99 per cent. of our literature. If we ignore the "Tentamen," it is preoccupied by Haploptilia, published somewhere about 1826. And it again was not formally founded so far as I can find out, but Zeller began to use it (doubtless from the Tentamen) about 1838 when he felt the need of a genus name for the group.

Nine tenths of the Tentamen names are now left in similar states of uncertainty. What would Dr. Holland do about it?

Incidentally I note an error or two in Dr. Holland's statement. As to the Tentamen being unused until Scudder recovered and reprinted it, it (or the names in it) was used by Hübner himself in the "Sammlung Exotischer Schmetterlinge" (for ten years), and it is said in the "Systematisch-Alphabetisch Verzeichniss," his last formal lay-out of the system; also by Ochsenheimer and Treitschke, Stephens, Herrich-Schaeffer, Zeller, Boisduval, Curtis and T. W. Harris. None of these authors adopted *all* the names, as the law of priority was not strictly construed in those days; also most people then did not feel the need of so many genera. Ochsenheimer specifically mentions the Tentamen, and Harris refers to Apatela as in common use. Others cite "Hübner" as author. Hübner himself says it was "partly accepted and partly rejected"—a true statement.

In bringing in the "Verzeichniss," Dr. Holland does not mention that ten years had intervened, and that in the meantime Hübner had used all the Tentamen names of butterflies as generic (as the first names of binomials), also many of the moths. This fact completely invalidates his argument.

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PARASITIC COPEPODS

IN the *Sitzungsberichte* of the Vienna Academy of Science there recently appeared (vol. 133, p. 613) a paper by Helene Kurtz upon two new parasitic copepods. The first of these new species belonged to the genus Achtheinus, and in dealing with it a question as to the validity of the genus was raised. This question was decided in the negative and it was stated that Achtheinus must be regarded as a synonym of Dana's much older genus Lepidopus. Such a conclusion might seem legitimate at first, but if we follow the steps by which it was reached we realize that the mode of reasoning employed is very defective.

In Dana's genus the first legs were uniramose and 3-segmented, the second, third, and fourth legs were biramose, the rami of the second pair 2-segmented, of the other pairs 1-segmented and rudimentary; the terminal segment of the maxillipeds was flattened into a broad lamina covered with scales, but without a claw. In Achtheinus on the contrary all four pairs of legs are biramose, the rami of the first 3 pairs 2-segmented, of the fourth pair 1-segmented; the maxillipeds have an ordinary terminal segment, with a stout terminal claw, but without scales.

Dana's type specimen has long since disappeared and no others have been obtained that could be identified with it, and hence it is impossible to verify or disprove his genus by any reexamination of specimens. In such a case the validity of the genus must rest upon the original description and the figures illustrating it. Fortunately both of these in the present instance are clear and decisive. Dana recorded the first legs as uniramose, and his figure showed a distinctively uniramose and 3-segmented leg, bearing no resemblance whatever to the first legs of Achtheinus, nor to either ramus of those legs. In the second legs also the basipod is long and narrow and extends out laterally, with the two rami fastened to the outer end, a very different type of leg from that found in the second pair of the genus Achtheinus.

If Dana's genus is to be accepted at all, it must be given these exact details which he described and figured, and nothing can be added to them or subtracted from them. Especially is there no opportunity for conjectures or hypothetical inferences.

Stebbing in discussing South African Crustacea in 1918 (Annals South African Museum, vol. 17, part 1, p. 41) fully recognized these facts. Although he did suggest that the first legs of Dana's specimen "might easily have lost one of the branches in the process of dissection," he nevertheless adopted the genus name Achtheinus and added "the merely conjectural identity of Lepidopus may stand aside."

Miss Kurtz must have failed to understand Stebbing's attitude in the matter for she adopted his suggestion but ignored his real conclusion. Furthermore she carried the suggestion farther than he did by declaring that he had said that the endopod of the first legs in Dana's specimen was probably (wahrscheinlich) broken off. With this for a premise she argued that if the basal segment in the first legs of Dana's genus be regarded as the basipod, the other two segments would correspond to the exopod of the first legs in Achtheinus. And if we could find that "probably" broken-off endopod, and if it should prove to be 2-segmented when we did find it, then the first legs of the two genera would be similar. She considered this sufficient proof of the identity of the two genera and made Achtheinus a synonym of Lepidopus.

She disposed of the scaly covering of the terminal segment of the maxillipeds, which Dana used as the basis of his genus name, by saying that no such

structure had ever been found in the entire order of copepods, and hence Dana must have been mistaken in what he thought he saw. Steenstrup and Lütken described and figured a similar structure in the maxillipeds of their new genus Perissopus (Kongelige Danske Vidensk. Selskabs Skrifter, ser. 5, vol. 5, 1861, pl. 12, fig. 25), and there is every reason for believing the structure in both genera to be genuine.

Absolutely hypothetical reasoning like that quoted above can have but little influence, and it certainly does not possess sufficient merit to prove or disprove the validity of any genus.

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NEW DUST TREATMENTS FOR OATS SMUTS

SINCE the introduction of copper carbonate for wheat bunt control (Darnell-Smith, and Ross, 1919)[1] considerable interest has been shown in dust treatments for grain smuts. It was found by one of us (Thomas)[2] in field tests in 1924 that copper carbonate alone was not effective in controlling oats smuts. However, when one part of either copper carbonate or copper sulfate was mixed with two parts of mercuric bichloride the dust was effective. These mixtures are too expensive for general use even though rapid and easy of application. Other tests showed that the mixture was less effective when inert fillers were added. In 1926 a mixture of one part of copper sulfate, one part of mercuric bichloride and one part of cresylic acid was found to control oats smuts. While the cost of this dust was only about half that of the copper sulfate-mercuric bichloride dust, yet it is also too expensive for general use.

None of these dusts, although they gave satisfactory control of oats smuts, was as cheap as the liquid formaldehyde. This liquid treatment is objectionable because of the difficulty in handling the wet grain and the possibility of seed injury. Since formaldehyde is so effective against smut, and the wet methods of grain treatment are objectionable, an attempt was made to put formaldehyde in a dust form. This was done by mixing 40 per cent. formaldehyde with either infusorial earth or charcoal. These dusts stick well and thoroughly coat the grains when mixed with them. In these tests dusts containing 9 per cent., 15 per cent. and 25 per cent. of 40 per cent. formaldehyde were used, each at the rate of 3 ounces per bushel of grain. While the checks showed 47 per cent. smut the various formaldehyde dusts reduced smut to less than one per cent.

Another new treatment, iodine vapor dust, was tried in these same experiments. This dust was made by mixing finely ground solid iodine with infusorial earth. The iodine vaporizes readily at ordinary temperatures and diffuses through the infusorial earth giving it a light yellow-ochre color. This dust contained 5 per cent. by weight of iodine and was applied at the same rate as the formaldehyde dust. Only three smutted heads were found in three one-hundredth acre plots which were treated with this dust. It is possible that lower concentrations of iodine dust will also control the oats smuts. Further tests are under way. The cost of treating grain with these dusts is estimated at considerably less than 5 cents a bushel.

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DO CATS SHARPEN THEIR CLAWS?

LAST winter the family cat (castrated male, 3½ years old) shed a number of claws in the house. These were found during January and February, some of them split lengthwise, the others intact. It struck the writer that the shedding of claws is probably a normal phenomenon with cats comparable to related phenomena, as that of the shedding of horns by deer. If this were true, it might be expected that some of the claws would be left in the bark of those trees which the cat used regularly for scratching. Upon investigation in April this bit of evidence was found in the form of two halves of a claw stuck into the bark of an elm and several halves lying under different trees used by the animal. The section of the bark was cut from the tree and with the pieces of claws has been mounted and placed in the college zoological museum.

This is but an isolated observation. There are good grounds, however, for believing the conjectured explanation to be correct. Cats do not instinctively or from experience select good grinding surfaces, slightly rough and hard, such as a cement walk, the foundation stone or the corner boards of a house, or smooth hard posts. They make use of the rough bark of trees which is always much softer than their claws. Observations of their scratching movements show that the animals do not scrape downward over the surface of the object, but catch the claws into the surface and with a circular stroke pull first downward and then outward and slightly upward. Careful examination of the cat's paws each time when a

[1] Darnell-Smith, G. P. and Ross, H. A dry method of treating seed wheat for bunt. *Agr. Gaz. N. So. Wales* 30: 685–692, 1919.

[2] Thomas, Roy C. Dust treatment for smut in oats. SCIENCE, No. 1567, Vol. LXI: 47–48. January 9, 1925.