president to withdraw land from all forms of entry except as to mineral claims for the development of metalliferous ores. The land will be restored to settlement and entry after such advertisement in the local papers as the secretary of the interior may consider necessary. The Forest Service is successfully reforesting a considerable area in the sandhills of Nebraska and Kansas, where the soil is so loose in texture that it blows away as soon as it is cultivated. Therefore, according to the government's foresters, the problem has been to grow trees in competition with the native grasses, both making rival demands on the small amount of moisture. If the grass cover is removed the soil blows out completely and exposes the roots of the trees. The success already attained indicates, in the judgment of the government foresters, that a large part of the sandhill country will become timber-producing.

THE quantity of briquetted fuel manufactured in the United States in 1912 showed a small gain over the output for 1911, and according to E. W. Parker, of the United States Geological Survey, the briquet industry may be considered as now passing out of the experimental stage and assuming a more substantial and permanent character. The quantity of briquetted fuel made in 1912, at 19 plants, was 220,064 short tons, valued at $952,-261, as compared with 218,443 tons valued at $808,721 in 1911. Of these plants 7 used anthracite culm, 9 used bituminous or semi-bituminous slack, 1 used residue from gas manufactured from oil, 1 used mixed anthracite culm and bituminous slack, and 1 used peat. The largest producer of briquets in the United States in 1912 was the Berwind Fuel Company, of Superior, Wis., the output of which was a little in excess of 50,000 short tons. The quantity of raw material available for the manufacture of briquets, as stated by Mr. Parker, is ample and may be obtained at slight cost. The most desirable material for producing a smokeless product is anthracite culm, a plentiful supply of which still remains in the anthracite region of Pennsylvania and more is produced daily in the mining operations. It is not too much to believe or to hope that in the near future the small sizes of anthracite, such as buckwheat and smaller, that are now sold for making steam, in competition with bituminous coal and at prices below the actual cost of production, will become more valuable as a raw material for the briquet manufacturer. The output of these small sizes, produced by breaking up large coal to obtain the domestic grades—egg, stove and nut—exceeds 20,000,000 long tons annually, exclusive of 3,000,000 to 4,000,000 tons annually recovered from the culm banks by washeries. The present revenue from this product will not exceed $30,000,000. Washery and small size coal is worth from 50 cents to $1.50 a ton, the price depending on the size. As briquetted fuel it should be worth as much as stove or egg coal, or $3 to $4 per ton. The cost of briquetting is $1 to $1.25 per ton. The uniform size of the briquets makes them desirable as a domestic fuel; besides if properly made they are completely consumed and do not produce clinkers.

UNIVERSITY AND EDUCATIONAL NEWS

PRINCETON UNIVERSITY has received three gifts: $100,000 from Mr. and Mrs. Russell W. Moore, of New York City, to endow a professorship of chemistry; $125,000 given anonymously for a professorship not named, and $30,000 from Mr. John D. Cadawallader, of New York City. About $70,000 were received for current expenses.

THE decision of the jury in the case of the will of Mr. C. H. Pratt being in its favor, the Massachusetts Institute of Technology will receive the bequest, amounting to three quarters of a million dollars, to be devoted to the establishment of a Pratt School of Naval Architecture and Marine Engineering. The requirement that the money actually in hand shall be held by the trustees till it amounts to the specified sum will not cause any delay, since the estate has proved to be of such value as to lack only a few thousand dollars, and will be of the requisite amount by the time the institute is ready to use it.

WHITALL HALL, of Haverford College, which houses the scientific departments, was damaged by fire on April 8, with a loss estimated at $20,000.

THE board of trustees has approved plans for an addition to the Women's School of the Carnegie Institute of Technology.

NEW buildings of the Sorbonne, Paris, have been erected at a cost of 782,000 francs. They are the Curie laboratory, under the direction of Mme. Curie; the radium laboratory, under the direction of M. Debierne, and the Pasteur laboratory, under the direction of M. Regnaud.

PROFESSOR ALEXANDER SMITH, administrative head of the department of chemistry in Columbia University, has accepted the position of professor of chemistry on the Wyman Foundation in Princeton University, and the headship of the department of chemistry. By the desire of the authorities of Columbia University, as well as his own, he will complete three years of service with Columbia University and will accept this call to take effect at the end of the academic year 1913–14.

DR. WILLIAM TRELEASE, director of the Missouri Botanical Garden from 1889 to 1912, has accepted the position of professor of botany and head of the department of botany at the University of Illinois.

DISCUSSION AND CORRESPONDENCE

ON METHODS OF TEACHING MODERN LANGUAGES

THE basis and warrant of all language teaching must be psychological. But among all the multitudinous articles and books on the subject, there are only a very few which take cognizance of the psychology of language teaching, although, to be sure, the practical application of the principles is practised in part, consciously or unconsciously.

The test of any method must be psychological. Here mere practical results can not be the criterion. The question should not be: Has the learner acquired so and so much of a vocabulary? but rather it should be: Has the learner been acquiring good *mental habits* while he has been acquiring the vocabulary? That is to say, the method must be based upon sound laws of the mind, to follow which means to produce good *habits of study.*

1. The newer school of linguists are agreed that language is an activity of the mind; not a thing thrust upon the individual, but rather the outward manifestation of mental states.

Speech without ideas is useless. Adults do not naturally learn words for the sake of learning them, but only for the purpose of expressing ideas. We find in normal adults first the idea, then the expression of it, or possibly the two simultaneously, but not the reverse.

2. Physiological psychology teaches us that four distinct centers of the brain are active in the acquisition of language; namely: the auditory, the visual, the motor writing, and the motor speech centers, the first two sensory, the latter two motor.[1] The function of the auditory center is to receive sensory impressions through the nerves of the ear; that of the visual center to receive impressions from the nerves of the eye; the motor-writing center controls the muscles of the hand in writing, while the motor speech center controls the muscles of the speech organs.

It has been established, also, by experimentation that the strength of the sensory impressions upon these centers varies with different individuals. There are those who get stronger impressions by the auditory than by the visual center, and more facile expression by the motor-speech than by the motor-writing center, and *vice versa.*

Moreover, there are in the case of the four brain centers under discussion not only nerve currents from the end-organs to the centers and from the motor centers to the muscles, there are also the association areas of the brain which serve communication between these centers, thereby bringing about a lively interaction between them.

3. Without going into the old question whether sensation is the sole principle of knowledge, we are on safe ground psycholog-

[1] Cf. Wundt, Wilhelm, "Principles of Physiological Psychology," English translation, London and New York, 1904, pp. 302 ff.; Judd, C. H., "Psychology, General Introduction," New York, 1907, pp. 51 ff.