

deleterious influences in the slums of great cities, or when he is getting into difficulties at home and at school and becoming a problem child. These problem children are receiving more and more attention every year—not only they, but their parents; for a problem child usually means a problem parent.

So we have parent-teachers associations, child-guidance clinics, juvenile courts and other agencies which are doing more and more effective work. We have mental hygiene clinics for poorly-adjusted adults who learn to recognize and handle their own difficulties and are thus enabled to handle their children better. The schools have psychologists and specially trained workers who take in hand children who are beginning to be at odds with society and help them over the rough spots.

### Social Sanitation Needed

The ultimate reclamation of the social group who grow up idealizing crime and criminals is, of course, a Gargantuan task, involving as it does the cleaning up of the slums, the ridding cities of graft and gangsters, and so on. It is a social problem whose solution is in the distant future.

In the meantime, a certain amount of education can be done by newspapers, movies, radio programs, and by parents and others in refraining from glorifying crime in any manner.

I have often been asked whether or not I think that exciting radio programs, especially of the serial variety, dealing with crooks, with super-criminals, and with exciting and impossible adventures are harmful to children.

That is a question which cannot be answered categorically. It all depends on the child. Most children nowadays take such things as a matter of course and if their hero is left at the end of the fifteen minute program apparently about to be destroyed in a particularly painful manner, do not worry about him unduly. As one of my own small boys said on such an occasion, "Oh well, his name is on the feature and they've got to rescue him so they can go on with it."

Of course, if a nervous child is obviously upset by exciting programs or begins to show too marked a preoccupation with crime or admiration of criminals the judicious parent will ban such programs in his own home.

Coming to deal with the actual person charged with crime of any serious or habitual nature, the first step is to give the offender a mental examination. This is required by law in Massachu-

setts and done very generally in New York, and Maryland. The offender who has actual mental trouble or who is feeble-minded is then weeded out and placed in an appropriate institution.

Next the prosecutor and the judge should have the advice of the psychiatrist as to the disposition of the case. In other words, the criminal should be treated and not the crime. The type of person committing the offense should be fully understood, the circumstances, the motive, and the chance of its repetition should be taken into account. It is obviously useless to lock up a person for a few months who has committed the same offense a dozen times before, even though it be a comparatively trivial one.

It may very well be that a murderer could be released after a short detention with perfect safety to himself and society and a man who stole a loaf of bread should remain confined for life.

Treatment of prisoners actually in penal institutions should be determined after a thorough psychiatric study, and indeed this is coming to be done more and more. Some types of criminals, the so-called "normal" criminal I have referred to above, will require a fairly strict, even hard-boiled method of treatment, the neurotic criminal will require special treatment in an effort to cure him, and the accidental criminal may be treated with a minimum of restraint.

### Criminals are Human Beings

Much has been said in criticism of the parole system. In reality it is successful in a high percentage of cases, but it is the failures which receive publicity. Aside from the evils of political pressure, the chief fault with it is that it is often administered by unqualified persons. The public is slow to understand that good intentions are not everything. A man may be a successful merchant, a good father, stand high in the councils of his church and lodge and be intensely interested in public reforms, but nevertheless be totally unfit to sit on a parole board.

Work is constantly being done in studying the criminal mind and in trying to solve the problems of prevention and reclamation. At the Baker Foundation in Boston Dr. Healy is doing notable work and at the Institute for Juvenile Research in Chicago Dr. Schroeder, and there are other workers elsewhere.

In short, we are coming to realize that the criminal is not a strange, scarcely human animal, but a person very much like you and me, who thinks, eats, breathes, talks, loves, desires, and hates

just as we do. Looking upon such a one think of Kipling's lines:

"Stopped in the straight when the race was his own,  
Look at him cutting it, cur to the bone;  
Ask, ere the youngster be rated and chidden,  
What did he carry and how was he ridden?  
Maybe they used him too much at the start,  
Maybe Fate's weight-cloths were breaking his heart."

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### PALEOBOTANY

## Minute Details of Fossils Revealed by New Method

SECRETS of the plant world which have been hidden from man for more than 200 million years may be revealed through a new microscopic technique with which scientists for the first time have been able to examine tiny fossilized cells under high magnification.

Developed by William C. Darrah, Harvard botany instructor, the improved technique enables investigators to peel a transparent cross-section less than one twenty-five-thousandth of an inch thick from a fossil embedded in solid rock. This peeling can be magnified approximately 500 times, so that study of complex cellular structures is easily possible.

Previous methods permit scientists to magnify clearly only to about 60 diameters. Fossil cross-sections are also considerably thicker and darker under older techniques of procuring them.

Armed with this new weapon, scientists are expected to be able to conduct research in fields which have heretofore been inaccessible. The discovery is expected to be of particular aid in a study of the plant life involved in the formation of petrified woods and anthracite coal.

Although botanists have never before been able to obtain satisfactory microscopic specimens from these hard rock types, Mr. Darrah has already made successful fossil peelings from both. Some of his specimens from an Illinois coal deposit have been found to contain the remains of pollen grains more than 200 million years old.

In making the cross-sections, the fossil area in the rock under examination is first polished with an abrasive wheel. The area is then treated with acid and coated with a special nitro-cellulose solution. When this has dried into a tough film, it is peeled from the specimen. On

it is retained a carbonized impression of every detail of the fossil.

The process is very inexpensive, and despite the extreme thinness of the peelings they are practically indestructible.

Under older methods, fossil cross-sections were cut with a fine diamond saw and polished until nearly transparent. This necessitated considerable care and usually required several weeks of skilled labor, making the slides rather expensive.

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PHYSIOLOGY

## "Nonsense" to Say That Drink Makes Driving Safer

By DR. YANDELL HENDERSON,  
Professor of Physiology, Yale University

EDITOR'S NOTE: Because of reports from New York City that reaction time of motorists was quickened after a stiff drink of whiskey, Science Service asked Prof. Henderson, eminent authority on the effect of alcohol on the human mechanism, to discuss this subject.

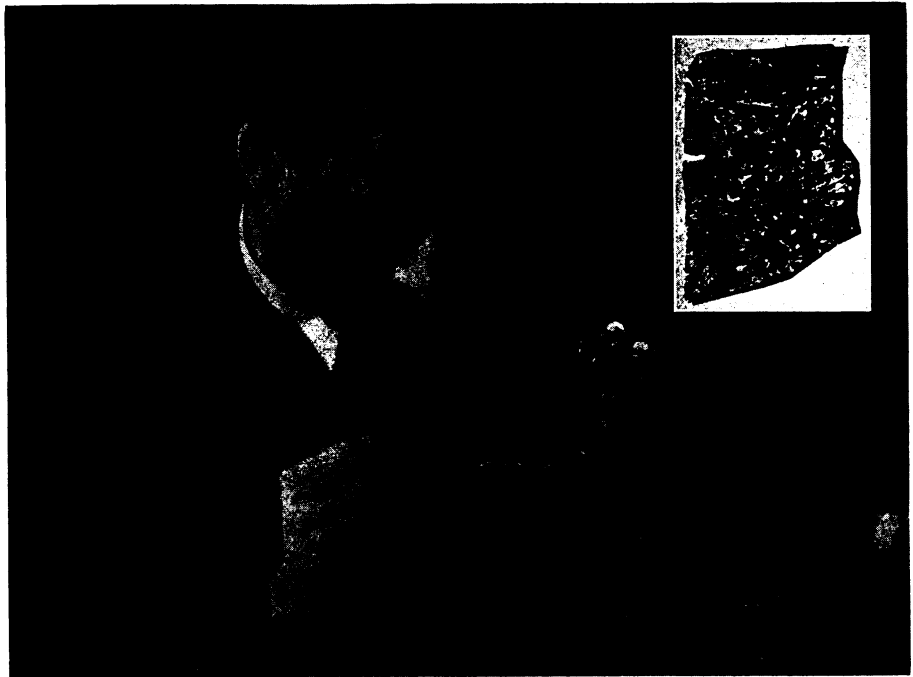
The relation of alcohol to motoring should be judged not only from scientific observations but also with a large measure of common sense. Two sets of observations are now offered. One tells us that the smallest quantity of alcohol causes a state of intoxication. That, in my opinion, is nonsense.

The other now reported from the Johns-Manville testing and safety truck asks us to believe that reaction time is actually reduced by a small amount of alcohol. Perhaps in the tests on the men quoted that was true, but to infer that those men or any men would drive more safely after a drink is also nonsense.

The truth for practical purposes is that the amount of alcohol in one bottle of light beer neither helps nor harms. On the other hand the motorist who has drunk half a pint or more of undiluted full proof liquor is a menace to himself and everyone. As motorists have no water available except in the radiator of the car, they drink undiluted liquor.

To lessen drunken driving requires that our standard liquor instead of being 45 to 50 per cent. alcohol shall be diluted to 30 or 35 per cent. This has been done in Sweden. It would not promote bootlegging for illicit liquor is now seldom over 35 per cent. and often only 30. Our Federal liquor tax should be changed to tax according to the percentage of alcohol and degrees of proof—high on high proof, low on low proof. That is what common sense applied to all these tests should teach us.

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### REVEALS AGE-OLD SECRETS

*William C. Darrah, of the Harvard botany faculty, using his new technique which permits examination of fossil wood cells under higher magnifications than have ever before been possible. The inset is a photomicrograph of fine details of petrified wood, made possible by Mr. Darrah's new process.*

PHYSICS

## Old Violin Makers May Have Tested By Branding

THE SECRET of how the old master violin makers determined the right kind and graininess of wood to use in their beautifully-toned fabrications now is believed found. They may have used a hot branding needle on wood which had been given a slight wax coating.

If the wood was homogeneous the melting wax formed nearly a circle around the hot needle. If the wood was inhomogeneous and possessed grain the branding tests showed a long, stretched, narrow ellipse.

Such at least is the simple test discovered by Prof. K. Lark-Horovitz of Purdue University who, for years, has been studying the composition of the wood in old violins by X-rays. From the studies, some of the mystery behind the beautiful tone of an Amati or a Stradivarius violin has been learned.

Prof. Lark-Horovitz has found, for example, that the best instruments have a top of spruce or pine and a back of maple.

The top, X-ray investigations reveal,

must possess a distinct fiber structure. The back, of maple, is almost without structure if the instrument is to have a good tone.

What Prof. Lark-Horovitz never could figure out was how the old sixteenth-century violin makers, 300 years before the discovery of X-rays, were able to tell what the wood structure might be.

The only clue was the markings of branding needles which can be seen on the old masterpieces of the violin-makers' art.

From this clue Prof. Lark-Horovitz finally found the simple hot branding needle test which, in its way, might tell roughly the same facts in the hands of a master as the more modern X-rays.

"There is nothing known," explained the Purdue scientist, before the Franklin Institute, Philadelphia, "about the actual use of this method, but it might be an explanation of the many traces produced by branding needles which we see on old instruments."

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