolving the wind receives different treatment on the two sides. On the side of the cylinder where the rotary motion is in the same direction as the wind, the air is helped along and speeded up by the friction of the surface of the cylinder. Consequently, the air pressure is reduced on this side and a sort of suction is formed. On the side of the cylinder that is turning against the wind, the opposite effect is produced by the friction. That is, the flow of the air current is impeded, the air is compressed and its pressure on the cylinder is increased. The net result of diminishing the pressure on one side and increasing it on the other is to produce a push acting on the cylinder at right angles to the wind, and it is this force that propels the Flettner boat.

The power of this cross-wind force depends upon the velocity of the wind, and height, and diameter of the cylinder and its speed of rotation. The greater these are the stronger is the power developed. The Langley Laboratory finds that this force appears suddenly when the speed of the surface of the rotating cylinder rises to half that of the wind, and that thereafter the force increases steadily with the speed until the surface is moving twice as fast as the wind or faster. The experiments suggest that if the rotating shaft is made in the shape of a Greek cross instead of a smooth cylinder a greater cross wind force may be produced though it requires more power for rotation. The National Advisory Committee for Aeronautics has been engaged for a year in the investigation of the possibility of equipping airplanes with rotating cylinders, so as to utilize this cross force to impart a lift to the machine instead of depending wholly on the angle of the winds.

But neither our baseball fans nor our aviation experts have applied the principle to ship propulsion. So Anton Flettner has a free field and if his invention works as well as the German papers claim, he may appear before long in one of our ports with the ten-thousand ton sailless ship that he plans to construct for trans-Atlantic trade. It will be as strange an apparition as the submarine that bobbed up at Baltimore loaded with German dyes and drugs during the war, and it will be much more welcome.

ROWING ATHLETE SHOWS HALF STRENGTH OF HORSE

"Strong as a horse", spoken admiringly of a mighty athlete, is not so great an exaggeration as it sounds. Exact studies of the physical exertion put forth by the members of the famous Yale crew of 1924 by Drs. Yandell Henderson and Howard W. Haggard of the department of applied physiology at Yale, show that each man developed, during the period of a race, about one-half horsepower.

Determinations of energy expended were obtained in various ways. The men were exercised individually on rowing-machines with power meters attached; the ratio of oxygen taken in to carbon dioxide given off in breathing was determined; the racing shell they used was towed by a power boat with a spring balance set into the towline.

"The data from these three methods were in general in fair agreement," say Dr. Henderson. "They indicate that the maximal power exerted is from .45 to .55 horse power per man, or expressed in the heat equivalents, 4.8 to 5.9 calories per minute, with a total energy expenditure of 19 to 29 calories per minute, or 13 to 20 times the basal rate."

It was noted that these athletes did not puff and blow noticeably, however, great their exertion; this is in marked contrast with the distress of untrained or half-trained men. The amount of oxygen they took in through their lungs reached about the limit of the carrying power of heart and blood; yet it was not sufficient to replace the amount burned up during the race. As Dr. Henderson expresses it, "He draws heavily on his credit and incurs oxygen deficits; these deficits are repaid by the high rate of oxygen absorption for a time after the work is ended."

CROSSWORD PUZZLE MAKERS OVERLOOKED THIS ONE

"Word of two letters, both vowels; meaning a type of lava; probably originated in native Hawaiian language." Why this word has not yet joined the other two-vowel aids to crossword puzzle making is itself a puzzle. The family awaits it "Ai", that indispensable two-toed sloth; "Io", rosy goddess of the ancients, "eo" and "ea", immigrant Latins. The word isn't in the dictionaries yet. It is "Aa". That 's all. "Aa".

ENGLISH GROWING SIMPLER BY LOSING PLURAL NOUNS

English, said to be the easiest language to learn, may soon be simplified still further by the elimination of plural nouns, is the claim of Prof. O. F. Emerson of Western Reserve University. "Our language has tended to the increased use of the singular number ever since Indo-European times," he states. Prof. Emerson cited a collection of 335 proverbs of Queen Elizabeth's time recently reprinted. "Of these, 25 were stated in the plural form, 38 contained both singular and plural and the remainder, or 272, used only the singular number," he said. This shows that the tendency was well defined at the time of the Renaissance. A popular illustration of the idea is the question "Who is there?" in answer to a knock at the door, rather than the query, "Who are there?"

"This tendency towards the elimination of plural forms has accompanied the growth of the language," Dr. Emerson explained. "The one common exception, the use of the pronoun 'you' no matter how many persons are referred to, is a social custom, rather than a violation of the rule."

Much valuable information about the culture of the Pueblo Indians has been lost because many of the graves were rifled by prehistoric grave robbers.

Over forty per cent of the mahogany shipped into the United States comes from Central America.
