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Etienne Rabaud

Professor at the Paris Faculty of Science.

FRENCH ASSOCIATION
FOR THE PROMOTION OF SCIENCE

CONGRESS OF LA ROCHELLE
(1928)

308
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ADDRESS

Box 280

Lucien Reychler

"UTRIUSQUE LABORE,,

Concerning the Collaboration in Botany of Man of Science
and Practical Breeder



BRUSSELS

GOEMAERE, PRINTER TO THE KING, PUBLISHER
21, Rue de la Limite, 21

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1950

author's list
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June 16, 1930 DA/HE

List of works published by the same author.

Concerning the possibility of provoking systematically among plants:

a) *The appearance of new vital phenomena.*

b) *Mutation.*

(Brussels, Goemaere, 1926. French, English and Dutch editions.)

A word to practical men. A protest.

(Brussels, Goemaere, 1927. French and English.)

Indifference or want of comprehension.

(Brussels, Goemaere, 1927. French and English.)

Why, in botanical science, a collaboration between scientists and practical men, under the present circumstances, cannot be realised.

(Brussels, Goemaere, 1927. French and English.)

Mutation with orchids.

Results obtained by crossing with mutants of Cattleya. —

Freaks. — Phenomena of telegony?

Album in-4° with 49 plates in the text. (Brussels, Goemaere, 1928. French, English, German and Dutch.)

Concerning the foundation of a German research institute at Müncheberg.

On the necessity to try and provoke systematically Mutation of cereals. Foundation of a special institute.

(Brussels, Goemaere, 1929. French and English.)

Indexing summary

as a guide to the easy perusal of my different publications. --

Two incidents. — Documentary part.

(Brussels, Goemaere, 1929. French and English.)

The embryo of a collection of orchids to be preserved to science.

Followed by :

Dr Z. KAMERLING (Leyden) **Fecundation by traumatism as practised by Lucien Reyehler.** (Scientific control.)

Complement to the Album « Mutation with Orchids ».

Album in-4° with 25 plates in the text.

(Brussels, Goemaere, 1930. French and English.)

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ARE RESERVED FOR ALL COUNTRIES.

I thank my friend Rabaud for allowing me to reproduce the fine address he delivered at La Rochelle at the Congress of the French Association for the Promotion of Science. He advocates the conception, so rarely admitted by « savants », of science advancing by the collaboration of all, by the labour of the humblest worker, ignored or disdained, as well as by that of the most conspicuous man of learning. It is an apology of research wherever it comes from and indirectly an encouragement, in a spirit of mutual esteem, to collaboration between man of science and man of practice so indispensable in botany, to mention only the branch I am familiar with.

But it is Rabaud's greatest merit to have expressed at La Rochelle feelings which, without ostentation, in a touchingly simple and natural manner, he practises himself. I know so by experience.

During all the years I worked under his control, as severe as it was disinterested, I never once felt that scornful pride with which sometimes men of science try to crush one.

The brotherly feeling he manifested from the very first made me immediately feel at ease with him and the interest he showed in the least of my efforts was a stimulus that doubled my capacity for work.

Never, in any of his letters, the least manifestation of a desire to appear superior, always the same kind sim-

plicity, the same wish to understand and guide me. Putting his vast erudition at the service of a breeder, he was for me an incomparable master, an ideal counsellor and, why not repeat it over and over again : if to scientific research I made some contribution of indisputable interest, it is owing to his help and his encouragement.

Hence, as I wrote elsewhere, when I communicated to my friend the sculptor Vandevelde the leading idea for the plate and superb basrelief « Utriusque Labore » it was Rabaud who was in my mind.

Deeply grateful to him I make bold to insert these lines before his address.

Lucien REYCHLER.

ADDRESS

of Mr. Etienne RABAUD

*Professeur at the Paris Faculty of Sciences,
Secretary to the Association.*

Ladies and Gentlemen,

The present speaker must start by excusing himself for occupying a place which is not his normally. Ill health of our chairman and professional duties of our vice-chairman call the secretary of the association to the presidency of this Congress. In your name as well as in his own he expresses to Mr. Chairman Lindet our regret and our best wishes for his recovery, and our regret also to Mr. Vice-Chairman G. Perrier, prevented from attending by a unhappy coincidence.

We meet here for our 52d Congress and meet once more in this town of La Rochelle, that already kindly received us as far back as 1882. Of those who invited us nearly half a century ago, very few, without doubt, have been left among us. One of them, Mr. Georges Musset, the soul of the Congress of 1882, was taken away quite recently. We gratefully and respectfully remember him. Men of another generation invite and receive us to-day. But if they are other men, the spirit remains the same : they invite and receive us because they preserve the aspirations of their predecessors towards an ideal of science and high culture. We thank them.

More immediately and quite personally we tender our thanks to Mr. Senator-Mayor of La Rochelle, who widely opens the gates of the town to us and receives us so graciously. We also owe special thanks to the Chairman and to the Members of the Local Committee, who took diligent care of the organisation of this Congress, an organisation rendered particularly difficult in a center like La Rochelle, of which the climate and beautiful scenery attract innumerable visitors. In spite of all, Gentlemen, you contrived — and we feel it deeply — not only to assure the material comfort of the members of the Congress, but also to set up a scientific exhibition full of information for us. You moreover organised trips, in which many of us rejoice beforehand. At your appeal people of good will multiplied and brought their help and we shall not forget in our thanks the Syndicate of ship-owners of the La Rochelle Chamber of Commerce.

We therefore thank you, Gentlemen, to day as we did yesterday. La Rochelle clearly understands the important roll of the Congress of the *French Association for the Promotion of Science*.

Answering to a larger and more comprehensive conception and so uniting all the diverse scientific methods, the *French Association*, more than any other grouping, constitutes a mighty centre of coordination, diffusion, animation. Do not all, whom scientific research interests, meet at every one of our Congresses? Whether they arrive from France or from abroad,

whatever their tendencies or professions, they come in order to realise immediate and intimate contact with one another, to know each other and find an opportunity, while comparing their ideas, to modify or widen their horizon, to discover in their own fields of work directions that must be followed or points that must be elucidated.

It is for the isolated workers, who are independent of all connection with official research, that our Congresses have a particular interest. They come and bring us here the results of their labour, of that labour caused by the purest scientific curiosity, the only one that is legitimate and respectable, that knows neither frontiers, nor races, nor castes, that laughs at honours, ignores thoughts of sordid gain, but procures the joy of knowledge, the joy of penetrating, alone and first, in regions as yet unexplored. In our annual meetings these independent workers find an assurance that their curiosity was not vainly exercised: that is why they feel encouraged and comforted. And so, ever since its foundation, wherever it holds its general meetings, the *Association* invites all the learned, all men of science. And what does it mean by the term?

When the term « learned », « man of science », is used, the man in the street opens his eyes very wide. It seems as if he expects, from a man made like himself, to see emanating some mysterious power. Yet he sees a mere man. Hence he fancies this man to be distinguished by having learned very much, by « knowing » much

as a schoolboy learns and knows grammar, history or mathematics, filling himself with somebody else's work until he understands nothing of it, without adding to it anything from his own : a true ambulating dictionary having painfully acquired, by abundant reading, an enormous mass of « information », giving an illusion of attaining the limits of the knowable... But what the man in the street takes for a learned man, a man of science, is nothing more than an erudite, honourable, doubtlessly, though of a necessarily limited roll, as he does not busy himself to disentangle the confusion of the unknown, as he does not *seek*.

Now, seeking is properly knowing, and only the seeker *knows*. He knows, for he exactly measures how far his ignorance goes, for he, at every step, instead of fancying himself arrived, considers himself at the starting point and strives with all his main to progress. He often succeeds, but only by a constant effort of initiative. For the man of science, the truly learned, does not exist but by his initiative. His eyes fixed on the unknown, animated by a veritable spirit of intellectual adventure, he dares advance and finds the means to do so. Truly, the path he makes is not always wide; but he makes one and always goes onward. However narrow, this path is his creation. By his personal and direct work he opens a way that allows him to behold new surroundings.

Does the learned man feel no interest outside his own direction ? He assuredly does, though. Starting on dis-

covery, he does not start at hazard. If he dares launch himself in the unknown and run some risks, he first applies for information. But he does not content himself with endless enquiries. He looks round him and in every direction. He ponders on the acquired facts. In one word, he gathers all that may favour his research and fecundate his discovery. He knows the connection between scientific problems, how the roads cross and intertwine. He knows that looking ahead as far as possible does not mean shutting the eyes to all else.

And as such is the learned man, the man of science, the man moving always in the midst of ignorance, which are the material means he needs for his research ? Does he want a laboratory or gangs of assistants ? He, whom the spirit of research animates, will always strive to satisfy his curiosity and always his efforts will furnish him with the indispensable. The finest material organisation, the most powerful help, will not make up for the strenuous and intelligent will of the man of initiative, who sees his goal and means to reach it. That is why the progress of Science is as well caused by the efforts of the independent worker as by those of the one favoured by the help of official organisation. Independent or official, both have an equal right to the name of man of science. Their relative situation is of little moment and depends too often on imponderable contingencies. Both have equal worth. The contribution of the one ranks with that of the other and vice-versa. What each of them adds to the work of science is what every work-

ing and thinking man adds. It is the grain, either small or big, added to other grains. It is the thing found and often preparing other findings, preparing in this way the great discovery or leading to general views. Sometimes a remark by an intelligent observer will do to cause a fine consecutive development.

Who will count the quantity of effort displayed since Denis Papin noticed and first used the energy contained in steam under pressure? What a series of ingenious and stubborn artisans, ignored themselves and unknown to each other, have not been necessary to arrive at our present steam-engines? And how many small inventors, undomitable at their obscure task, have collaborated, unknown of each other, to lead us from the yellow piece of amber rubbed with a cat's skin unto Volta's pile, unto the present development of electrical science and industry, unto those mighty views on the constitution of matter?

And in another domain: has not the work of Réaumur, that illustrious citizen of La Rochelle, imperfect though so great by its consequences, been the centre round which successive discoveries agglutinated so as to cause the birth of an entire branch of biology? A whole pleiad of observers and patient experimentists, physicians, lawyers, officers, manufacturers, merchants, officials of all kinds, have brought and bring their contribution, either important or modest, but always useful, to the science of animal life. Some names emerge: Dr Léon Dufour's, councillor Perris', commander Fer-

ton's, to quote only those who disappeared, but an infinite number of others have left a visible mark of their work, done freely with primitive means. And others, to day, continue the task. An enormous mass of facts, accumulated in this way, already now gives more than mere indications on the mechanism and determinism of phenomena.

In the birth and development of anthropological science the action is manifest of workers left to their personal means. Enlightened amateurs are the first to affirm Man's geological antiquity. Though reiterated their affirmations are not unanimously accepted. A director of the Customs, Boucher de Perthes, begins shaking resistance by his discovery of the « first diluvian hatchets » interred together with bones of great mammals of vanished species. The start is given. Denials, mockeries, disdain, the weight of the whole Academy of Science, nothing hinders truth from establishing itself: discoveries succeed thanks to the researches of Boucher de Perthes, Edouard Lartet, Gabriel de Mortillet, Cartailhac and others, all workers at this immense task, moved by the mere desire of ever knowing more, of adding to the intellectual patrimony of Mankind their disinterested contribution.

So Science advances by common effort. Fact after fact, our mass of information grows. No matter who the worker is, provided he works well.

The annual meetings we hold in different places are part of this common effort, precisely because they are

a centre where in a numerous body we collect our forces. Whatever the origin of the efforts, none must be disregarded, none are neglectable : nobody knows what a new fact, in spite of its apparent insignificance, may probably or possibly lead to. The discoverer of the fact is as ignorant of it as anybody; he will perhaps find a number of other facts without being able to deduct their essence; he will perhaps remain an obscure inventor whose name will be lost. What does it matter ? His work remains, imperishable, useful, fertile; from it other discoveries will spring; round it other facts will be grouped... Then, one day, these germs will shoot up; a man will come and examine them in detail, meanwhile grasping them as a whole. That will be the Great Man. Having arrived at the proper time he will draw from the much prolonged common effort all its useful effect. His name will mean and denote a whole work, though actually covering the work of a collectivity, of an anonymous collectivity. In spite of his greatness would Claude Bernard personify physiology if not Harvey, J. Hunter, Ch. Bell, Lavoisier, Bichat, Flourens, Magendie and so many others had thrown the light on numbers of particular facts ? We certainly owe to Claude Bernard all our admiration, but do not we owe it also to these known and unknown forerunners, who had already accumulated so much material when Claude Bernard appeared ?

So all things develop. Every one of us, even the humblest, leaves behind him a work, often very small and

often unappreciated, that nevertheless exercises its influence. Social evolution is made by these scarcely noticeable influences exercised in infinite number; they work on a generation and modify it; the modification is passed on to the next generations, who in their turn undergo new influences; these successive acquisitions are so many precious elements, constantly handled and constantly revised.

Shall we therefore say that, barring the difficulties inherent to its very nature, research proceeds without impediments ? Boucher de Perthes' example proves that the mere mention of a discovery sometimes sets loose a strong opposition. Must we wonder at it ? Every novelty meets with incredulity, contempt and resistance. The opposition has its source in the misoneism that lives in the depth of our very being. We are shut up in our habits and do not feel for anything that interferes with them. Even as to material things Man does not care much for change. In the intellectual sphere he does not like it at all. When once an intellectual attitude has been taken he sticks to it : Woe to you if you wish to make him adopt another !

Any innovator, whatever his rank, may expect to be disappointed. Doubtless those who arrived, those who, more by cleverness at doing than by knowing, secured themselves a comfortable place in the train of honours, always head the opposition.

That is why the worker who is buffeted starts accusing « officials » of putting the light under the bushel.

He had better first try and find who fights against him. He will not only detect these « officials », who are disturbed in their quiet, but all those who, having never found anything themselves, cannot stand another's fertile activity...

Truly, if two antagonistic groups there are, they are not both groups of learned men. On the one side we have the learned, the men of science, without any distinction of origin and whoever they are, working with diverse means, all disinterested and necessarily modest men, aware of their shortcomings and alive to the fact that error constantly threatens them, yet not hesitating to affirm, when they are sure of themselves. On the other side we find the men who from simulated labour are able to draw important material profit. These are afraid of obstacles on their road. With all their might they try to stop the inconsiderate worker who raises the obstacle. Yet truth advances and finally brings to nought this interested opposition.

No, verily, two categories of men of science do not exist. As time moves on the great names of science acquire their proper value. All are mixed indistinctively. We forget that Maupas, the great zoologist, was a mere librarian, — the great neurologist Duchenne a modest physician of Boulogne, — Darwin, Mendel, Lubbock, great also in different domains, nothing but « amateurs ». And we at the same time forget that Lamarck, Cuvier, E. Geoffroy Saint-Hilaire, Claude Bernard, Charcot, held a chair and were in happy posses-

sion of laboratories. They all are ranked the same. We measure them alike. We understand how the obscurest and the most brilliant meet in a common ideal. All had their ill-luck and their satisfactions; all worked without afterthought.

Let us follow their example. Let us as freely satisfy our curiosity, the source of such pure joy to any one who lifts a small corner of the veil covering the unknown. Every one feels the height of moral elevation he reaches when, without any desire of sordid gain, bent on learning what as yet nobody knows, he tries to contribute to the common patrimony.

And if every one of us in his sphere of action followed this dream of learning, always learning, if he never wished for any but the mind's satisfactions, if he only drew from his discoveries that which strengthens our mastery over the unknown whilst improving our life conditions, — then, surely, the human mind would arrive at its full beauty and veritably Science would be the great Peace-Maker.

« UTRIUSQUE LABORE »

Deeply convinced that the progress of botanical science is intimately bound up with the collaboration of the man of learning and the practical breeder, I advocate this idea, *with all the means at my disposal*.

It is of less moment how my words are received. It suffices me to think I am right.

L. R.

« UTRIUSQUE LABORE »

Concerning the Collaboration in Botany
of the Man of Learning with the Practical Breeder.

In his fine address at La Rochelle Rabaud stood up for research *whatever its origin*. As to me I should like it to be understood, that there are in botany *on the one side* humble workers who often, as it were accidentally, make discoveries by working on a field nearly wholly ignored by Science and whose work is lost; *on the other side* men of science almost quite unacquainted with the very life of Nature, whose research cannot be but too exclusively theoretical to be really fertile.

As a rule the man of learning isolates himself and refuses to come into contact with the environment in which the practical breeder works. It is especially the laboratory botanist who generally pursues his research far from *the very life* of plants. As a result he does not grasp the importance of the facts the breeder offers him.

Nothing but the reform of university studies of botany, too exclusively theoretical, could remedy this evil.

Already at the university the future scientist must be taught to work in the true laboratories of the botanist: *the hothouse and the experiment garden*.

But this reform will be slow in getting realised. Hence a world remains closed to the botanist, the more so as the access to it is not so easy. Initiation is long

and difficult. *True* men of practice, possessing the *sense* of plant-life, are rare. Years of practice and special aptitude are needed to acquire mastership. But this long apprenticeship in the laboratory of Nature is worth the studies of the young doctor, freshly produced by the university, who, as he can speak like a book, fancies himself entitled to disregard *our* work.

Yet this work deserves his attention. In his daily work every man of practice, even the merest empiric, may happen to come across interesting facts.

For in *Dynamic Botany*, *the very ignorance of what others realised* often constitutes the strength of the experimenter. Constantly grappling with the great forces of Nature, his mind free from all influence, he makes discoveries without being aware of it. If, at the proper time, the scientist were there to note facts and sift the good grain, we should have the collaboration needed to wrest from the Unknown some particles of truth.

Can one understand that the botanist would stubbornly refuse to study a world where the gropings of empirics already could discover so many interesting problems? The more so as in the present period in every domain of human activity a progress has been realised, far surpassing all that the wildest imagination ever dreamed.

This obstinate attitude also causes the current ideas on life in Nature to remain so arbitrary and puerile, so little in harmony with what any intelligent observer

may note, that it is not exaggerated to say they are *unworthy* of the state of culture society attained.

Almost exclusively a laboratory man, our modern naturalist sees and studies nothing but fragments or remnants of what *was* a living being.

Not observing *life in action*, he inevitably forms an idea of it according to *his* logic and *his* mathematics.

Hence the commonly taught *finalism* and the still current idea, that in Nature all is created for the needs and pleasures of man ! !

It may therefore be useful to repeat the few lines with which, in a former pamphlet, I wound up my conclusion (1) :

« Nature disposes of means of which the bearing is » beyond us. It elaborates its work in Eternity, and » *seems, in our eyes*, to behave with a levity which we » readily call madness. It frequently destroys what it » has scarcely formed, often removes the strong in order » to spare the weak, and always acts in such a manner » as to cause Chance, Arbitrariness and Absurdity to » prevail, setting the example of the most brutal violence everywhere.

» In face of this chaos which surpasses our understanding » and which obeys a *Logic and Mathematics that are not ours*, « it is useless to try and discover » one's way. »

Let us add that this way will probably show itself spontaneously, when thousands upon thousands of experiments

(1) *Concerning the Possibility of Provoking*, etc., p. 55.

and new facts will have accumulated, allowing to draw conclusions in harmony with the *ascertained reality*.

We, practical breeders, would seem lost in *your* laboratories, just as you, botanists, feel yourselves strangers in the laboratory of Nature, *if for a long time you have not been apprenticed to it*.

Come therefore and be initiated with us. Not with a feeling of your superiority barring from the first all possibility of understanding, but with a desire to come into contact with the great enigmas of plant life. Only at this condition can collaboration in research become possible.

As I wrote before (1) :

« The last word necessarily remains with the scientist » who puts to a severe test what the practical man » believes he has discovered. The part of the latter is » thus, naturally, a subordinate one; but it is logical to » demand, that science should profit by a knowledge » whatever its origin, « acquired during a long career of » research and groping ».

Moreover we see prospects of experiments for which, in a near future, the scientist shall be *forced* to call for the help of men of practice of the first rank.

These experiments yet would be incomplete or inexact, if the botanist deemed it against his dignity to listen to the least advice of the practical breeder, if, through

(1) Why, in *Botanical Science, Collaboration* etc., p. 15.

thick and thin, he tried to impose on the latter his own conceptions. That would not be « collaboration ».

« *Utriusque Labore* ». Are we yet far from this understanding between scientist and man of practice, that alone can give to botany a new orientation ??

As a close I should like to copy here the words full of hope that my dear master and friend Rabaud just wrote me :

« *Utriusque Labore* » ! *If men understood what these words mean ! What work they might realise and would not the very air we breathe be changed !*

The device should be written over the frontispiece of the Temple of Nations... But, what you and I did, others will do again : I look at the future with confidence (2).

Lucien Reychler.

January 1930.

(2) Indeed, nearly at the same time with Rabaud's letter, a communication from Holland tells me that my friend Dr Kamerling of Leyden made arrangements with one of the first Dutch breeders of hybrids, Mr Lubbe, to organise in collaboration systematic research during next spring. Dr Kamerling will try to interest a university student in this collaboration. The mastership of Dr Kamerling who passed part of this life in the Indies and in Brazil as an assistant at botanical research stations, together with the great esteem he has for men of practice, warrants the value of this collaboration. I wish both masters, each in his domain, much success and an abundant harvest.

The news was to good not to be told here. May it provoke numerous imitators.

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