C. R. Biologies 335 (2012) 350–355

Contents lists available at SciVerse ScienceDirect

Comptes Rendus Biologies

www.sciencedirect.com

Note historique/Historical note

De la création des Écoles vétérinaires à l'évolution de la notion de contagion aux 19e et 20e siècles

From the creation of the Veterinary Schools to the evolution of the notion of contagion in the 19th and 20th centuries

Charles Pilet [1]

Académie des sciences, 23 quai de Conti, 75270 Paris cedex 06, France

INFO ARTICLE

Historique de l'article :
Disponible sur internet le 3 mai 2012

Mots clés :
École vétérinaire
Vaccin
Santé animale
Santé de l'Homme
Santé publique
Physiologie comparée
Pathologie comparée
Zoonoses

RÉSUMÉ

La création des Écoles vétérinaires au 18e siècle allait révéler une pléiade de scientifiques dont les uns furent des précurseurs de Pasteur, certains des émules, d'autres des disciples, collaborateurs ou amis du Maître. Parmi les précurseurs citons : Chabbert, Huzard, Girard, Delafond, Renault, Toussaint, Galtier. Parmi les émules : Chauveau, Arloing, Cornevin et Thomas. Parmi les disciples, collaborateurs ou amis de Pasteur : Bouley, d'abord spontanéiste résolu, puis le plus fervent défenseur de Pasteur (Président de l'Académie de médecine et de l'Académie des sciences) ; Nocard, Directeur de l'École d'Alfort, important collaborateur de Pasteur. Plus tard : Leclainche, créateur de l'Office International des Épizooties et Président de l'Académie des sciences ; Guérin créateur avec Calmette du vaccin BCG ; Ramon, père des anatoxines (vaccins contre la diphtérie et le tétanos, vaccins associés, adjuvants de l'immunité). Ainsi, la création des Écoles vétérinaires aura contribué, non seulement à l'évolution de la notion de contagion, à l'amélioration de la santé animale et de l'économie des productions agricoles, mais également à de sérieuses avancées en matière de santé de l'Homme et de protection de la santé publique.

Keywords:
Veterinary School
Vaccination
Animal health
Human health
Public health
Comparative physiology
Comparative pathology
Zoonosis

ABSTRACT

The creation of the Veterinary Schools in the 18th century would reveal a plethora of scientists, some of whom would be the precursors of Pasteur, some rivals, others followers collaborators or friends of the Master. Among the precursors let us name Chabbert, Huzard, Girard, Delafond, Renault, Toussaint, Galtier ; among the rivals: Chauveau, Arloing, Cornevin and Thomas; among the followers, collaborators or friends of Pasteur: Bouley, at first a resolute spontaneist, then the most fervent in defense of Pasteur (President of the Academy of Medicine and of the Academy of Sciences) and Nocard, Director of the School in Alfort, an important collaborator of Pasteur. Later, there was Leclainche, who created the International Office of Epizootics, and who was President of the Academy of Sciences; Guérin, who with Calmette developed the BCG vaccination; Ramon, the father of anatoxins (vaccines against diphtheria, and tetanus, combined vaccines, adjuvants to immunity). Thus, the creation of the Veterinary Schools contributed

Adresse e-mail : chpilet@wanadoo.fr.

[1] Membre de l'Académie des Sciences de l'Institut de France ; Président honoraire de l'Académie nationale de médecine ; Directeur honoraire de l'École nationale vétérinaire d'Alfort.

1631-0691/$ – see front matter © 2012 Publié par Elsevier Masson SAS pour l'Académie des sciences.
doi:10.1016/j.crvi.2012.03.006

not only to the evolution of the notion of contagion, to the amelioration of animal health and the economics of agricultural production, but also to serious advances in human care, and to the protection of public health.

Abridged English version

The greater part of the 19th century was dominated by a debate between *"spontaneists"* and advocates of *"disease specificity"*, that is to say between *"non-contagionists" and "contagionists"*. The former believed that transmissible diseases appear spontaneously, while the latter, in particular after Pasteur's important work disproving spontaneous generation, thought such diseases were caused by an "*exogenous virus*".

The creation of veterinary schools in the 18th century brought forth a myriad of remarkable scientists, among which were some of Pasteur's *predecessors*, *emulators*, *students, collaborators and friends* and others who would become his *successors*.

Among veterinarians who were Pasteur's *predecessors*, Chabert (Alfort) tried to classify carbuncular diseases. Huzard (Alfort), as early as 1790, evoked the contagious nature of tuberculosis. Girard (Alfort) suggested a "principle of contagion" for certain gangrenous tumors. Four men had a particularly important role: Delafond (Alfort) established a relationship between anthrax symptoms and the presence of rod-shaped corpuscles in the bloodstream; Renault (Alfort), together with Delafond, transmitted cholera to chicken, experimentally; Toussaint (Toulouse) was the first to immunize sheep against anthrax and also cultured the cholera agent from the blood of dead chicken; and Galtier (Lyon) was the first to show that rabies could be transmitted to rabbits by injecting them with the saliva of a rabid dog, and also proved the possibility of immunization by intravenous inoculation of rabid saliva to sheep. Galtier was considered for a Nobel Prize, but died before being nominated.

Among Pasteur's *emulators*, Chauveau, who worked at the veterinary school in Lyon and is better known for his physiology work (he established, with Marey, the basis for cardiac auscultation), contributed significantly to bacteriology and immunology (tuberculosis) as did his students, Arloing (tuberculosis), Cornevin and Thomas (cattle blackleg).

Among Pasteur's *students, collaborators and friends*, Henri Bouley, at Alfort, was first a staunch spontaneist, then became one of Pasteur's most fervent supporters. An impressive speaker, he endlessly promoted Pasteur's work, especially at the Académie de médecine and the Académie des sciences, two prestigious institutions of which he became President.

Edmond Nocard, first a professor at and then a director of the Alfort veterinary school, was an early important collaborator of Pasteur (tuberculosis, glanders, mycoplasmosis, antidiphteria and antitetanos antisera therapy). Pasteur held Nocard in such high esteem that, in spite of the opposition of a selection committee, a minister's approval was obtained to include the young veterinary teacher on a mission Pasteur had organized to Egypt to study cholera.

Among Pasteur's *followers*, Emmanuel Leclainche, who was a student of Nocard, prepared with Morel the first serum against blackleg and then against swine erysipelas. His interests included the organization of sanitary prophylaxis for animal diseases, and animal diseases transmittable to humans. He created the International Office of Epizootics (OIE, which became the World Organisation for Animal Health) in 1924 and was nominated President of the Académie des sciences in 1937.

Camille Guérin, a former student of Alfort, worked for a long time with the doctor Albert Calmette on tuberculosis pathology and immunity. Together they created the *B.C.G. vaccine* (Bacillus Calmette-Guérin) that made it possible to protect many people against tuberculosis.

Gaston Ramon, a former student of the Alfort veterinary school and former director of the Pasteur Institute, discovered *anatoxins*, opening the way for *vaccinations against diphteria and tetanus*. Gaston Ramon also demonstrated the value of using *combined vaccines* and *adjuvants and other substances* in stimulating immunity. His scientific work is particularly rich and would deserve to be better known by the greater public.

With successive advances in knowledge, the *concept of contagion* became widely accepted and led to practical measures for the protection of public health. Thus, as early as 1872, Chauveau insisted on the importance of *meat inspection*. This issue became, in 1878, the main subject of the first national veterinary meeting. The same year, *a curriculum in meat inspection* was created at the Alfort school. In 1881, a law was published on *animal health policies*, which described measures to be taken when a contagious disease was reported. In 1885, the *veterinary inspection service of the Paris and Seine departments* was created and, in 1901, a veterinary service (*Direction des services vétérinaires*) was established in every French department.

Thus, the creation of veterinary schools contributed greatly, not only to the improvement of animal health, but also to significant progress in human medicine and public health.

1. Introduction : spontanéistes contre spécifistes

Une grande partie du 19^{e} siècle a été dominée par le débat entre *« spontanéistes »* et *« spécifistes »* et partant, entre *« non-contagiosistes »* et *« contagiosistes »*. Pour les uns, les maladies transmissibles apparaissent spontanément, pour les autres, notamment après les remarquables travaux de Pasteur sur la génération spontanée, ces maladies ne peuvent provenir que d'un « *virus exogène* ».

Les vétérinaires issus des Écoles créées par Bourgelat en 1761 allaient participer activement à ces débats. Certains