

## PSYCHOLOGY

# "G," Which is "Mind-Power" Needed in Many Activities

**C**OLLEGE professor and skilled mechanic both need "G."

But this sort of mental "it," which may also be called mind-power, is needed in different amounts as compared with special talents.

Pure physical strength and the sort of fancifulness that enables you to see pictures in clouds or ink blots are the only human abilities encountered in a comprehensive program that do not need "G" at all.

This is the message brought to American psychologists meeting in Ann Arbor, Mich., by Prof. Charles Spearman of the University of London, who addressed the American Psychological Association.

A grand total of 92 tests designed to measure the whole gamut of human abilities was given to twelve hundred students, in the course of Prof. Spearman's research. Every one of the 92 abilities, including such widely different matters as tapping rapidly with a pencil and working arithmetic problems, involved more or less of the General Factor, which Prof. Spearman has made famous as "G."

"G" is not what is generally spoken of as general intelligence, but extends far beyond the range of that ability, Prof. Spearman explained. It is the mental side of what has been called the "mass action" of the brain's whole outer layer or cortex.

Much of what is measured by current tests of intelligence or "IQ" is not the "G" factor at all, but another general factor linked with language. This seems to be nothing more than a capacity to link any symbol with a meaning. Yet it

plays a large part in the most exalted mental operations such as reasoning, Prof. Spearman said. It is present in all linguistic activities.

It is not, however, nearly so widely present as is "G," but underlies only about twelve of the abilities tested. It is involved in the ability to acquire general information.

The boy who is bad at arithmetic will not necessarily fail in his geometry tests, Prof. Spearman said. There is no general "mathematical ability." For arithmetic, you need "G" plus a special factor dealing with number. For geometry, you need "G" again, but a special ability for dealing with spatial relations.

Mechanical ability depends again upon the general factor, together with a special facility for understanding and inventing machines.

The idea that talent in music, painting or literature is a special gift is confirmed by Prof. Spearman's research. There is a common factor active in all these three branches of art, but it is not very important. And the amount of "G" involved in any of them is extremely small.

A battery of tests which may be shot at the individual and result in an adequate picture of his entire makeup, to aid in his education and his placement in industry, is one of the aims of his research, Prof. Spearman said. So far only mental abilities have been studied in this research, but further research is already planned covering the equally important traits of character and personality.

*Science News Letter, September 28, 1935*

## METALLURGY

# Method for Welding Aluminum Developed in Great Britain

**A** NEW process for welding the light aluminum alloys like RR 56 and Duralumin, holding promise for airplane and automobile construction, has been perfected in Great Britain, Consul William W. Heard, Birmingham, England, reports.

The new welding material, known as "Alusol," will join aluminum in cast, rolled, sheet or tube form and fluxes

freely at 200 degrees Centigrade, according to the U. S. Department of Interior's *Mineral Trade Notes* (Aug. 20).

The method, invented by an unnamed engineer of Coventry, Warwickshire, England, overcomes the old trouble wherein attempts to weld aluminum in ordinary fashion destroyed the effects of the previous heat treatment.

Test pieces of RR 56 and Hiduminium

tubing socketed together and joined with Alusol were only pulled apart at forces of twenty-six tons to the square inch, leaving the welded joint intact.

Alusol is claimed to withstand corrosion well and is unaffected by aging.

As an immediate application, it is reported, experiments are under way to produce an all light alloy bicycle which will weigh but four and three-quarter pounds with only the wheels and seat removed. Of more import, however, is the promise which the new joining method holds for aircraft and automobile construction.

The new process is analogous to soldering except that no flux is required. The aluminum alloy surfaces are first cleaned with special emphasis on the removal of oil, and the parts placed in a heating device.

After each part is warmed up the Alusol is rubbed on carefully over the surface with a steel scraper. After coating, the pieces are brought together, heated again, and finally allowed to cool.

It has also been found, the report states, that aluminum tubing can be joined to steel by the method, providing the steel is first tinned with a coat of soft solder. A joint of this character is said to withstand a pull of six tons per square inch.

*Science News Letter, September 28, 1935*

## ENTOMOLOGY

# Battling Butterflies Attack Wasps and Birds

**B**UTTERFLIES that offer to fight wasps, and even birds, sound a bit fabulous—like the traditional rabbit growling at a bulldog. But butterflies do fight, declares Austin Clark, Smithsonian Institution biologist.

Mr. Clark tells of butterflies that "fly at" such well-armed insects as wasps, bees and dragonflies. One species, the common milkweed butterfly, has a special antipathy for hummingbirds, and chases them away whenever they approach the flowers on which it is feeding. Another, the buckeye butterfly, makes a specialty of hazing the Carolina locust, a much larger insect. Many male butterflies are also pugnacious toward each other, and get into endless fights.

The curious part of it all is that the butterflies are quite without stings, biting mouthparts or any other weapons of offense. They fly in the faces of their enemies armed only with a truculent disposition. But apparently their bluff never is called.

*Science News Letter, September 28, 1935*