cians to vivisect animals for experimental purposes, or to undertake painful operations of any other kind.

Of course we cannot desire that the misuse of this right should escape punishment. For it is with such an abuse, not with the production of pain, that torture of animals first comes into operation. Were every production of pain in itself an act of torture, punishment ought to be inflicted on a veterinary surgeon when he operates on a sick horse for the purpose of curing it. Culpable torture of animals lies before us, when pain is inflicted on an animal in a useless manner, and without purpose. Hence nothing can be said against the view that every experimenter should be subject to official inspection; but surely this does not require a society for the protection of animals. He who has a greater interest in domestic animals than in science, that is, in the knowledge of truth, is not qualified to be an official controller of scientific affairs. To what would it lead, if an experimenter, who had commenced his experiment in good faith, had perhaps o answer to some layman during the experiment, or to a magistrate afterwards, the charge that he had not selected some other method, or some other instruments, or perhaps some other experiment?

No: here is no question of objective right. So long as perfect liberty is left to every possessor of animals to kill his animals, be they wild or tame, at any time, and according to his own judgment, so long must it also be permitted that, for scientific ends, and thus on purely internal grounds, experiments should be made on living animals. But the necessity of such experiments can naturally only be decided by the inquirer himself; as to the choice of place, time, the admission of strangers, he may be required to communicate with the inspector; but the carrying out of the experiment must remain in his own hands. So we understand the expression of the freedom of science.

What is objected to us is, that it is the outraged feelings of the possessor of horses, pet dogs, and parlour cats that excite him to the belief that the same thing may happen to his beloved animals as to the animals in the learned institute. We can sympathise with him. We would force no one to deliver to us his favourites, not would we steal them. Were either of the two to occur, probably in every country the intervention of the magistrate would be called on with effect. But we also require that the disposal of the life and maintenance of those animals which have come into our possession in a legitimate way, should not be lessened to us, and that we should not be considered or declared to be *à priori* rough, void of moral feeling, and barbarians standing almost on the threshold of crime. The evidence that moral earnestness is failing in modern medical circles is nowhere afforded. The reproach that Christianity is imperilled by vivisection is worthy of Abdera. The assertion that the medical youth are inevitably "brutalised" by dissection and vivisection is, as usual, snatched from the air; as it is also a calumny that the vivisecting teachers have suffered injury to their morality

At least however there is no ground to fear for science itself. To it is applicable what Bacon said of the sun: "Palatia et cloacas ingreditur, neque tamen polluitur."

SOCIETIES AND ACADEMIES

PARIS

Academy of Sciences, August 1.—M. Jamin in the chair.—The following papers were read:—On the formation of tails of comets (second note), by M. Faye. Herschel, Arago, Delaunay, and other astronomers did not thoroughly study the tails of comets, but Newton had already given a quite sufficient explanation of the phenomena. The tail is nothing else—he maintained—than the result of a continual emission of molecules from the head of the comet. It is very much like the tail of smoke emitted by a running locomotive, its outer end being lost in space, and the inner one continually receiving a new supply of molecules. M. Roche, who has made the necessary calculations, taking account of the repulsive force M. Faye advocates, has worked out all those shapes of tails which we witness in reality.—On the equivalence of quadratic forms, by M. Jordan.—On a modification of the electric lamp, by M. Jamin, being the result of observations on the electric light in vacuum, and in closed vessels containing various gases.—On the perchloric acids, by M. Berthelot.—On the travels of Moncatch-Apé, by M. Quatrefages. This American Indian undertook a journey to the north-western coasts of America at the beginning of last century, in search of the origin of his race; whilst on this coast he learned and witnessed that it was visited every year by white men with long black beards, and M. Quatrefages proves that these men were originally from the Loo Choo islands.—On the first meteorological, topographical, and hydrographical observations at the future Panama canal, by M. de Lesseps. Several maps of the coast are prepared, and a meteorological station is opened at Colon.—On the application of electromotive power and of M. Planté's secondary piles to the direction of aërostats, by M. Tissandier. In an aërostat which has a volume of 2200 litres, 3·50m. long, with a diameter of 1·30m., and can raise a weight of 2 kilogrammes, having a Siemens machine which weighs 220 grammes, and a secondary couple of 1300 grammes, the propulsory helix makes six and a half revolutions per second, and the balloon acquires a speed of 1 metre per second for forty minutes. The small Siemens machine, with three elements, produces the work of 1 kilogrammetre.—The elements of comet *c* of 1881 (Schäberle), by M. Bigourdan, as deduced from observations at Vienna on July 18, and at Paris on July 23 and 28. Its brightness, which is still increasing, will be on August 23 seventeen times as much as it was on July 18.—Spectroscopical observations on the comets *b* and *c*, 1881, by MM. Thollon and Tacchini.—On the lengths of spectral bands given by compounds of carbon, by M. Thollon.—On the constitution of comets, by M. Prazmowski.—On the theory of trilinear forms, by M. Le Paige.—On the influence of pressure on dissociation, by M. Lemoine.—On the heat of formation of explosives, by MM. Sarrau and Vieille.—On oxycyanides of lead, cadmium, and mercury, by M. Joannis.—On the heat of combustion of heptane and of hexahydrotoluene, by M. Louguinine.—Third note on the magnesia industry, by M. Schlösing.—A contribution to the study of the transmission of tuberculosis, by M. Toussaint. The juices of animals which have had tuberculosis transmit the disease with very great ease, even when submitted to a high temperature, but especially when employed uncooked.—On the injection of the virus of rabies into the circulation, by M. Galtier. It seems to prevent infection.—On hemeralopia and on the functions of the visual purple, by M. Parinaud.—On the applications of electromotors, by M. Trouvé.

VIENNA

Imperial Academy of Sciences, July 21.—L. T. Fitzinger in the chair.—A. Rollett, on the derived albumins noted as acid-albumins and alkaline albuminates.—Dr. Stur, on the Silurian flora of the H-h_1 stratum in Bohemia.—S. Lustgarten, on an ethyl nitrate formed by the action of nitric acid on glycogen.—Ernst Lecher, on the spectral distribution of radiant heat.—Dr. T. Kessel, on the function of the external ear in relation to the space-perception.—On the difference of intensity of a linear-produced sound in different directions, by the same.—F. Fossek, on the products of condensation of isobutyl aldehyde.—Zd. H. Skraup, on quinine and quinidine.—Note on some quinine compounds, by the same.—Prof. Freund, on the formation and preparation of trimethene alcohol from glycerine.—Preliminary note on trimethene, by the same.—H. Weidel, on a compound isomeric to α-sulphocinchoninic acid.—G. Goldschmidt, on mono- and dinitropyrene and amidopyrene.—E. Weiss, a communication on the third comet of the year 1881 (1881 *c*), discovered by Schäberle at Ann Arbor (Michigan).—T. Woehner, report on his observations of the earthquake phenomena in Croatia in the year 1880.

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