

(3) Especial stress is laid on the fact that home tasks are not to be increased; that the bulk of the work should be performed in school; and that, with this object in view, an alteration in the present method of teaching is absolutely necessary.

(4) For the teacher, more thorough pedagogic education and a higher social status are insisted on.

(5) Teachers should not be specialists, but form masters, and should realize their responsibility for the physical as well as the intellectual development of their pupils. Greater attention should be paid to the health of the boys, and to the demands of hygiene in the schools.

(6) The final school examination (which serves as entrance examination to the university) should be regarded as the "remove" examination out of the oberprima, and consequently should be restricted to work done in this class. The Latin essay is henceforth to be abolished, and the examination in other respects made considerably easier.

In order to meet the probable growing demand for höhere bürgerschulen and realschulen, the conference passed a number of resolutions, the most important of which were that gymnasia or realgymnasia, where only a small proportion of the pupils pass into the upper classes, should be turned into realschulen; that in towns where there are several gymnasia or realgymnasia, if possible, one of these should be turned into a realschule. In the establishment of new schools, preference is to be given to realschulen, but at the same time the interests of the minority of the inhabitants of small towns without gymnasia are to be considered by having Latin instruction given where desired in the three lowest classes, so that pupils who are intended for a gymnasium may be prepared for it without leaving their homes at too early an age.

The salaries of the teachers in the realschulen are to be on the same scale as those in the gymnasia.

It is thought likely that the demand for realschulen will increase, now that a leaving-certificate from a realschule qualifies for all the lower government posts, and for the one year's military service. There is to be a special examination for this privilege in the gymnasia at the end of the year in the unter secunda.

Another reform is the putting of gymnasia and realschulen on an equal footing with regard to the right of study for all degrees in the university and technical high schools (these are of the nature of technico-scientific universities). The only condition for realschule students is the completion of their leaving-certificate by certificates of their proficiency in classics, while gymnasium students must obtain certificates of proficiency in drawing and mathematics. Moreover, the school authorities have the right to excuse good pupils from the gymnasium or realschule this supplementary examination; also every candidate who has passed the final examination of a nine-class high-school shall be admitted to all state examinations, if, during his term of study, he passes the necessary special examination which he has omitted during his school career. It is these reforms which are really the most important, for they make it possible to carry out the proposed changes without injuring the interests of many classes.

The committee for the carrying-out of the reforms resolved upon in the conference held its first meeting in Berlin on Jan. 6. The committee consists of Geheimrath Hinzpeter as chairman; Dr. Schrader, curator of the Halle University, as vice-chairman; Dr. Fiedler of Breslau; Dr. Graf of Elberfeld; Dr. Kropatscheck of Berlin; Dr. Schlee, director of the Realgymnasium of Altona; and Dr. Uhlhorn of Hannover. The members of the Council for Education are not on the reform committee, but several of them are appointed to draw up the report. The committee agreed as to the reforms necessary for raising the social standing of the teacher, and on the conditions for the right to one year's military service. The next general meeting is to be held in February, and meanwhile the work of reform is to be furthered by private consultations.

Reforms have already been initiated in Württemberg gymnasia. They are divided into ten classes, of which Class I. is the lowest. The chief alteration is that Latin is to be begun in Class II. instead of Class I., in which the average age is eight. In the lowest class the time is to be spent in mastering reading, writing, and

the elements of arithmetic; also Greek is to be begun in the fifth, instead of the fourth, the average age of which is eleven. Then the time devoted to classics is to be curtailed in all classes, so that from the second to the sixth not more than ten hours, from the seventh to the tenth not more than eight hours, are given to classics in the week. This means a reduction from 102 hours to 82 hours in all the classes reckoned together. The number of school-hours is not to be diminished, but the time saved is to be given to other subjects. German is to have 28 hours as against 26, French 18 instead of 16, mathematics 39 instead of 37, physiography 16 instead of 10, and obligatory drawing in Classes IV. to VI. 7 hours, whereas before no time was devoted to this subject.

The chief feature of the reform programme is the emphasis laid on making grammar the handmaid of literature, on mastering the text, and gaining a knowledge of grammar by study of it rather than making grammar an aim in itself. The official publications point out the fact that these alterations are comparatively insignificant, and that the Württemberg educational authorities consider the time not yet ripe for extensive reforms, more especially as the resolutions passed by the Berlin School Conference really tend to make the gymnasia of Prussia more nearly resemble those of Württemberg. For instance: the gymnasium in Württemberg has no Latin essay, and the division of secondary schools into gymnasia and non-classical realschulen is already carried out.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

Discovery of Fish-Remains in Lower Silurian Rocks.

AT a meeting of the Biological Society of Washington on Feb. 7, 1891, Mr. Charles D. Walcott of the United States Geological Survey announced the discovery of vertebrate life in the Lower Silurian (Ordovician) strata. He stated that "the remains were found in a sandstone resting on the pre-paleozoic rocks of the eastern front of the Rocky Mountains, near Cañon City, Col. They consist of an immense number of separate plates of placogonoid fishes and many fragments of the calcified covering of the notochord, of a form provisionally referred to the *Elasmobranchii*. The accompanying invertebrate fauna has the facies of the Trenton fauna of New York and the Mississippi valley. It extends upward into the superjacent limestone and at an horizon 180 feet above the fish-beds. Seventeen out of thirty-three species that have been distinguished are identical with species occurring in the Trenton limestone of Wisconsin and New York.

"Great interest centres about this discovery from the fact that we now have some of the ancestors of the great group of placoderm fishes which appear so suddenly at the close of the Upper Silurian and in the lower portion of the Devonian groups. It also carries the vertebrate fauna far back into the Silurian, and indicates that the differentiation between the invertebrate and vertebrate types probably occurred in Cambrian time."

Mr. Walcott is preparing a full description of the stratigraphic section, mode of occurrence, and character of the invertebrate and vertebrate faunas, for presentation at the meeting of the Geological Society of America in August, 1891.

L. A.

Washington, Feb. 10.

Was Lake Iroquois an Arm of the Sea?

IN *Science* recently Professor Davis stated several reasons leading to the belief that the Iroquois beach was formed by a lake instead of being formed by the sea, as held by Professor Spencer. It is possible that both theories are partly right, and that there was once a lake overflowing the divide at Rome, while later the basin of Lake Ontario or its eastern portion was occupied by the sea. It is not my present purpose to enter into a general discussion of the question, but to call attention to a class of deposits