

used. The entire apparatus, including bell attachment, may be placed on a surface $5 \times 8\frac{1}{2}$ inches. The bell employed directly with the apparatus is a small one with delicate musical sound. Its ringing does not disturb the animal. It is obvious, of course, that the apparatus may be connected with a bell in a room some distance from that in which the animal is kept.

In the demonstration it was shown that the apparatus announced the deposit in an ordinary urinary receiver placed on it of volumes of water less than 5 c.c. The apparatus may be adjusted to announce delivery of a volume as small as 1 c.c. and may be made, in larger sizes, to announce the deposit of masses of any desired weight.

The annunciator was made especially for use with Gies's metabolism cage, in connection with its urine receiver.

Some Observations on the Presence of Albumin in Bile: WILLIAM SALANT.

The author's results thus far, although not uniform, make it seem probable that the albuminuria that results from poisoning with ethyl or amyl alcohol, as observed in animals with permanent fistulas, might have been due to irritation of the bladder and perhaps only slightly to lesions in the liver. The question whether albumin passes more readily into the bile than it does into the urine was also studied. The results in every instance examined showed considerable quantities of albumin in the urine after poisoning with amyl alcohol.

More decided effects were obtained with ricin, which seemed to cause the appearance of considerable albumin in the bile.

WILLIAM J. GIES,
Secretary.

THE UNIVERSITY OF COLORADO SCIENTIFIC SOCIETY.

DURING the months of April and May the society held seven meetings, at which papers were presented as follows:

PROFESSOR E. C. HILLS: 'Esperanto, the new Universal Language.'

DR. F. R. SPENCER: 'The Prevalence of Near-sight and the Reasons for its Development.'

PROFESSOR CHARLES B. DYKE: 'Hawaii and its People.'

PROFESSOR JOHN B. PHILLIPS: 'The Divorce Problem.'

DR. H. B. LEONARD: 'Practical Results of Higher Mathematics.'

DR. O. M. GILBERT: 'Death due to Embryonic Structures.'

MR. G. S. DODDS: 'The So-called Artificial Creation of Life.'

Officers for the coming year were elected as follows:

President—Professor William Duane.

Vice-president—Dr. O. M. Gilbert.

Secretary—Mr. G. S. Dodds.

Treasurer—Professor John A. Hunter.

FRANCIS RAMALEY,
Secretary.

BOULDER, COLO.,
June 1, 1906.

DISCUSSION AND CORRESPONDENCE.

COLLEGE ENTRANCE EXAMINATIONS.

TO THE EDITOR OF SCIENCE: Professor Thorndike's article on 'College Entrance Examinations' in SCIENCE for June 1 seems to me so timely and so important that teachers who agree with the general substance of it may well say so. An experience of something like twenty-five years, mostly in secondary schools, has led me to take the same view of the matter which Professor Thorndike has so thoroughly set forth. It would be worth while to get the principal of some large fitting school to give in considerable detail his experiences in regard to the inadequacy of the entrance examination to test the boy's fitness for college. I will not in this place undertake to give detailed evidence, but only to cite a few instances which occur to me at once in regard to the imperfectness with which examinations test the attainments of the student. I have known of a class in science in a very highly respected private preparatory school securing the signature of the instructor to the laboratory note-books before his departure for Europe some weeks before the end of the school year. After the signature was affixed, the ablest boy in the class completed by himself a large portion of the whole year's

laboratory work. The remaining pupils copied his notes and the whole class passed into college triumphantly as regards the subject in question on the high quality of these note-books. I have known somewhat similar instances in the same subject in one of the most celebrated public fitting schools in the United States. I have known of a young man getting a mark of 30 per cent. on his entrance examination paper in advanced Latin which he copied in the examination room and which was pronounced by two experienced Latin teachers to whom he submitted his duplicate copy to be an admirable paper, worth 80 per cent. or more. The same student in the same entrance examinations, failed in his elementary geometry and was credited as having passed in a year's advanced mathematics and a year's advanced Greek, neither of which subjects had he ever studied, and in neither of which was any paper presented. He also received a higher mark in advanced French than in elementary French.

This, of course, was pure blundering on the part of the college office, but such blunders are neither unprecedented nor uncommon.

As regards examinations in college, I have known a boy to pass his examination on a half-year laboratory course in botany on twelve private lessons without laboratory work, the boy having been rusticated during the time when the course was carried on. In another instance, in a course in the history of Greek art, a student, whom we will call X, had attended less than 5 per cent. of the lectures and had read no text-book, did not even know what the text-books were. After about twenty hours' tutoring from a student friend, the two young men took the examination and X received a mark of 85 per cent. His friend Y, who had tutored him, received a mark of 55 per cent. The instructor, on being questioned by the two students as to how their marks could have been as reported, professed himself perfectly unable to understand the situation, but it appeared that the inferior penmanship and rather prolix paper of Y had caused his paper to receive very scanty consideration. At the mid-year examination Y

received a mark of 30 per cent., mainly because his paper contained a summary of all the important facts that had been presented by the instructor, and was, therefore, intolerably long.

The reasons why examinations fail to rate students properly may be briefly summed up as follows:

1. It is extremely difficult for any one but the person who has taught a class to set a paper which shall fairly test the work done by the class. Every teacher can recall many instances where his examinations have failed to call out the knowledge which he knew the class to possess.

2. There is, as Professor Thorndike suggests, an enormous factor of unknown value to be attributed to the influence of coaching.

3. There is a broad field for the perpetration of blunders which vitiate the whole record of the results of the examinations.

4. There is the constant allowance to be made for actual dishonesty on the part of the students examined, for it is a well-known fact that examinations are regarded by the average boy, and by the occasional girl, as game which may be stalked and shot down by the aid of any amount of trickery. Not infrequently epidemics of cheating run through a large school, and I well remember one which infected a very important institution during the entire school life of one set of pupils.

The remedy for the evils due to unchecked grading by examinations, in school or college, must consist in a partial return to the old-fashioned system of recording in some fashion the instructor's impressions of the daily work, in making examinations briefer and more frequent, and giving them at wholly unexpected times. College entrance examinations should at any rate be balanced by the school's report of the pupil's standing in his several subjects, and the schools should be held to so strict an account for their recommendations that such a set of certified note-books as that above described should be absolutely impossible.

J. Y. BERGEN.

CAMBRIDGE, MASS.,
June 8, 1906.