CURRENT COMMENT AND CASE REPORTS

CURRENT COMMENT is a section in Anesthesiology in which will appear invited and unsolicited professional and scientific correspondence, abbreviated reports of interesting cases, material of interest to anesthesiologists reprinted from varied sources, brief descriptions of apparatus and appliances, technical suggestions, and short citations of experiences with drugs and methods in anesthesiology. Contributions are urgently solicited. Editorial discretion is reserved in selecting and preparing those published. The author's name or initials will appear with all items included.

THE USE OF A STATICATOR* IN LESSENING ANESTHETIC EXPLOSIVE HAZARDS

The widespread use of anesthetic agents which are explosive and combustible in nature has increased the hazards to patients. It is a well-known fact that at least a portion of the explosions occurring in the closed system when ether, cyclopropane and ethylene are used is caused by static. Greene (1), in 1941, reported that of a total of 230 fires and explosions 63 cases were due to static electricity.

Static charges of considerable magnitude may be developed on the anesthetic machine and persons in the operating room and in the vicinity of the anesthetic field through frictional contacts and movements.

Phillips (2, 3) has written a number of papers regarding the avoidance of sparks or flames in the operating room. Careful management calls for sparkproof switches; conductive flooring, anesthetic tubing and face mask; grounding of tables; avoidance of wool and silk by the operating room personnel; proper humidification; and mopping of floors with a 4 per cent solution of calcium chloride each morning before surgery to improve conductivity.

Nevertheless, with all these safeguards, anesthetic explosions still occur frequently enough to make the operating room a hazardous place for the anesthesiologist, surgeon and patient when explosive anesthetic agents are in use.

Faced with this constant danger of a static spark, the questions naturally arise: first, how does one know when a voltage of sufficient magnitude is present that when it comes in contact with the anesthetic mixture it will precipitate an explosion? Second, if such a charge is present, what may the anesthesiologist do to prevent it? The Horton intercoupler was developed to equalize different electrostatic potentials. It did not warn of the potential dangers which might be outside the anesthetic field.

Therefore, an instrument which would warn the anesthetist of the presence of static charges and also prevent development of high electrical potentials would be desirable in the anesthesiologist's armamentarium. The following static indicator was developed in answer to these questions: namely to indicate when a static charge is present on a moving object in the vicinity of the anesthetic apparatus and to dissipate any charge which may have been built up in the anesthetic machine, operating table and personnel. The staticator* is an electronic instrument for indicating on a meter and with sound the presence of static electricity on persons and objects in the operating room.

This instrument consists of a highly sensitive vacuum tube which picks up a small voltage by the use of a short antenna wire when the antenna is in the presence of a moving static electric charge. This sensitive tube amplifies the voltage picked up by the antenna wire, and passes it along to another tube which further amplifies it.

* Staticator a trade name and manufactured by Anderson-Stolz Pharmaceutical, Inc., Kansas City, Mo.
and passes it to the meter and at the same
time to a small speaker which serves as an
alarm. The larger the static voltage, the
more voltage is induced in the antenna and
in the amplifier tubes and consequently in
the meter.

The speaker tone is such that it draws
the anesthesiologist’s attention without dis-
tracting the surgeon. The higher the static
ccharge the louder the sound until the meter
reaches its maximum reading.

The range of the instrument is set so
that a static charge of about half the mag-
nitude (2000 volts) necessary to cause a
spark strong enough to ignite an explosive
mixture of gases will cause a full scale
meter reading when it approaches the
danger zone around the anesthesia equip-
ment.

In the normal installation of the stati-
ceator, which consists of simply plugging into
a regular electrical outlet, the statisator is
grounded through a resister to the
grounded wire of the 110 volt power line.
Thus, by attaching the statisator to the gas
machine, any static charge built up on the
gas machine is instantly drained off to
ground.

We have used the statisator the last six
months during various surgical procedures
and under variable conditions of humidity
and temperature. Figure 1 illustrates the
danger points for the anesthesiologist and
particularly when he should be on the alert.
From the graph, it may be observed that
there are a number of instances when the
anesthesiologist was in a dangerous zone of
high electrical potential; it is interesting
to observe at “H” the presence of a third
person who entered the operating room
wearing wool clothing. The points “I”
and “J” are also of interest, as they show
the danger points when the anesthetist is
touching the patient and when the mask is
removed.

In conclusion we may state that the stati-
ceator as devised will fill a useful place in
the anesthesiologist’s armamentarium in that it
will warn him of the possible dangers in the
vicinity of the anesthetic apparatus and
dissipate and prevent any concentration of
static charges in the anesthetic field.

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CONVULSIONS FOLLOWING PONTOCAINE SPINAL ANESTHESIA:
REPORT OF CASE

Convulsions during anesthesia have been
reported many times in the literature (1).
These reports deal frequently with the so-
called “ether convulsions” although con-
vulsions occurring during all types of an-
esthesia have been reported. The typical
case of “ether convulsions” is that of a
young individual with an acute illness,
fever, and frequently intra-abdominal dis-
ease. Recent reports have indicated that
pentothal sodium is the drug of choice for
the control of convulsions. Convulsions
following intravascular injection of one of
the drugs of the cocaine-series is well
known. In the case reported here, convul-
sions followed intraspinal administration
of pontocaine hydrochloride for surgical
closure of a perforated peptic ulcer.

The patient, a 19-year-old veteran, was
admitted to Mitchel Field, AAF Regional
Station Hospital, July 25, 1946. He had
been discharged on July 22, 1946, from the
Army on a certificate of disability owing
to a prepyloric peptic ulcer. Ulcer symp-
toms began in November 1945. Four
hours before admission nausea, repeated