faring people had extended their journeys, if not their colonies, to that comparatively remote quarter. This interesting relic has been ably worked up by Professor Pauli, who may be said to be at the head of living Etruscologists.

About the time that the Etruscans settled in Italy, a people of closely similar name, the Tursha, appear in Egyptian history as bold invaders and daring warriors. They are mentioned in the inscriptions of Meneptah II. and Ramses III., and by most writers are considered of the same stock as the Turseni, Tyrrheni, Tursci, or Etruscans. They were allies with the Libyans, and entered the Fayoom with these in the Ramesside period from the Libyan territory to the west. Professor Krall accepts this identification, but adds the cautious and just remark, that we have no positive knowledge of the language spoken by these Libyan neighbors of Egypt at the time mentioned. Of course, if they were the Tursha, and these were the Etruscans, we should see our way much more clearly.

## CREMATION OF CHOLERA CORPSES.

BY ALBERT S. ASHMEAD, M.D., NEW YORK.

LET me add a few words to the article of mine, entitled "Cremation of Cholera Corpses," which you published Sept. 2.

I said in the New York *Tribune*, Sept. 22,[1] that religious prejudices should not interfere with the enforced cremation of cholera corpses.

This is what Professor Stillé writes to me about the subject: "In regard to cremation, I have no doubt of its being the proper way to dispose of the dead, and that it originated, as all sanitary laws did, not in divine command, but in human wisdom derived from experience.

"If the Egyptians had possessed fuel, I have no doubt they would have burned their dead, and that the Jews would have followed them in this as in most of their sanitary laws, e.g., circumcision, unclean meats, etc. Of course, with Greeks, Romans, and Christians the doctrine of the resurrection of the dead (most distinct, of course, in the last) led to the preservation of inhumation.

"There are many persons even now who believe in the literal resurrection of the actual body, albeit they are at a loss to give a reason for this popular belief. After all, I doubt if cremation of the dead will become usual. Superstition will hinder it among the ignorant, and tenderness among the refined."

There are in the history of the treatment of infectious and contagious diseases three periods.

1. There was a barbarous period when every, let us say, leper, was considered as outside of the pale of humanity, without any right to the sympathy of his fellow-men, only not killed because there is a law of the Decalogue against killing. The leper, as we have chosen him as the representative of this class of wretches, was condemned to solitude, absolute isolation; if he came by chance within hail of any fortunate healthy brother or sister, he had to ring a bell which he was obliged by law to always carry about him, in order to let them know that somebody was approaching who had no right to approach his fellow-being, and whose presence was an involuntary menace of death! These men were utter outcasts, enemies to be kept off as wild beasts are, completely neglected; when they were found dead, their carcasses were buried — that was the only duty which society performed in their behalf.

2. The second may be called the Mediæval-Christian period. Then something was done for them, in fact everything which those dark centuries knew how to do. *Misericordius* were formed, societies of St. Lazarus, etc. Asylums, hospitals were established. Of course, the greatest service the men of that time thought that they could render their unfortunate brethren was — prayers, the ceremonies of religion. For the ætiology was — visitation of God, punished sin, etc. In a time of epidemic the sanitary measures consisted in holy processions with banners flying, crosses, candles, holy-water; also relics, such as the seamless coat of Treves, a thousand ugly images of the Virgin meeting the traveller at every step. Have not we seen here in New York thousands kissing a bone?

3. The third period is the age of reason, the sanitary period, when superstition, ignorance, and fanaticism must be kept in check, brought to bay, utterly ignored, in every question of public health. We know now what we have to do; there is no excuse for not doing it. If, with the knowledge we have, we pander to the ridiculous pretentions of those who stupidly try to keep up the regimè of the Middle Ages, we are simply criminal.

[1] TO THE EDITOR OF THE *Tribune*: No more salutary measures have ever been taken against the spreading of cholera than the burning of the cholera corpses at Swinburne Island. It is evident that as long as the bacillus has not been entirely destroyed it will live to fight again. However deep it may be buried, at some time it will reach the surface again, get mixed with the water we drink, and cultivate itself in the human body. Why then should a measure so necessary for our safety be limited to such uncared for bodies as those who are found on vessels stationed at quarantine in the bay? The same danger threatens us from the bodies of those who die in the city. There is no use in saying that they will be buried in metallic coffins. Metal may keep the enemy in harmless seclusion for a longer time, but not forever. Moreover, metal renders the process of putrefaction slower, and keeps the bacillus which feeds on the corpse longer alive. There is probably no difference in regard to the danger arising from buried germs, whether the corpse be buried in wood or in iron. Therefore, it is evidently a duty of a board of health which cares truly for the public welfare to enforce cremation of all cholera corpses in the city as well as on the ships. Religious prejudices can really not interfere with that; the body reduced to ashes can resuscitate as well as the body buried, for it is clear that any corpse long before the general resurrection of the dead will be reduced to a condition entirely similar to that which cremation brings about. Or, if it is only the routine of the ignorant that stands in the way, it is the right and the duty of the educated and learned to impose by law and by force what is necessary to the welfare of the whole community. If we must bury our corpses, let us at least bury them in the most rational way possible. Wood decays, iron rusts or bursts, but earthenware jars are absolutely impermeable, and even indestructible. These have been used for more than a thousand years by the royalty and higher classes of Japan, and as we are, just now, teaching the Japanese so much, it is only fair that, when they are entirely in the right, and have given a great deal of thought to the matter, they should teach us something, too. They put vermillion with the cadaver; we might use bichloride of mercury.

## SOME POINTS IN CHRONOLOGY.

BY R. W. MCFARLAND.

THE difficulties met with in chronology are best understood by those who have given most attention to the subject. In ancient times each nation was a law unto itself, touching the method of counting time or registering great events.

The Egyptians, several thousand years B.C., knew that the year was very nearly 365¼ days. They, however, dropped the fraction and retained only the whole number. It is said on good authority that this error of one-quarter was allowed to remain, so that by losing one-quarter of a day each year the seasons would slide forward around the whole heavens in 1461 years. By this slow motion of the seasons through the year, the festivals of the gods in like manner would be celebrated in all the seasons, to the end that all the gods should be honored equally and in exactly the same way.

The Roman calendar was amended by Julius Cæsar, 46 years B.C., with and by the aid of an Alexandrian astronomer. We use what is substantially the Roman calendar. It would not be proper in this place to enter into an explanation of the minutiæ of many points in doubt or in controversy. The immediate cause of Cæsar's reform was the vicious habit of the pontiffs in calling out or proclaiming the beginning of the months in such a way as to serve political ends or emergencies. Of course most people who are conversant with the derivation of words know that the word "calendar" is from the Latin *calare*, to call, or to proclaim. As a consequence of the reformation by Cæsar, the year 46 B.C. was made to consist of 445 days, and is sometimes known as the year of confusion. The year 45 B.C., the first of the reformed calendar, coincided in the main with the year 708 of the city of Rome. This is the Julian calendar which was followed in general by the Latin Empire, and was naturally adopted by the various nations after their incorporation into the Roman dominions. The old Egyptian year of 365¼ days was merely transferred to a more northern region, and into a far wider territory. It was not till long after the conversion of the Emperor Constantine to Christianity in the year 320, viz., in the early part of the sixth century, that the proposition was made to count the assumed date of

the birth of Christ, as the beginning of the era — the one now in common use by all Christian nations.

For ecclesiastical purposes the early Christians adopted in part, at least, the Jewish calendar, especially for the feast of Easter, the counterpart of the Jewish passover — the 14th of Abib, the first month of the year. "In the fourteenth day of the first month at even is the Lord's passover."— Leviticus xxiii., 5. But the fourteenth day did not generally fall on the Sabbath. Some churches celebrated Easter on the fourteenth, and some on the following Sunday. This caused some contention, and easily grew into a matter of supreme importance for the church. In the year 325 of our era, the council which convened at the city of Nicæa, beyond Constantinople, decided that the feast of Easter should be celebrated on Sunday, and that it should be the Sunday following the day of the full moon, which should occur on, or next after, the 21st of March. The intention was to fix the time of Easter as nearly as a movable feast could be fixed. The Jewish year was luni-solar — twelve months for one year, thirteen for the next.

Early in the fifteenth century the ecclesiastics noticed that the equinox was slipping away from the 21st of March. The question was discussed more or less for nearly two hundred years before final action was taken. In 1582 the equinox occurred on the 11th of March instead of the 21st, as at the time of the Council of Nicæa, in 325. Pope Gregory XIII., with the aid of able coadjutors, reformed the Julian calendar. His object was to prevent in the future such diversity of days in celebrating the same feast. The change made by Gregory consisted chiefly of two points: 1, The skipping of ten days in order to bring the equinox back to the 21st of March; and 2, To arrange an order of leap years which should prevent a like divergence thereafter. The omitted days were the ten following the 4th of October, 1582. The day which in the ordinary course of events would have been the 5th was reckoned as the 15th of October, new style. The Julian calendar, with every fourth year a leap year, is old style. Gregory excepted the centesimal years, decreeing that only those which are divisible by 400 should be called leap years. The year 1600 being divisible by 4 and by 400 was a leap year in both styles. Wherefore the difference between the two styles continued ten days for a century after 1600, viz., till midnight of the 28th of February, 1700. In new style, 1700, not being divisible by 400, was a common year, and the day following the 28th of February was March 1. But in countries which still adhered to the old style, 1700, being divisible by 4, was a leap year; so the day following the 28th of February was the 29th. Here there began a difference of eleven days between the styles. A like case occurred on the 28th of February in 1800, and the difference became twelve days, and will so continue till February 28, 1900; after which for 200 years the difference will be thirteen days. Russia still adheres to the Julian calendar, and the 12th of October, 1892, in that country will be the 24th in this.

The change of style by Gregory looked solely to the future, in order to prevent unseemly changes in the time or date of church festivals. It did not disturb the past at all, and was not intended to do so. As a proof of this, it may be stated that no date previous to October 4, 1582, old style, was ever changed by Gregory or any of his successors, or by any body of learned men, or of unlearned men; that no writer of history or of chronology in any European nation has changed or attempted to change such dates from old to new style. The discovery of America was on Friday, October 12, 1492, old style. It is so written "always and everywhere and by all."

It was reserved for the American Congress of 1892, instigated by a committee of some ill-informed society, to depart from established and uniform custom, and to declare that the 21st of October, 1892, should be celebrated as the 400th anniversary of the discovery. It is a "consummation devoutly to be wished" that this hasty and ill-advised action of Congress may die a speedy death, and that after this year it may never again be thought of or regarded in any way.

The present Pope, in his announcement concerning "Columbus Day," utterly ignores this act of Congress. He says, according to current reports in the daily press, that on the twelfth of October or on the following Sunday (the 16th) appropriate services will be had in commemoration of the great discovery. It is to hoped that some friend will call his attention to the unadulterated wisdom displayed on this side of the Atlantic, regardless of the "effete monarchies" of Europe.

England adhered to the Julian calendar till about the first of September, 1752. To be specific, the order of Parliament was that the day following the second of September of that year should be called the fourteenth, and that the year which previously began on March 25 should begin on January 1, 1752, to conform to the Gregorian calendar. Macaulay, Hume, Robertson, and all other historians who have written in the English language of events in English history, give the dates in old style up to the year 1752.

In the colonies on this continent, planted by the French, Dutch, Spanish, and English, each followed the custom of the mother country, some using old and some new style. After the Revolutionary War Ramsay's Life of Washington was written. In it Washington's birth is given in old style only, viz., February 11, 1731,— conforming to the English custom of leaving unchanged all dates before the change of style. But "necessity knows no law;" so the conflicting dates of the various colonies were assimilated by all being made new style, for events occurring on this continent.

Such is a brief account of some points in chronology, which account may be of interest to many and may stir up some to a more careful study of a much neglected subject.

Oxford, Ohio, September, 1892.

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## SOME THOUGHTS ON THE PHYLOGENY OF THE MOLE CRICKET.

BY E. W. DORAN, PH.D., COLLEGE PARK, MD.

I HAVE recently been able to work out to some extent the life-history of the Northern Mole Cricket, *Gryllotalpa borealis*. The various stages of the insect seem not to have been studied extensively, or described, before. I have made some observations of interest which I have not seen recorded elsewhere, and which seem to indicate the course of development in this species. I am led to believe that formerly the insect lived upon the surface of the ground, or in natural hiding places, very much like our common field cricket, instead of burrowing into the earth, and passing all its existence under ground.

My first reason for supposing a change of habit has taken place is based upon the fact that the larva, before the first moult, is able to jump like the field and house-cricket. (Larvæ but little over a fourth of an inch long were seen to jump five or six inches in the breeding-jars.) They are otherwise very active and brisk in their movements. After this stage the insect cannot jump at all, and is very clumsy. It can run rather rapidly backward or forward in its burrow, or upon a level surface, but has very awkward movements upon an uneven surface. The abdomen is long and heavy, especially in the pupa and imago.

Now this would indicate that originally the mole cricket had the power of jumping like most other orthoptera, and all other *Gryllidæ*, I think, and lived upon the surface of the ground, perhaps hiding in crevices, or under rubbish, like the common cricket. But having taken to the burrowing habit, and no longer finding the necessity for exercising its power of leaping, it gradually lost that power, until it appears only in the early part of the larval stage.

My second reason for this conclusion is based upon the habit the mole cricket has of defending itself in the burrow by ejecting posteriorly a creamy, viscid substance in large quantities, which rapidly thickens after exposure to the atmosphere. This fluid seems also to have peculiar chemical properties. In this way it is able to protect itself from almost any foe which may attack it from behind, and it fights viciously if attacked in front. Now, the larva before the first moult does not have the power of ejecting this substance, and this would possibly indicate that in a previous stage of its development the mature insect was not so armed, for the young larva certainly needs protection as much as