

## Correspondence.

## LATHER AS A TRAP FOR INSECTS.

To the Editor of the SCIENTIFIC AMERICAN:

Here is a little experience that may be valuable to others:

An hour ago, while I was reading my SCIENTIFIC AMERICAN, my room was invaded by a swarm of gnats, and I was unable to continue my reading. Just as I was wishing I had sticky flypaper, I thought of something else. I took a cake of toilet soap and made a quantity of stiff lather, and spread it on some sheets of paper which I laid in the bright light under my lamp. I also covered the top of the lamp around the burner with the lather. In fifteen minutes every gnat had got tangled in the lather, besides a candle moth or two for good measure. As I was reading your paper at the time I thought it might be useful to you, so here you have it.

L. L. KLINEFELTER.

Obar (formerly Perry), N. M.

## THE POPE AND THE COMET.

To the Editor of the SCIENTIFIC AMERICAN:

I regret that you have published the old fable of the Pope and the Comet. Kindly correct it in the name of truth.

(Rev.) H. S. SPALDING, S.J.

Chicago, Ill.

In an article published in Popular Astronomy last October, William F. Rigge considers this subject. He writes:

"It seems that no article can be written on Halley's comet without bringing in the oft-told story of the bull which Pope Callixtus III. so ineffectually launched against it, or of the Angelus bells which were rung to frighten it away, or of the prayers which were to deliver the Christian world from the devil, the Turk and the comet. The truth-loving reader will, therefore, be probably most intensely surprised when he hears that, as an actual fact of sober history, there is no truth whatever in the story, not even in its least details. And the proof is easy and solid.

"First. While Newcomb calls the bull a myth, but along with the Columbian and Chambers encyclopedias believes that prayers were ordered to be said against the comet, no allusion whatever to the Pope, the bells and the prayers is made by Sir John Herschel, Grant, Young, Comstock, Todd, Langley, the American Cyclopaedia, the Encyclopedia Americana, the Encyclopædia Britannica of 1902, etc. While this may be a negative argument, it is not, however, an inconclusive one, for why should these eminent authorities, all of them non-catholic, not mention the story if it is true, when so many other writers speak of it?

"Second. The Bullarium Romanum is a large series of volumes containing in Latin most of the official documents ever issued by the popes, from St. Peter down to our own day. Owing to the definiteness of the reference and the short reign of Callixtus III., it was an easy task for me to read all the documents of this pope, and I can attest from my own personal knowledge that not only is there no bull against or concerning a comet, there is not even a paragraph, nor a phrase, nor a word, which might be construed to refer to a comet.

"Third. The story is so universally told and is to be found in so many writers, such as Arago, Draper, Babinet, Guillemin, White of Cornell, etc., that most persons are really excusable when they are misled into the conviction of its truth, and then simply copy it and pass it on to the next generation. If the reader of these lines is really interested in the matter, I would refer him to an able article entitled "Of a Bull and a Comet" written by John Gerard, S.J., and published in The Month, London, in February, 1907. Here the whole story is traced to its fountain head, and it is shown by the best authorities, nearly all of them non-catholic, that not only no bull was ever launched against the comet, but prayers were not even ordered to be said against it, although the prevailing opinion of the scientific men of the time was that the comet foreboded calamity to the earth. Any one that wishes it may obtain a free reprint of the article in question by applying to the Superintendent of Parish Schools, Broad and Vine Streets, Philadelphia.

"Fourth. The article just referred to traces the origin of the whole story about the bull against the comet to this one paragraph of Platina, in his Vitae Pontificum, published in Venice in 1479. As this writer was not only in Rome at the time, but was also archivist of the Vatican when he wrote his history, his authority ought to be of the utmost value. These are his exact words:

"A hairy and fiery comet having then made its appearance for several days, as the mathematicians declared that there would follow a grievous pestilence, dearth, and some great calamity, Callixtus—to avert the wrath of God—ordered supplications, that if evils were impending for the human race, He would turn all upon the Turks, the enemies of the Christian name. He likewise ordered, to move God by continual entreaty, that notice should be given by the bells to all

the faithful, at midday, to aid by their prayers those engaged in battle with the Turk."

"Let us read the words again and study them carefully. 1. The Pope did not issue a bull against the comet; he ordered supplications. 2. He ordered these conditionally, 'that if evils were impending,' prudently neither admitting nor rejecting the authority of the mathematicians who declared that pestilence, dearth and some great calamity would follow the appearance of the comet. 3. He assumes no authority over the comet nor bids it be gone; he orders supplications, declaring himself to be a suppliant, that if evils were impending, God would turn them upon the enemies of the Christian name. 4. Bells are to be rung to remind the faithful to pray, not to frighten away the comet.

"This one quotation from one author, which has been the germ of the whole comet story, weakened as it is by our simple analysis, becomes of no value whatever when we apply the rules of ordinary historical criticism. We have only the word of Platina that the Pope ordered supplications to be made and bells to be rung; he neither refers to any papal document, nor does he quote the Pope's exact words. Now, as the Bullarium Romanum contains all the official documents of all the popes, and as not one of the declarations of Callixtus III. alludes in any manner whatever, directly or indirectly, to a comet, we have every reason to dismiss the testimony of Platina altogether. For this same reason we must also reject the testimony of each and every writer that mentions the comet story or any of its details, because not a single one of them has ever given the slightest reference to any official document ever promulgated by Callixtus III. whether in the Bullarium Romanum or out of it, nor supported his assertion by anything stronger than a quotation from a previous writer who was equally deficient in his historical proofs.

"There is, therefore, no foundation whatever for the story that Callixtus III. issued a bull against or concerning a comet, that he ordered bells to be rung to frighten it away, and that he ordered prayers to be said to deliver the world from its influence."

## THE NUMBER OF OUR ANCESTORS.

To the Editor of the SCIENTIFIC AMERICAN:

If all of one's progenitors had been totally unrelated, each generation back would consist of twice as many persons as the one preceding it. But the true number of one's ancestors would in a few generations cease to even approximate the figures thus obtained.

It is likely that after going back just a few generations, the number of ancestors in each degree would remain fairly constant. In many instances of small, isolated communities, it is possible that the eighth to tenth remove might include the entire community at that time. From that point, the number would bear a definite relation to the population, and would often be a decreasing factor.

It may be inferred, from the persistence of some strongly developed types, that persons of the same ancestry are drawn together by natural selection without any knowledge of their common parentage, as most people's knowledge of their own genealogy becomes hazy when the third generation is passed; in fact, it generally ends there. There is not one person in a thousand that can name all his great-grandparents.

It seems to me the probabilities are that when a generation includes as many as one thousand persons, that number is not likely to be exceeded by any previous generation, and I do not believe that number would be reached ordinarily in less than twenty generations.

The tenth-degree ancestors would number 1,024, if there were no deductions by reason of plural lines of descent from some of them.

F. W. A. shows that the second, third, and fourth degree ancestors may number only four each. Blackstone in his Commentaries on English Law, using a very similar illustration, shows that an indefinite number of generations might consist of but four persons each, and that all the unions might still be legal. Twenty generations of legal ancestors might then comprise only seventy-eight persons, and it seems probable that this number is nearer the truth than the enormous number suggested by the first contributor.

The theoretical number of ancestors in ten generations would be 2,046; but suppose that in each generation from the third to the tenth there was one from whom there were two lines of descent. That alone would reduce the number 492, or nearly one-fourth. The more remote in degree, the greater would probably be the proportional loss by lines running to a common source.

There can be no approximation to the true number that would be more than a more or less shrewd guess—my own is no better than anyone else's—and it is that in twenty generations the total number of one's ancestors is not likely to exceed 20,000, or an average of 1,000 to the generation; and that the number in each preceding generation is more likely to decrease than to increase.

After arriving at the true number of one's ancestors

in each degree, if that were possible, the total would be subject to considerable deductions on account of the same person's being an ancestor in several different degrees, as would be the more likely the more remote the relationship.

R. L. FLOYD.

El Dorado, Ark.

## THE NUMBER OF OUR ANCESTORS AND OF OUR FUTURE COUSINS.

To the Editor of the SCIENTIFIC AMERICAN:

The problem which has been discussed by a number of your correspondents, in regard to the number of our ancestors, while very puzzling, has given rise to another quite as puzzling to my mind and even more disquieting.

It appears evident that to have kept good the number of the human race, or of any other race, each pair must, on the average, have produced two offspring who matured and reproduced themselves in two individuals, and so on; this merely on the supposition that the number of the race remained stationary, although it is generally supposed the human race has increased through the ages. However, adopting the first supposition, as very moderate surely, I cannot escape the following conclusions:

A has two parents, each of whom had one brother or sister, and each of these collateral relatives has two children. Therefore, A has four first cousins or four cousins of his own generation descended from the collateral branches one generation back. Likewise, from the four collaterals to his grandparents he has sixteen cousins of his own generation, from the eight collaterals to his great-grandparents he has sixty-four cousins of his own generation, etc., or in general A has  $4^x$  cousins of his own generation descended from ancestors  $x$  generations back.

This gives us startling results. From the ancestors ten generations back A has over a million cousins; fifteen generations back, over a billion; and this takes us back only about five centuries. If we go back another century, or eighteen generations, A must have about 64 billion cousins, and we are still in very modern times.

Now, what has become of all these myriads of cousins? They are not on the earth. Where are they? And worse yet, because it looks to the future, what of A's children? They must have four times as many cousins as he; and his grandchildren must have sixteen times as many. The prospect looks dark to me. I am more concerned about the cousins of the future than I am for the ancestors of the past.

Sugar Grove, Ill.

A. T. MIGHELL.

## WHY DO MAIN SPRINGS BREAK?

To the Editor of the SCIENTIFIC AMERICAN:

Inasmuch as I have had over thirty years' experience in fitting some thousands of main springs to watches, I believe that I may be able to add something to the article entitled "Why Do Main Springs Break?" which appears in your issue of September 4th, 1909.

I have found in my experience that the main spring of new watches break when the watch has been in use only for a few days. The cause may be attributed to the excessively high tempering of the steel, and in some cases to the uneven tempering of the steel. Moreover, any mineral or vegetable oil will corrode the main spring, because of the presence of acids in the oil. During my entire experience, I have never been able to obtain any mineral or vegetable oil free from acid. The only oil that I have used with success is purified fish oil.

I have found that main springs also break into many pieces because the watchmaker has carelessly handled the spring with perspiring hands. Some watchmakers when cleaning a watch steep the main spring, as well as the other parts, either in benzine or kerosene, to save time. This practice will surely cause the main spring to break within a very short space of time, because of the acids in the benzine or kerosene, which penetrate the steel. Even though the spring be afterward oiled with good fish oil, it is sure to break after this dipping in kerosene or benzine.

If a barrel arbor around which the main spring coils is made too small, in time the spring will break close to the center, which is an infrequent occurrence, particularly in modern watches.

When the watch repairer finds that a spring has lost its resiliency, instead of replacing the old spring with a new one, he will sometimes take the spring in his hands and straighten it by drawing it between his thumb and fore finger, thus restoring its resiliency temporarily. At the same time, however, he makes the spring more brittle, and breakage is sure to follow such treatment.

In conclusion, I wish to concur with your contention regarding the breakage of main springs during hot weather, particularly when taking the watch from the pocket and laying it suddenly on a cold marble or iron slab.

RICHARD B. SMITH.

New York.