The following abbreviations are printed in Webster's Dictionary without the period: *etym(on)*, *demirep(utation)*, *grog(ram)*, *hyp*, and *hypo(chondria)*, *noncon(tent)*, *hyper(critic)*, *navvy* for *navigator*; but the abbreviations above suggested should probably be followed by the period.

PRÆCOMMISSURA, ETC.

The single words *præcommissura*, *medicommisura*, and *postcommissura* are proposed as substitutes for the compound terms *commissura anterior*, *medius*, and *posterior*, and for their English equivalents. A similar change is desirable in the case of the three cerebellar peduncles, which may be more conveniently termed *præmeso-* and *postpedunculus*. So, too, the *corpora geniculata* (*external and internal*) may be called *prægeniculatum* and *postgeniculatum*; the *brachia* of the mesencephalon become *præbrachium* and *postbrachium*, and the two "perforated spaces," *præperforatus* and *postperforatus*. The "anterior pyramids" have been called by Owen "prepyramids," but more exact designations of these and of the "posterior pyramids" would be *ventripyramides* and *dorsipyramides*.

The prefixes are usually employed when the object referred to lies before, between, or behind other objects of a different kind; *e. g. præcordia*, *mediterraneus*, and *posterganeus*. The use here proposed is as if three dogs in line were designated by *præcanis*, *medicanis* and *postcanis*. If the terms are objectionable, what can be substituted for them? They are certainly as legitimate as are the well-established terms *prosencephalon*, *mesencephalon* and *metencephalon*. Do not the English words *preposition* and *postposition* offer some analogy?

The following points are mainly etymological and orthographical rather than anatomical.

THE CONNECTING VOWEL.

With derivative words the connecting vowel is commonly *i*; *e.g. alipes*, *claviger*, *fatifer*, *fidicen*, *fluctigena*, *decimanus*, *neurilemma*, and *xiphisternum*. But classical exceptions are *mulomedicus*, *quadrupedus*, *noctuvigilus*, and *decumanus*. In common English and scientific terms of Latin or Greek origin the *o* is common; *e. g. ambodexter*, *burgomaster*, *gastrotomy*, *termonology*, *ventrotnguinal*, *lateroflexion*, *mucopurolent*, *vasomotor*, *curvograph*, *neuroglia*, *oculospinal*, *pleuroperitoneal*, *xiphosura*, *septopyra*, *hemoglobin*, *cephalotribe*, etc. Rarely is it *e* as in *venesection*.

Should the *i* or the *o* be used in the following terms: *Dorsimeson*, *ventrimeson*, *dorsicumbent*, *latericumbent*, *dextriflexion*, *sinistriversion*, *cephaloduction*, *caudiduction*, etc.? Both analogy and euphony lead one to use the *i* when the first part of the word is of Latin origin, and the *o* with the Greek.

Should any of these terms be written as compound words?

COMPOUND WORDS.

The two Latin compounds known to me are *venerivagus* and *vesti-contubernium*. The following common or technical English compound words are selected from Webster's English Dictionary, or the Medical Dictionaries of Dunglison, or Littré et Robin, or from the writings of Barclay, Humphrey, and Straus-Durckheim: *Anglo-Saxon*, *concavo-convex*, *dextro-gyrate*, *ventro-appendicular*, *costo-vertebral*, *costo-alaris*, *caudo-pedal*, *osseocutaneous*, *occipito-scapularis*, *dorso-lateral*, *sterno-clavicular*, *clavo-cucullaire*, *clavi-sternal*, *clavio-humeralis*. By analogy with the foregoing, compound terms of direction should read *dorso-ventral*, *caudo-cephalic*, *meso-lateral*, *sinistro-cephalic*, etc.

HYBRID WORDS.

Some of the terms already mentioned are formed by the union of Latin with Greek words; *e. g.*, *dorsimeson*, *meso-lateral*, and *caudo-cephalic*; several others are likely to be employed; *e. g. clavo-mastoideus*, and *felitomy*.

Beyond the occasional intimation, in the dictionaries, that a term is hybrid, the subject seems to be ignored, and it might fairly be inferred that literary authorities entertain one or the other of two opposite convictions: either mongrel words are verbal monstrosities which will be shunned instinctively by all well-regulated minds, or there is no more serious objection to their use, or even their creation, than to the employment, or even the production, of mules, or the mixed varieties of grapes and roses.

However this may be, the fact is that the Latin and the Greek tongues have united to form the following nine hybrids which may be found in Latin writings: *anticato*, *biclinium*, *cryptoporticus*, *dentarpaga*, *epitogium*, *monosolis*, *monoloris*, *pseudo-flavus*, and *pseudo-urbanus*. Of these, the third only occurs with any degree of frequency.

Whoever will spend the time to look through an unabridged dictionary of the English language—and the interest as well as the instructiveness of such a search can hardly be realized by those who use the volume only for occasional reference—will find that, after excluding the twenty-five or more words ending with *meter*, which may perhaps be derived directly from the Latin form *metrum*, there are more than *one hundred hybrid* words, many of them in good standing. Many more are to be gleaned from the dictionaries of medicine and the other arts and sciences.

Nevertheless, it is probable that a due regard for the feelings of the classical purists in whose eyes language was not made for man, but rather man for language, will lead scientists to refrain from the introduction of mongrel terms when others will serve the purpose, and the present writer will be pleased to receive suggestions leading to the substitution of wholly unobjectionable words for any of the hybrids which have been mentioned.

(*To be continued in our next.*)

ON CHICKEN CHOLERA: STUDY OF THE CONDITIONS OF NON-RECIDIVATION AND OF SOME OTHER CHARACTERISTICS OF THIS DISEASE.*

By M. L. Pasteur.

II.

Concerning the properties of the extracts of the artificial cultivation of the germ of chicken cholera, an inquiry presents itself. We have shown that these extracts contain no substances capable of preventing the cultivation of the germs of this disease. They might, however, contain elements adapted to the vaccination of chickens. To investigate this point I have prepared cultivations where volume was not less than 120 c.c. After filtration and evaporation at a low temperature, while infinite care has been taken that its purity should not be affected, this liquid has given a dry extract, which was re-dissolved in 2 c.c. of water, and the totality of this was injected under the skin of a chicken which had never had chicken cholera. A few days afterwards the chicken, after being inoculated with a virus of the greatest virulence, died with the usual symptoms of *unvaccinated* chickens.

This class of experiments led to the following obsertion, which is of the greatest importance in physiology. When the extract from the cultivation of the germ of this disease, corresponding to an abundant development of the parasite, is injected under the skin of a fresh chicken in perfect health, the following phenomena take place: At first the chicken seems to suffer from a nervous dis-

*Translated from the *Comptes Rendus de l'Academie de Sciences*, of May 3d, 1880, by P. Casamajor. The translation of the second paper of this series appeared in the *Chemical News*, vol. xlii., page 321 (December 31, 1880).

order, which is indicated by panting breath and alternately opening and closing its beak; afterwards it becomes motionless, assumes the shape of a ball, refuses food, and seems overcome with drowsiness, as is the case with chickens affected with the disease. There is this difference, however, that the chicken wakes up at the least noise. This sleep lasts about four hours, after which the chicken wakes up, looks as well as usual, eats and cackles as if nothing had happened to it.

I have repeated this experiment several times and have always observed the same facts. Before injecting the extract above mentioned, I took, in every case, the precaution of injecting an extract of the pure chicken broth, which does not cause analogous phenomena. I have, by this means, acquired the conviction that, during the life of the parasite, a narcotic is formed, and that it is this narcotic which causes the morbid symptom of sleep so characteristic of the disease which we are studying.

By the acts of its nutrition the germ of the disease causes grave disorders and brings on death. The germ, being aerobian, absorbs during its life large quantities of oxygen, and burns up many of the elements of its medium of cultivation. This may be seen by comparing the extract of the broth, before the development of the germ, with the extract of the liquid in which the development has taken place. Everything seems to show that it is from the globules of the blood that the oxygen necessary to its existence is derived by absorption through the tissues. While the chickens are still alive, even when death is still far off, their combs assume a violet tinge at a time when the germ of disease is so little diffused through the blood that it escapes microscopical examination. This species of asphyxia is one of the most curious traits of the disease we are studying. Death is caused by the grave disorders brought about by the development of the parasite in its body, by pericarditis, by serous extravasations, by alterations of its internal organs, by asphyxia, but the sleep characteristic of the disease is caused by a product formed during the life of the germ, which acts on the nervous centres. The independence of these two effects in the symptoms of this disease is further established by the fact that the extract from a filtered cultivation of the germ acts as a narcotic on chickens which have been submitted to the *maximum* degree of vaccination.*

These facts will, doubtless, be found worthy of the meditations of pathologists.

Although I have taken already much of its time with this subject, the Academy will allow me to call its attention to some other characteristics of the disease called *chicken cholera*. We know that this disease is rapidly fatal, particularly if caused by a direct inoculation of its germ. It must then appear extraordinary that it sometimes presents itself in the chronic state, as in the case of inoculated chickens; which, after being severely ill, do not die, but seem to get relatively better. They eat, however, very little; they become anæmic, as shown in the discoloration of their combs; they continue to lose flesh, and finally die, after lingering for weeks or months. This fact would not be of primary importance if, at the death of the chicken, the germ of the disease was not, in most cases, found in its body, which conclusively proves that the parasite has been present since the last inoculation, always active, although in a mild form, for it brings on death slowly. Doubtless, the germ was placed in some *vaccinated* portion unfavorable to its cultivation. Vaccinnated chickens are most apt to present this form of disease, which is of very rare occurrence. We might be led to believe that, in this case, the virulent virus is changed into the attenuated, but this would be an error. In cases of this kind the virulence of the germ of the disease seems, on the contrary, to be aggravated. This may be easily seen by cultivating it artificially, so as to separate it from the blood, and inoculating it on fresh chickens.

Facts of this kind help us to understand the possibility of those long incubations of virus, such as that of rabies, for instance, which, after existing a long time in the body in a state which may be called latent, suddenly manifest their presence by the most marked virulence and by death. Do not these facts also throw light on human pathology?

Alas! how often we see virulent diseases, such as scarlatina, measles, typhoid fever, followed by serious disorders of long duration, which are frequently incurable? The facts to which I have called attention are of the same nature, only here we can put our finger on their true cause.

I will conclude by pointing out another peculiarity, which is not less worthy of the attention of the medical profession.

In chickens in perfect health which have been thoroughly vaccinated there often occurs an abscess full of pus on some portion of the body, which does not seem to have any injurious effect on the health of the animal. It is a remarkable circumstance that this abscess is due to the germ of chicken cholera, which remains in it as in a closed vessel, and it cannot propagate, doubtless, because the chicken has been vaccinated. This germ may be withdrawn by artificial cultivation, or it may be directly inoculated on fresh chickens, which it kills in the usual manner after an abundant development. These facts recall the abcesses on guinea-pigs, which I have mentioned in the first communication on this subject, and they furnish a rational explation of what happens in these abcesses. In all likelihood the muscles of the guinea-pig cultivate the germ more slowly and with greater difficulty than those of chickens; the disease is limited to an abscess, and recovery becomes possible.

I will now conclude this statement, as I have no wish to wear out the patience of this Academy. This subject is, however, so vast and so fruitful that I will ask its permission to bring the subject before it again. I have other observations to present than these. I will add those which will present themselves in the investigations I am now making.

"We would give nothing to the public," said Lavoisier, "if we waited until we reach the end of our researches, as these become broader and more extended the farther we advance."

* I should, however, try to isolate the narcotic, and see whether a sufficient quantity could cause death, and whether, in this case, the internal disorders would be the same as those of the disease itself.

THE NEW CHEMISTRY.

Lieut.-Col. W. A. Ross, who has done so much to advance our knowledge of blowpipe analysis, and whose original chemical investigations are of the greatest interest, in speaking of Prof. Cooke's "New Chemistry," indicates as follows, that much more radical changes, at all events as regards anhydrates, will shortly demand the attention of philosophical chemists, in consequence of the following facts:

FACT 1. 5mgrs. of pure caustic lime are carefully fused into a bead of pure boric acid before the blowpipe, the bead boiled in distilled water, and the transparent calcium borate ball thus extracted, weighed. The weight will invariably be exactly 20mgrs.

FACT 2.—The above-mentioned ball is now fused into a second bead of boric acid, the transparency of which it does not in the least degree affect, and when again boiled out it has the same weight—viz., 20mgrs.

FACT 3. —5mgrs. of calcium hydrate are now fused into a boric acid bead similarly to (1), when it is observed that the borate ball formed is at first opaque white; then, as it becomes transparent B B, that an enormous amount of opalescent matter is emitted from the ball into the bead; and finally, that the extracted ball weighs only 15mgrs.